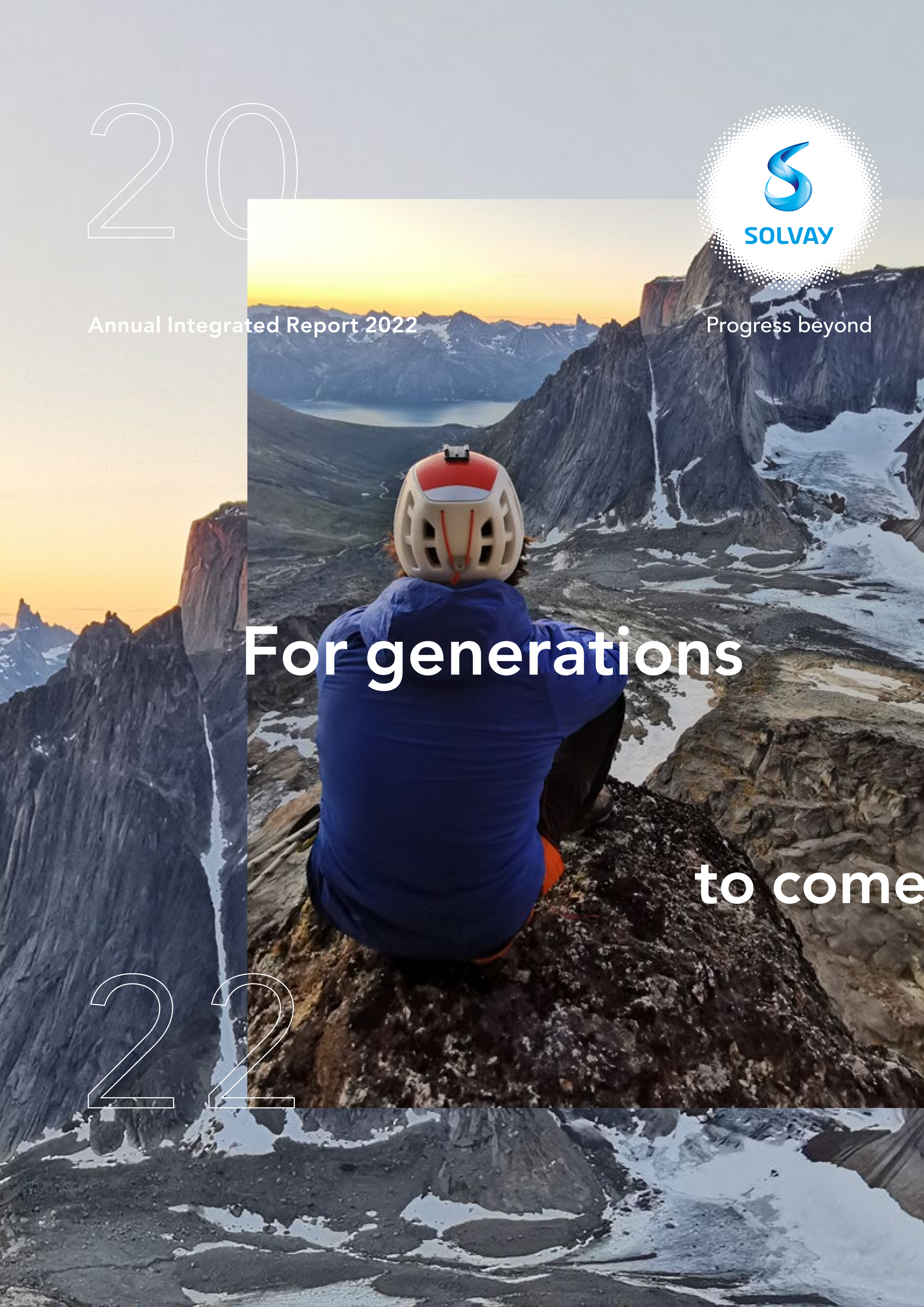
2022

Annual Integrated Report 2022

SOLVAY

Progress beyond

For generations to come



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About this report

Solvay's 2022 Annual Integrated Report provides material information on Solvay for the year ending December 31, 2022. This report reflects our progress in our integrated management journey, as it integrates all content in one comprehensive document.

The first chapters tell the story of the year, explaining how the radical transformation we have implemented over the past three years as part of our G.R.O.W. strategy enabled us to overcome the challenging macroeconomic environment and deliver outstanding results. It showcases our continued progress toward achieving our sustainability objectives, including a comprehensive update of the climate risks analysis conducted in 2022. And it shows how we have been collaborating with our stakeholders to continuously improve.

The report includes our management report, as required by article 12 of the Royal Decree of 14 November 2007 relating to the obligations of issuers of financial instruments admitted for trading on a regulated market. The information required by articles 3:6 and 3:32 of the Belgian Code of Companies and Associations can be found in the different chapters of the report. This includes our Remuneration report, Risk management report, Business performance review, Extra-financial statements and Financial statements.

Solvay's 2022 Annual Integrated Report is based on the Value Reporting Foundation Integrated Reporting principles and elements of content, and aligned with the GRI Sustainability Reporting Standards and the World Business Council for Sustainable Development (WBCSD) Environmental, Social, and Governance (ESG) Disclosure Handbook.

Our Annual Integrated Report has been validated by Solvay's Executive Leadership Team and Board of Directors.

The Nanok Expedition

A sporting challenge with a scientific mission

In April 2022, two Belgian explorers, Gilles Denis and Nathan Goffart, set out on the Nanok Expedition, a unique, five-month triathlon adventure across Greenland that combined a sporting challenge with an important scientific mission.

In one of the world's most hostile environments, Gilles and Nathan tackled 450km on skis, 600km in kayaks and opened up a new 1,000-meter vertical climbing route. Though extreme weather conditions and bureaucratic difficulties threatened to derail their plans, the duo persevered, completing all three stages of their expedition and collecting important scientific data to help us better understand the impact of climate change. As part of our Corporate Citizenship program supporting projects in education, innovation and sustainability, Solvay was one of the main sponsors of the expedition.

"Our expedition had a scientific part and a human part," explains Nathan. "Scientific because we wanted the expedition to have a purpose related to the environment and climate change, and human because we wanted to give a message to people, to encourage people to believe in and follow their dreams."

"I like to think that in terms of science, awareness and values, explorers have a lot to contribute," says Gilles. "We can bring messages, such as courage, resilience and perseverance through difficult times. But we can also be the natural ambassadors for field science, tailoring expeditions to the needs of scientists and giving them a much-needed voice."

Solvay corporate citizenship in action

— At Solvay, we have always been driven by our conviction that science holds the key to solving society's greatest challenges. We aim to support scientific research through partnerships and collaborations with universities, investing in extraordinary projects, such as the Nanok Expedition, that help us to reinvent progress.

"Gilles and Nathan's passion for exploration, for forging new paths and advancing climate science, is so motivating for us all at Solvay – there's so much we can learn from them, both as a business and as people," says Solvay CEO Ilham Kadri. "The incredible success of their expedition is a great example of what you can achieve when you go after your passion, dream big and plan to win."

The information collected during the Nanok Expedition is being used by four universities and research centers in Belgium and Denmark to study diverse topics relating to climate change, such as changes to the ice sheet and the melting of the ice cap, the impact of microplastics, and rock dust released by melting glaciers. —

www.nanokexpedition.be


“We have reached the highest point of a fast transformation that places us in an ideal situation to enter into the next chapter of our Group’s history."

Editorial

by Nicolas Boël

CHAIRMAN OF THE BOARD OF DIRECTORS

The year 2022 was the pinnacle of our purpose and a reflection of our purpose and beliefs. With record financial results, investments, strong cash generation and profitability, we have reached the highest point of a fast transformation that began in 2019, and has enabled us to drastically reduce our debt and positioned us in an ideal situation for entering into the next chapter of our Group's history. These outstanding results are a testament to our collective sense of vision and adaptation to a volatile environment, as they were achieved at a time of high inflation, political tensions and general macroeconomic uncertainty. We have successfully navigated through these extraordinarily turbulent conditions by focusing on what we can control and doing so with discipline and efficiency in mind, while seizing every opportunity to create value. We are confident that we have entered 2023 as a stronger and more agile company than ever.

Allow me to stress that in this exceptional year, we have been creating value for ALL stakeholders, including:

- Our employees, through anti-inflation support;
- Our shareholders, as Solvay will recommend a dividend increase at our General Assembly which - if approved - would be our highest increase to date; and
- Future generations, whom we are serving with ground-breaking innovations that will contribute to a cleaner, safer future, such as the reinvention of the Solvay process to produce soda ash as well as the development of non-fluorosurfactant technologies for the manufacturing of fluorinated products that are essential for the decarbonization of the economy.

It is clear that Group results are aligned with the interests of all stakeholders, creating sustainable, shared value for all, which, in my view, represents a striking, unprecedented success on behalf of the management team and all employees worldwide.

Last year was also a productive one for the Board of Directors. The Board was closely involved in Solvay's strategic positioning on all major, forward-looking strategies. We also successfully integrated two new members, Laurence Debroux and Pierre Gurdjian, who contribute complementary competencies and fresh perspectives to our Board's work and bring the number of independent Directors to 10 out of 15 Board members.

As part of our efforts to continue raising the bar, the Board last year entered into an in-depth evaluation of Directors under the guidance of Guberna, the non-profit reference organization for good governance in Belgium. We view this evaluation as an opportunity to keep progressing and building on the basis of our governance program rooted in the transparent and trusting spirit of collaboration that exists between the Board and the Executive Leadership Team.

On-site visits to Solvay's operations in Italy were a highlight of the Board's activities last year, as they are a testament to our Group's innovation and responsible manufacturing principles that we implement everywhere, including when managing the aftermath of an acquisition. Moreover, the Board's meetings with the local teams not only allowed Directors to express their gratitude, but also gave them a firsthand understanding of how the Group's culture and purpose come to life in the field.

I would like to take this opportunity to reiterate my personal gratitude to the Solvay employees for their unremitting engagement; to the Group Chief Executive Officer, who sets the pace, raises the bar everyday and has delivered, with her team, unprecedented results; and to our shareholders, for their continued commitment to our Group and our purpose. I am looking forward to laying the foundations, together, of our future success as two new, strong companies. —

Nicolas Boël

Interview with Ilham Kadri

PRESIDENT OF THE EXECUTIVE LEADERSHIP TEAM AND CEO

"Today, we have the perfect equation to be future-proof through the combination of a high-performing culture, talented people, compelling business results, a robust capital structure and ambitious projects."

What were the biggest highlights, looking back at Solvay's 2022 financial performance?

Ilham Kadri — I was proud beyond words with the Group's unprecedented performance, thanks to the work of our teams deserves a celebration. The combination of strong pricing and volume increase in 2022 helped us deliver 26% growth in net sales, with every business contributing. This in turn drove EBITDA above the 3 billion euro mark for the first time in the company's 160-year history.

We achieved these record results while maintaining our disciplined approach on cash: Q4 marked our 15th consecutive quarter of positive free cash flow, of which we generated a record €1.1 billion for the year. At the same time we lifted our capital expenditure to €1 billion, well above pre-pandemic levels and almost €300 million above 2021. Last, and perhaps most importantly, our Group's balance sheet is considerably more robust today, with a debt-to-EBITDA ratio at 1.1, which is half of where it stood in 2019.

These numbers illustrate our ability to look simultaneously into the microscope and into the telescope. They result from our strategy to differentiate our portfolio and shift toward higher value-added products to reshape our organization and, in the shorter term, our ability to pursue disciplined cost control as well as our pricing power in markets where we bring outstanding value to our customers.

We indeed created shared value for all: for our customers, through innovation, the quality of our products and the reliability of our supply; and for our teams, with the successful launch of a worldwide employee shareholding plan, as well as anti-inflation bonuses and pay increases in line with market practice.

How does the strong performance support the company's sustainable growth ambition?

I.K. — Our economic performance is precisely what enables us to innovate and invest in delivering on our Solvay One Planet ambition. Since the inception of this program four years ago, we have achieved a 15% structural reduction of greenhouse gas emissions, which amounts to almost twice the reduction target set in the Paris Climate Agreement. We continue to drive momentum on this front, with biomass boilers under construction in three major plants in Europe and investment in methane abatement in the United States. These initiatives, among others, are placing us on the right trajectory to reaching carbon neutrality by 2050.

In addition to delivering on Solvay One planet goals, we are laying the groundwork for product innovation through our four growth platforms: Renewable Materials and Biotechnology, Batteries, Green Hydrogen and Thermoplastic Composites, which are designed to meet our customers' growing demand for sustainable solutions and represent an estimated €10 billion growth opportunity for our Group. We are also innovating on processes, while our "Star Factory" program, launched in 2021, is transforming our manufacturing sites into industry benchmarks in terms of competitiveness and sustainability. Last year, our two pilot sites had an immediate impact on our bottom line and we are now scaling up to include 40 additional sites worldwide in 2023.

Why is this the right time to split the Group?

I.K. — We are confident this separation will establish two strong industry leaders, with distinct operating models to optimize their

respective growth opportunities. Our 2022 results are a testament to our successful transformation, which we delivered three years ahead of schedule, while steering the company through a global pandemic, geopolitical crises and subsequent macroeconomic turmoil.

Today, we are ready to enter the next phase in our history and redefine our growth potential. With our transformation complete, two types of business profiles have clearly emerged from our portfolio – essentials and specialties – and the planned split is designed to separate the businesses in a way that will unleash their full potential. Importantly, we have strengthened the foundations of our culture through our Purpose and Strategy so that it can continue to flourish at both companies once the separation is effective.

Will Solvay's Diversity, Equity and Inclusion ambition live on in the future?

I.K. — Our DEI initiatives are core to our culture and our success, and I am confident that both new companies will be able to build on the momentum we've achieved as one. We made compelling progress on our Solvay One Dignity roadmap last year, namely through concrete action to address the pay gap between male and female employees; the creation of nine Employee Resource Groups; our engagement alongside highly inspiring para-athletes; and the participation of 100 sites in our 2022 Solvay Citizen Day.

Our mindset and values are firmly anchored throughout our organization and are illustrated by the continued activity of the Solvay Solidarity Fund in 2022, which supported care for people in Ukraine, Turkey and Syria, among others.

What is the significance of Solvay's 160th anniversary?

I.K. — In this special anniversary year, we are beginning a new chapter that is inspired by our 160-year journey. We will pass on our values and knowledge to both companies.

Today, we have the perfect equation to be future-proof through the combination of a high-performing culture, talented people, compelling business results, a robust capital structure and ambitious projects. This will enable us to create two formidable companies with attractive investment profiles and values, built on the foundation of our 160-year journey. —

Key figures 2022

We are a science company whose technologies bring benefits to many aspects of daily life. With more than 22,000 employees in 61 countries, we bond people, ideas and elements to reinvent progress. We seek to create sustainable shared value for all, notably through our Solvay One Planet plan crafted around three pillars: protecting the climate, preserving resources and fostering better life. Our innovative solutions contribute to safer, cleaner, and more sustainable products found in homes, food and consumer goods, planes, cars, batteries, smart devices, healthcare applications, water and air purification systems. Founded in 1863, Solvay today ranks among the world's top three companies for the vast majority of its activities.

Solvay around the world — 61 countries

	Europe	North America	Latin America	Asia & Rest of the world[1]
€13.4bn Net sales	27%	26%	14%	33%
22,000 Employees	47%	26%	9%	18%
99 Industrial sites	37	36	6	20
12 Research and Innovation centers	5	3	1	3

Research and Innovation

2,030
Employees

€349M
R&I effort

13%
New sales ratio
% of products/applications < 5 years

85%
of expected R&I revenue from sustainable solutions
according to our SPM methodology

1. inludes Middle-East and Africa

Financial indicators

2022 vs. 2021

€3,229M
Underlying EBITDA
+28.7% organic basis[1]

€1,094M
Free cash flow[2]
to Solvay shareholders from continuing operations
+29.8%

16%
ROCE[3]
+4.7pp

€4.05[4]
Dividend
per share

Environmental and societal indicators

2022 vs. 2018

Climate

Greenhouse gas emissions

10.3Mt.CO_2eq.[5]
Scopes 1 and 2
-19% (-15% structural)

24.2Mt.CO_2eq.[6]
Scope 3

28PJ
Phase out solid fuels[7]
-15%

-5%
Pressure on biodiversity[8]
-28%

Resources

55%
Sustainable solutions (SPM)
% of Group sales
+5%

9%
Circular economy[9]
% of Group sales based on circular raw materials or energy
n.a.

56kt
Non-Sustainable Industrial Waste
-36%

330Mm³
Freshwater intake

Better Life

0.34
Reportable Injuries and Illnesses Rate[10] (RIIR)

26.5%
Gender parity
Women in mid & senior management
+2.8pp

16 weeks
Parental leave time
for all co-parents since January 2021

1. Organic growth excludes forex conversion and scope effects. **2.** Free cash flow to Solvay shareholders is the free cash flow after payment of net interests, coupons of perpetual hybrid bonds and dividends to non-controlling interests. This represents the cash flow available to Solvay shareholders, to pay their dividend and/or to reduce the net financial debt. **3.** Return on Capital employed. **4.** Recommended to the Shareholders meeting on May 9, 2023. **5.** Total emissions from Solvay operations. **6.** Emissions upstream and downstream in the value chain (suppliers and customers). **7.** Wherever renewable alternatives exist. **8.** In number of animal or plant species potentially impacted in one year. ReCiPe method for biodiversity impact assessment. **9.** Our new KPI is defined according to the Ellen MacArthur Foundation Circulytics framework. It comprises products that are based on recycled or renewable materials, are produced with renewable energy, have increased longevity in the use phase or enable recycling at the end of life. **10.** Number of work-related injuries and illnesses (employees and contractors) resulting from an accident with severity above first aid, according to US OSHA 29 CFR 1904, per 200,000 work hours.

10 higlights of 2022

_WELL-BEING

Helped employees cope with high inflation

Upholding our founder's legacy of protecting employee well-being, Solvay was one of the first companies to provide support for employees significantly impacted by high inflation in 2022. We distributed €25 million, including a €9.5 million bonus payment, among the Solvay employees proportionally most affected by inflation and working in countries that are not protected by national schemes, and the Global Performance Sharing budget for "non-executive" employees increased to €15 million. —

→ P.51

_CITIZEN DAY 2022

Advanced our DEI mindset

In 2022, we made significant progress in embedding diversity, equity and inclusion (DEI) into our company culture, launching a number of different initiatives. These included setting up a new senior leadership team to promote inclusive leadership, expanding our Employee Resource Groups (ERGs) and taking action to reduce the gender pay gap. We also made DEI the focus of our annual Citizen Day, which involved more than 100 sites across the world, and included the DEI roadmap within the 15% Solvay One Planet part of the Short Term Incentive. —

→ P.51

_RESULTS

Achieved record-breaking financial results

We achieved new financial records in 2022. Strong pricing enabled us to more than offset cost inflation. Combined with higher volumes, this led to record EBITDA of €3.2 billion, increasing organically by 28.7% versus 2021. Higher profit and disciplined cash management led to record annual free cash flow of €1,094 million. Returns (ROCE) also reached a new record of 16.0%, versus 11.4% in 2021, and we continued to strengthen our balance sheet, with our underlying leverage ratio down at 1.1. —

→ P.88

_EMPLOYEE ENGAGEMENT

Launched our first employee shareholder scheme

Almost 28% of Solvay employees signed up to our Solvay Shares program, launched in 2022. These employees are now company shareholders, enhancing their sense of belonging and enabling them to share in our growth and performance. Participation rates were ahead of the benchmark for similar initiatives in other companies and reflect the high level of engagement recorded in our global employee Pulse surveys. —

→ P.51

_INNOVATION

Committed to phase out fluorosurfactants globally by 2026

In June 2022, we unveiled our industry-leading plan to voluntarily phase out the use of fluorosurfactants globally by 2026. This will involve manufacturing nearly 100% of our fluoropolymers without fluorosurfactants at our Spinetta Marengo site in Italy. Since 2019, we have quadrupled our investment in research and innovation to develop new non-fluorosurfactant technologies, successfully discontinuing the use of fluorosurfactants in the US in July 2021. —

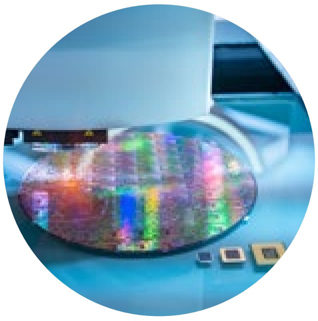
→ P.54

_CIRCULARITY

Launched our Renewable Materials and Biotechnology growth platform

To meet growing demand for sustainable and circular solutions in a range of markets and develop new business opportunities, we launched our fourth growth platform, focused on renewable materials and biotechnology. The platform covers the entire value chain, from the origin of the product to its end-of-life, reinventing the way we produce chemicals to accelerate the development of more environmentally friendly solutions and enhance circularity in our product offering. —

→ P.22



_DIGITIZATION

Expanded electronic-grade hydrogen peroxide production

We invested in a new electronic-grade hydrogen peroxide (eH2O2) facility at our site in Arizona to help supply the growing US semiconductor market and meet the industry's increasingly stringent specifications. Our new facility, which will be fully powered by renewable electricity, will convert hydrogen peroxide into an ultra-high purity grade to clean the silicon wafers needed to manufacture semiconductors. —

→ P.28

_POWER OF 2

Unveiled our project to create two new leading global companies

At the beginning of 2022, we announced our intention to separate Solvay into two strong, independent, publicly listed companies. One will focus on essential chemicals and the other on specialty chemicals, and both will be leaders in their respective areas. Our teams worked hard throughout 2022 to prepare for the split and we are on track to complete it in December 2023. —

→ P.14

_CARBON NEUTRALITY

Took big steps toward reaching carbon neutrality

In four years, Solvay has reduced Scope 1 and 2 greenhouse gas emissions by 19%, of which 15% was structural – almost twice the target set by the Paris Climate Agreement. In 2022, we advanced toward carbon neutrality by adding 23 emissions-reduction projects, bringing our worldwide total to 59. These address phasing out coal from energy production at four plants and significantly progressing renewable energy to power our operations. We also introduced a target to reduce our Scope 3 emissions by 24% and our climate targets were validated by the Science Based Targets initiative (SBTi) in early 2023. —

→ P.36

_INVESTMENTS

Invested record amounts to support sustainable growth

2022 was an exceptional year for investments with more than €1 billion invested to unleash growth and power our energy transition – a 39% increase compared to 2021. Clean mobility is a key focus, with investments in new PVDF capacity for electric vehicle batteries in all regions. We also increased capacity for sodium bicarbonate in Bulgaria, and invested in the vertical integration of natural vanillin. We announced major investments to phase out coal at our soda ash plants, and implemented an innovative new technology to cut process emissions at our Green River, Wyoming, site in the US. —

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Reinventing progress for 160 years

In 2023, we are celebrating 160 years of Solvay. We are reflecting on all we have achieved since Ernest Solvay founded the company in 1863, and looking toward an exciting new future, celebrating our heritage, while passing on our legacy as we separate into two new companies that will be leaders in their respective fields.

Remaining relevant over 160 years while staying true to our Purpose, core values and family spirit is an achievement we are rightfully proud of. We have reinvented ourselves time and again, drawing on our passion for human progress and our long-term vision to overcome geopolitical crises, economic downturns and technological shifts. Our G.R.O.W. strategy and Solvay One Planet sustainability roadmap have made us stronger. By creating two formidable new companies, we will be able to unleash our full potential, creating sustainable shared value for generations to come.

"Industry is a perpetual struggle. Those who slumber soon disappear. Those who relentlessly fight with trust and rationality outshine others."

ERNEST SOLVAY,
FOUNDER

1863

Soda ash makes daily life brighter and cleaner

The Solvay brothers, Ernest and Alfred, industrialize their innovative ammonia-soda process, enabling the mass production of glass and soap. —

1880

A pioneering welfare policy

As an early multinational, Solvay contributes to the development of local economies and develops a pioneering welfare policy for its workers, their families and the surrounding area. —

1894

Vanillin for food and fragrances

In Lyon, the Société des Usines Chimiques du Rhône is the first to produce and broadly commercialize the vanillin aroma for use in food and fragrances. —

1911

The birth of modern physics

The greatest scientists of the time, including Albert Einstein, Max Planck and Marie Curie, gather at the first Solvay Conference, kicking off the revival of classical physics that will give birth to quantum physics. —

1950

Providing innovative, future-oriented solution

Solvay opens a large R&I center in Brussels as it diversifies into peroxides and polymer science, opening doors to lightweighting and many other innovative industrial solutions. —

1960

Focusing on consumer goods

Solvay makes the most of the post-war economic boom to further diversify into consumer goods. By 1967, nearly half of the company's turnover came from activities other than soda ash. —

1980

Moving into the life sciences

In a world changed by the oil shocks, the Cold War and the advent of the information age, Solvay explores new growth opportunities in life sciences, focusing on human and animal health, crop protection, enzymes and more. —

1990

Cleaner and lighter mobility

Solvay acquires activities in Silica and Composites and becomes an active player in providing solutions for cleaner and lighter mobility. —

2003

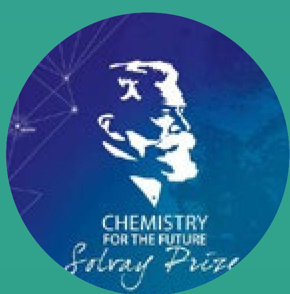
Supporting solar flight

Bertrand Piccard turns to Solvay as a first technological and financial partner for his Solar Impulse plane, which succeeds in flying around the world 12 years later with Solvay's specialty polymers on board. —

2013

Advancing fundamental chemistry

Solvay launches its Prize for the chemistry of the future, honoring Ernest Solvay's lifelong support and passion for scientific research by recognizing major scientific discoveries with the potential to advance human progress. —



2019

Accelerating energy transition

Solvay develops an ambitious roadmap focused on climate, resources and better life to improve its carbon footprint, develop sustainable solutions and improve the well-being of its employees and local communities. —

2023

We are Essential AND Special

The adventure continues, as Solvay announces its intention to separate into two new and distinct companies focused on Specialties and Essentials. —

The Power of 2 project

Solvay has been continually changing, transforming and reinventing for 160 years, but we have always remained true to our heritage of social responsibility and innovation excellence. Our Power of 2 project is the next bold chapter in our story: by separating Solvay into two independent, publicly listed companies, both of which are leaders in their respective fields, we would be able to unleash our full potential. We are on track to complete the separation by December 2023.

Progressing beyond our G.R.O.W. strategy

— Since 2019, we have worked to accelerate the reinvention of the Group and amplify the impact we have in the world. This involved reinforcing our foundations, with a keen focus on Purpose, Strategy and Culture that will carry over into both new companies. In spite of the highly volatile environment in which we have been operating over the past four years, we have consistently delivered, achieving outstanding financial results and advancing on our Solvay One Planet sustainability commitments faster than planned. We invested record amounts to support sustainable growth and advance toward carbon neutrality, while continuing to develop a diversity, equity and inclusion (DEI) mindset. With these solid foundations in place, we would give both new companies the strong start they need to develop their potential and show the world how we continue to Reinvent Progress.

Creating two strong industry leaders

— Two distinct groups of businesses emerged as we delivered our G.R.O.W. strategy and business optimizations three years ahead of schedule: Essential and Specialty chemicals. While both have bold ambitions and incredible potential, they have different – sometimes competing – needs, different operating requirements and different investment demands. The company would therefore be separated along the following lines:

- → EssentialCo would comprise the leading mono-technology businesses in the Solvay's Chemicals segment, including Soda Ash, Peroxides, Silica and Coatis, and Special Chem.
- → SpecialtyCo would comprise Solvay's Materials segment, including our Specialty Polymers and Composites businesses, our four Growth Platforms and the majority of Solvay's Solutions segment, including Novecare, Technology Solutions, Aroma Performance, and Oil and Gas Solutions.

Once complete, the separation would establish two strong industry leaders able to benefit from the strategic and financial flexibility they need to achieve their full potential. Each standalone company would be positioned to apply differentiated operating models to better serve its customers; pursue distinct capital structures and capital allocation priorities; drive sustainability initiatives, including reaching carbon neutrality before 2040 for SpecialtyCo, and before 2050 for EssentialCo; attract and retain the talent best suited for distinct businesses; and provide a clear investment thesis and visibility to attract a long-term investor base suited to each company.

EssentialCo –

An Essential Chemicals leader with resilient cash generation

€5.5bn*
2022 net sales

MARKET POSITION

Soda Ash & Derivatives	**#1** Soda Ash (global)
	#1 Bicarbonate (global)
Peroxides	**#1** Hydrogen Peroxide (global)
Silica	**#1** Silica for tires (global)
Others (Coatis, Special Chem)	**#1** Coatis (Latin America) **#1** Rare earths for automative catalysts (global)

*estimate based on Solvay 2022 net sales

EssentialCo would provide market-leading essential chemicals across attractive and resilient end markets, including building, health, consumer goods and automotive, driven by key megatrends, such as renewable energy, resource efficiency, sustainable resources and evolving demographics. It would benefit from a foundation of strong, global leadership positions that, as an independent company, it would be able to further reinforce through expansion and consolidation opportunities. This includes accelerating growth in natural soda ash and sodium bicarbonate, pursuing growth in the Asia-Pacific region and further extending its leadership in the peroxide market. EssentialCo would also play a key role in accelerating the energy transition that began in its soda ash business, in order to achieve carbon neutrality in all businesses other than soda ash by 2040, and before 2050 for soda ash. Following the separation, EssentialCo would strengthen its operating model by enhancing its cost leadership and maximizing cash generation.

SpecialtyCo – A pure-play Specialty leader with accelerated growth potential

€7.8bn*
2022 net sales

Two business segments		MARKET POSITION
Materials	Speciality Polymers	#1 High-performance polymers; leading position in thermoplastic composites
Materials	Composites	#2 Composites for civil aerospace #1 Composites for defense
Consumer and Resources	Novecare	#2 Speciality surfactants and polymers
Consumer and Resources	Aroma	#1 Flavors & Fragrances; Natural Vanillin
Consumer and Resources	Technology Solutions Oil & Gas	#1 Mining reagents

*estimate based on Solvay 2022 net sales

SpecialtyCo would provide innovative, value-creating and market-leading solutions that support a more sustainable world, driving above-market growth and strong returns. It would be made up of two business segments:

- Materials: an industry leader in advanced materials that provides customers with new solutions to critical performance and environmental challenges. Supported by underlying megatrends, such as electrification, lightweighting, sustainable mobility and digitalization, these businesses have a strong track record of above-market growth. With a focus on innovation, a robust commercial engine and a unique understanding of its customer base, this segment would help customers disrupt industries such as transportation, electronics and healthcare. The separation would ensure that it benefits from increased investments in capacity, innovation and commercial capabilities, supporting above-market organic growth, superior returns and industry-leading margins.

- Consumer and Resources: consisting primarily of businesses within Solvay's current Solutions segment, Consumer and Resources would be a market leader in providing specialty ingredients focused on more natural and sustainable solutions, by anticipating rapidly evolving customer needs. Its proven, asset-light business model is supported by underlying megatrends such as eco-friendly ingredients and resource efficiency, making it well positioned to drive the consumer industry toward biobased, natural and circular solutions, leveraging its portfolio of innovative solutions and application expertise. It would also be positioned to drive above market growth at strong returns.

Following the separation, SpecialtyCo would be able to extend its leading position in sustainability, with a clear path to achieving carbon neutrality before 2040.

Unleashing our full potential to unlock value

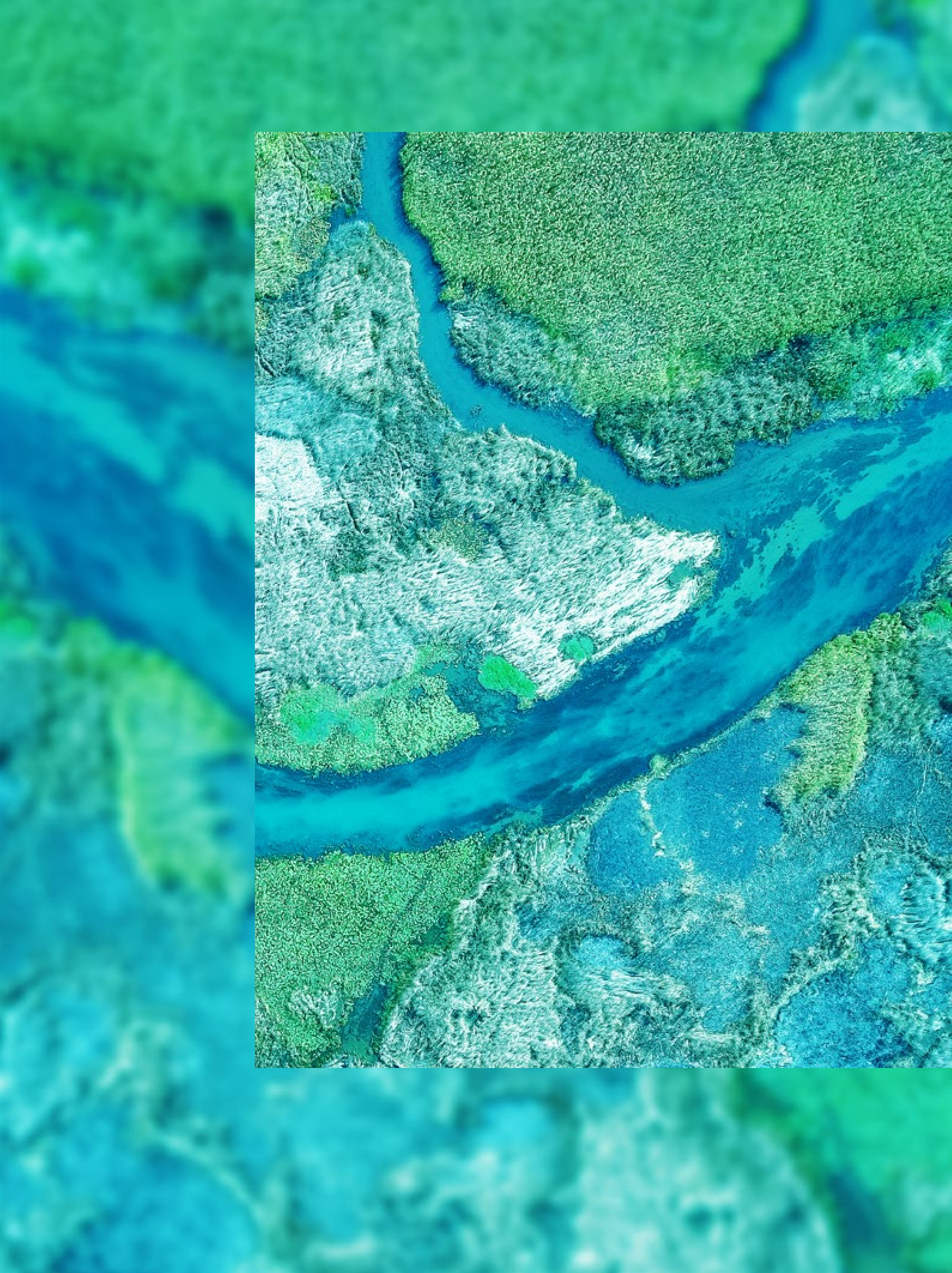
— By strengthening the link between each company's unique needs and strategic path forward, we believe we can unleash our full potential and unlock value for all stakeholders moving forward. The capital structure of each company would be tailored to best support its value creation objectives.

Solvay's shareholders would retain their current shares of Solvay stock under the separation plan. The separation would take place by means of a partial demerger, whereby the specialty businesses, assets and liabilities held by Solvay SA will be spun off to SpecialtyCo. At the time of the separation, Solvay shareholders would also receive shares in SpecialtyCo pro rata to their shareholding in Solvay SA. We expect the shares of SpecialtyCo to be listed on Euronext Brussels and Euronext Paris and plan to structure the separation in a manner that would be tax efficient for a significant majority of shareholders in key jurisdictions. The transaction is subject to general market conditions and customary closing conditions, including final approval by Solvay's Board of Directors, consent of certain financing providers and shareholder approval at an Extraordinary General Meeting. We plan to complete the separation by December 2023. The Board of Directors of Solvac, Solvay's long-standing reference shareholder, has confirmed its full support for this transaction, in March 2022.

2023 opens a new chapter

	Q2	Q3	Q4 2023	
	Capital structures June/July **Historical financials** June/July	**H1 key figures ECo & SCo** August **Debt management** Q3	**Capital markets days** October/November **9M key figures ECo & SCo** November	**Extraordinary Shareholders' meeting** December
Q1 2023 results May 4	**Shareholders' meeting** May 9	**Q2 2023 results** August 3	**Q3 2023 results** November 3	**Completion of the separation**

This timetable is indicative and reflects a likely scenario. ECo and SCo are not reflective of the future company names.



STRATEGY

Strategy

SOLVAY ONE PLANET

STORY

Reinventing our soda ash process for a carbon-neutral future

In 1863, our founder Ernest Solvay invented a radically new industrial process for the production of soda ash. It was so successful that by 1900, it was used to process 95% of the soda ash consumed worldwide. Even now, 160 years later, Ernest Solvay's innovation remains the preferred way to produce soda ash, and Solvay continues to lead the way in the soda ash and derivatives market.

Ernest Solvay's technological breakthrough provided a more efficient and cleaner alternative to the Leblanc process it replaced, and he continued to work hard at improving it to stay ahead of the competition. Building on this legacy, we are seeking to dethrone our founder's soda ash process with a new breakthrough that will help us reach our climate neutrality target and respond to increasing customer demand for soda ash.

"We have always operated by imposing on our minds a duty of continuous progress."

ERNEST SOLVAY,
FOUNDER

A 160-year-old process

— Ernest Solvay came up with his ammonia-soda process at the start of the second industrial revolution, when electricity was just being industrialized and new processes were expanding the applications of chemistry. Now 160 years old, the process has some drawbacks that we need to address.

The biggest issue is that soda ash production produces high levels of greenhouse gas emissions, accounting for a significant amount of Solvay's total emissions. Around two-thirds of the emissions in soda ash production are associated with the requirement to generate steam, which we are tackling by transitioning our soda ash plants away from CO_2-intensive energy sources like coal. But to reach carbon neutrality, we also need to find a way of addressing the remaining third.

This alone is sufficient incentive for change, but with increasingly strict legislation on greenhouse gas emissions in Europe, there is also economic pressure on us to find a more environmentally friendly solution.

"As the new process we have developed is more competitive and sustainable, all 'synthetic' soda ash producers will have adopted it within the next two decades"

PHILIPPE KEHREN,
PRESIDENT, SODA ASH & DERIVATIVES

#1

A milestone in Solvay's strategy to reach carbon neutrality

— The next step is to test this breakthrough technology through the launch of a pilot project at our Dombasle site in France. Assuming that the pilot is successful, we plan to roll out the new technology across our European soda ash plants.

This development is a real game-changer for our carbon neutrality strategy. While our energy transition plans will enable us to phase out coal and reduce emissions 30% by 2030, our soda ash team expects that the new process innovation now being tested in Dombasle would allow our soda ash business to target full carbon neutrality by 2050.

With this breakthrough, Solvay is poised to revolutionize the soda ash industry once more, cementing our position as the leading force in soda ash and sodium bicarbonate, and the partner of choice for our customers. Guiding Solvay's 160-year-old legacy business into a carbon-neutral world is a challenging task, but we are confident that we now have the knowledge, tools and capabilities to do so, delivering a solution that ensures sustainable value for all, for generations to come.

An essential ingredient for our daily lives

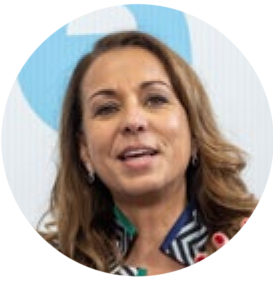
— Soda ash is a key ingredient in our everyday lives. Among many other things, it can be found in the windows of our houses, the detergents we use to clean and even the rechargeable batteries that power our appliances. Life without soda ash is almost unimaginable and, as many of its applications are supported by environmental megatrends, demand continues to grow.

As the world's largest soda ash producer, we recognize the need to continue Ernest Solvay's legacy of constant innovation in this area. By finding a way to produce soda ash more cleanly and efficiently, we will reduce its impact on the environment so that we can continue to use it in environmentally beneficial applications. And to best serve our customers, we know we need a solution that will provide a secure and competitive supply to keep up with strong demand.

A revolutionary soda ash process for a more sustainable world

— Over the past 30 years, Solvay has invested €40 million in developing proprietary technology first patented in 2014. This investment, and the work of our talented engineers and researchers, has enabled us to develop a new method for producing soda ash, which introduces three revolutionary improvements: 50% less CO_2 emissions; a 20% reduction in water and salt usage and a 30% reduction in limestone consumption; as well as significantly less limestone residues.

The new technology complements our energy transition plans, using an electrochemical process that could be powered by renewable energy instead of fossil fuels. As it is more efficient, the process will also reduce consumption of natural resources; reducing our energy needs and our dependence on fossil fuels would improve our competitiveness and our ability to keep up with customer demand.



"I am proud that Solvay is perpetuating our founder's legacy of innovation as we lead our industry toward a more sustainable future."

ILHAM KADRI, CEO

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A new process enabling:

-50%
Co_2 emissions

-20%
Water and salt consumption

-30%
Limestone consumption

STORY

Our Star Factories for generations to come

The chemical industry has long faced criticism for its negative impact on health and the environment. Customer demand for more sustainable solutions and circular products with lower environmental footprints is also putting pressure on the industry to make radical changes.

At Solvay, we recognize that chemistry is both part of the problem and the solution. We strongly believe that chemistry will help shape our future for the better, but we know that this requires us to make fundamental changes to the way our plants operate. This is why we launched our Star Factory program.

Star Factory is about transforming the capabilities and operational efficiency of our plants to ensure they are best-in-class in all areas, including manufacturing and digital excellence, sustainability, safety and people. In doing so, we ensure that we are able to meet increasingly high customer expectations, transforming the way we operate for the better.

A radical transformation for all of our factories

— Star Factory is our response to a fast-changing world in which factories must live up to the highest expectations and be prepared to confront unprecedented challenges. This comprehensive transformation program is aimed at completely reinventing all of our plants. This will help us to develop and attract the best talents, while building strong foundations for the two future companies that we will launch through our Power of 2 project.

"The Star Factory program illustrates our determination to accelerate the transformation of all our manufacturing sites into an industry benchmark in terms of sustainability and performance."

AUGUSTO DI DONFRANCESCO,
MEMBER OF THE EXECUTIVE LEADERSHIP TEAM,
CHIEF TRANSFORMATION AND OPERATIONS OFFICER

Our main focus is on getting sites to to make real progress on energy efficiency, energy transition and greenhouse gas emissions reduction projects to benefit business and the environment. The program also addresses all other aspects of our Solvay One Planet objectives on climate, resources and better life, building on operational excellence and digitalization to drive our plants to become Star Factories.

Success for our pilot sites

— We kicked off this huge program at the end of 2021 with two pilot sites: Tavaux in France and Spinetta Marengo in Italy. Our objective was to create a transformation roadmap for each of these sites and assess whether it could create value, both financially and in Environment, Social and Governance (ESG) areas, before extending the program to other sites.

Both sites defined their vision for the future and developed a comprehensive roadmap focused on five key areas: safety; sustainability; employee engagement; competitiveness; and customer satisfaction. They also set objectives to reach by 2030, as a way to monitor their performance. The roadmap sets out actions to be taken in all main domains at each industrial site and shows the expected impact these actions will have on the site's key performance objectives, as well as the resources needed for implementation.

The pilot sites demonstrated the ability of the Star Factory program to accelerate value creation in several different areas. Even more importantly, it generated results as soon as the first year. The recurring EBITDA impact expected by 2030 for the two pilot sites combined is significant, with part of it having already been delivered in 2022.

#2

Culture and leadership: critical factors for success

— Fundamentally changing the way our plants operate involves combining a powerful methodology with comprehensive culture change: everyone at the site needs to be fully onboard with the program and play their respective part. Each plant's leadership has a critical role, not only defining the vision, but also inspiring their teams to fully engage with it and raise the bar on performance.

"In Saint Fons, where we embarked on the Star Factory program in 2022, leadership development is one of the key areas of focus for the site. Solvay's Leadership Academy plays an important role here, ensuring our leaders are equipped with the right skills."

YVES COURTEMANCHE,
SITE MANAGER, SAINT FONS, FRANCE

Incorporating both bottom-up and top-down approaches, and uniting all site stakeholders around clear goals, our sites worked hard to ensure engagement and buy-in from leadership teams, employees, local communities and business partners. As Emilia Buffa, Spinetta Marengo Star Factory Leader, says: "There is an acceptance curve but, in the end, a greater commitment."

With their leadership driving the program, each plant is fully empowered to implement our sustainability targets, engage with local authorities and communities, and develop the critical capabilities needed both now and in the future. Among these critical capabilities is developing and attracting the talents that will help us reach our full potential.

"Star Factory is helping us to quickly improve leadership skills across the sites and reinforce sustainability and digital mindsets, ensuring that everyone feels inspired to play a key role in our transformation journey, both now and in the future"

ANNE LEFEBVRE,
GROUP PEOPLE SOLUTIONS,
PEOPLE AND CAPABILITIES LEADER

Creating long-term, sustainable value for all Solvay stakeholders

— For example, several site initiatives are targeted at reinforcing connections with our local communities. In Saint Fons, France, the site is exploring external partnerships to diversify their sourcing and strengthen the talent pipeline locally, while also working with various organizations to attract more women to jobs in the chemical industry. Similarly, in Rosignano, Italy, the site is partnering with local women's organizations, and has committed to improve connections with the local educational ecosystem.

Our sites are also making great strides in improving sustainability. At Tavaux, we are investing to significantly reduce freshwater intake and greenhouse gas emissions despite doubling production. And in Spinetta, we invested €40 million in improving the purification of discharged water and reducing liquid waste, with the objective of eliminating the majority of the site's non-recoverable waste.

In addition, we have already achieved tangible results in improving our digital capabilities. An ambitious IT infrastructure modernization project and a new industrial data management architecture are accelerating the implementation of data-intensive industrial projects. At Spinetta, for example, we have deployed SeeQ, a self-service analytics tool that has a direct impact in our monomer and Technoflon® production, reducing variable costs and increasing production capacity respectively. A condition-based monitoring system for rotating equipment at Tavaux was built on the new data architecture. The system helps maintenance teams make more accurate decisions about performance optimization and upkeep needs before equipment failure occurs, with the goal of reducing losses caused by asset breakdown by 30%.

Our clear Capex and resources plan for each site, combined with a tailored governance system for decision, validation and escalation, provides us with a strong execution and decision engine that we can now apply globally. The pilots also enabled us to create a standard for plant digitalization and a library of best practices to accelerate the identification of solutions at other plants.

Three additional plants joined the program in 2022: our Baton Rouge site in the US, Saint Fons in France and Rosignano in Italy. Another 40 plants will join in 2023, with the rest set to join over the following two years.

This accelerated implementation will ensure that Star Factory serves as a building block for our Power of 2 project. As both future companies intend to continue with the Star Factory program following the split, we have adapted the methodology for each company's specific needs and are preparing to grant them the appropriate capabilities for successful implementation. —

▸ READ MORE PAGE 36

5
plants joined the program in 2022

40
plants to join in 2023 and all remaining plants by 2025

STORY

Enabling circularity through our new growth platform

Solvay's growth platforms are all designed to accelerate the development of innovative and sustainable solutions to meet current and future market needs. They are driven by key business trends, and help us and our stakeholders advance our sustainability goals, for the benefit of generations to come.

Our newest growth platform, focused on renewable materials and biotechnology, is no exception. It aims to reinvent the way we produce chemicals by combining chemistry and biology to convert renewable feedstocks into valuable and sustainable solutions that will preserve natural resources and support the transition to a carbon-neutral future. Most importantly, it will foster circularity by promoting the use of renewable resources and exploring new ways to manage the end of life for our products.

"Through our new growth platform, we aim to connect with our partners to reinvent progress as we have done throughout our 160-year history, playing a key role in the chemical industry's transition to the bioeconomy in a carbon neutral future."

ILHAM KADRI,
CEO

Enabling circularity

— The new platform, which was launched in May 2022, brings together several Solvay businesses to help meet growing demand for sustainable and circular solutions and develop new business opportunities enabled by biotechnology. It covers the entire value stream, helping to embed circularity into all of our businesses by focusing holistically on three interdependent areas: the origin of materials; biotechnologies for transformation; and product end of life management.

First, to address the origin of materials, we aim to significantly increase the share of renewable carbon in our product offering by using sustainable and renewable feedstocks to develop more environmentally friendly, natural and circular products. Renewable carbon encompasses all sources of carbon other than fossil fuels, such as biomass, captured CO_2 and recycling. Our solvents derived from plants are a good example of a product Solvay already markets in this area.

Second, by using more biotechnology, combined with the chemistries mastered by Solvay, we expect to unlock new business opportunities to expand our customer base. Biotechnologies are a set of disruptive technologies that use enzymes or living microbes to transform feedstocks, such as crude oil, CO_2 and crops, into valuable molecules. This growing industry will open up new opportunities for us to expand our portfolio, while developing more cost-effective and lower carbon footprint processes for our existing products. Our venture capital fund, Solvay Ventures, has already invested in DMC, an American biotech startup, and Sofinnova, a French venture capital fund specializing in biotech, which will enrich our portfolio of options for growth.

Lastly, the platform will address the end of life of products, helping to close the loop and foster circularity. For our durable and long-lasting advanced polymers, recycling and reuse are the preferred ways to do this, but in cases where neither is possible, such as ingredients in consumer formulations, developing molecules that do no harm to people or the planet is our imperative. Our biodegradable-by-design solutions are designed to leave no trace in the environment and enable our customers to future-proof their products in an evolving regulatory landscape, which, in Europe, is driven by the European Green Deal and the Chemical Strategy for Sustainability. An example is the readily or inherently biodegradable water-soluble polymers we are developing for our home and personal care or agrochemicals markets, with the first product launches expected in 2023.

Driven by open innovation

— The platform aims to achieve these three goals by accelerating open innovation. This involves developing strategic partnerships with suppliers and customers from different parts of the value chain to increase our capacity to innovate and develop new solutions that benefit multiple markets.

We are not starting from scratch: Solvay is already a market leader in some bio-polymers like guar, bio-sourced solvents and natural vanillin, the latter of which is enabled by biotechnology. The new growth platform will help us build on this by investing in assets and capabilities that will enable us to expand in areas where we are already market leaders, and by developing strategic partnerships that will lead us to new market spaces, complementing our existing technologies and expertise.

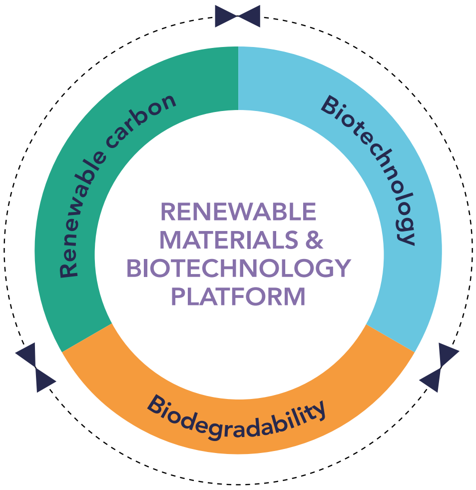
Our investment in Suanfarma's Cipan manufacturing site in Portugal, which specializes in fermentation, is a good example. This is the first step in a long-term strategic alliance that will allow us to build on our expertise as a leading producer of natural vanillin to develop other natural ingredients for the food, flavors and fragrance markets, and improve our biotechnology capabilities, paving the way for further growth in naturals. The collaboration between our Materials business and French startup Carbios on the enzymatic recycling of polymers is another example. This project would enable complex, multilayer plastic films to be recycled, facilitating circularity.

#3

Combining three bio-derived concepts to develop innovative, more circular solutions

Focus on the ORIGIN

Significantly increase the **content of renewable carbon** in Solvay's product offering



Focus on the TECHNOLOGY

Strengthen and expand our customer base through new growth businesses **enabled by biotechnology**

Focus on the END-OF-LIFE

Develop **biodegradable by design** technologies to manage the end-of-life of our products striving toward zero environmental pollution

"Chemistry needs the power of biology to reach new heights in terms of sustainability, and biology will benefit from all the available chemical knowledge to become increasingly affordable and present in our lives."

THOMAS CANOVA,
HEAD OF RENEWABLE MATERIALS AND BIOTECHNOLOGY GROWTH PLATFORM

A growth platform with multiple benefits

— Renewable materials and biotechnology will positively transform all aspects of our lives, from the way we connect and the way we care for one another, to the food we eat and the planet we live on. This has clear benefits for society and the planet that, as a responsible business, we cannot afford to leave unexplored.

The platform will enable us and our customers to better serve growing consumer demand for sustainable and circular products. Catering to customer needs by increasing the share of renewable carbon in our product offering will lead to increased sales and higher value for stakeholders. The platform will also help reduce our impact on the planet and achieve our sustainability goals, which include increasing the share of sustainable solutions in Group sales to 65%, more than doubling the share of Solvay products based on circular raw materials or energy and reducing greenhouse gas emissions across the board by 30% in our plants, and by 24% in the value chain.

We recognize that the road to a circular, carbon-neutral future demands a radical transformation in how chemistry is designed and, with the launch of our new platform, we're ready to contribute to this change. —

▸ READ MORE PAGE 42

STORY

Celebrating Diversity, Equity and Inclusion

In 2022, as part of our annual Citizen Day event, more than 40% of our global workforce devoted time to improving their awareness of Diversity Equity and Inclusion (DEI), identifying the ways in which they can make an impact and celebrating the actions taken and results achieved a year after our Solvay One Dignity DEI program was launched. The event's success demonstrates the progress we have made in embedding DEI, and the discussions surrounding it, into our company culture, while also showing our capacity to mobilize and engage our employees globally around a common purpose.

Citizen Day 2022: I am because we are

— Citizen Day is an annual Solvay event aimed at creating bonds between employees and with local communities by rallying around a subject that impacts us all. The fourth edition of our Citizen Day focused on DEI, with almost 9,000 employees across 105 sites globally taking action to create a more inclusive company and society.

Our activities were inspired by a common theme: "I am because we are." Taken from the African philosophy of "Ubuntu," this proverb resonates with Solvay's Purpose, reminding us that our sense of self is shaped by our relationships with other people and that our common bonds are more important than our differences.

"I was really impressed by the creativity of our sites globally, with each one appropriating the concept to make it relevant to their specific culture or environment. I can feel we are truly moving forward together, creating an excellent foundation for the two future companies to build on!"

NATHALIE VAN YPERSELE,
CHIEF DIVERSITY, EQUITY AND INCLUSION OFFICER

Citizen Day activities took place at global, site, team and individual levels, and in both virtual and in-person formats, with many involving partners and non-governmental organizations (NGOs) We also encouraged employees to get involved with the local community and speak up against non-inclusive behaviors. All these activities gave our employees the opportunity to learn, exchange, discover and dare to share their opinions, contributing to an inclusive, diverse and equitable workplace.

Solvay sites mobilize for DEI

— Solvay strives to establish and maintain a diverse workforce, provide equal career opportunities and make all of our employees feel included in everything we do. By giving diverse talents equal opportunities and encouraging them to bring their whole selves to work, we are able to benefit from a workforce that is confident in voicing their opinions, and comfortable with bringing their experiences and ideas to the table. The wide variety of Citizen Day activities organized by our employees at site level showcased this culture.

In Curitiba, Brazil, for example, employees were taught the phrase "I am because we are" in Brazilian sign language. The site created a video of dozens of employees signing the phrase, raising awareness of how different forms of communication can increase inclusivity. Several employees at Solvay are hearing impaired, or have friends or family that are. Demonstrating that employees at Solvay are willing to learn and show their support meant a lot to many of them.

"The 2022 Citizen Day showed the power of collectivity and the barriers we can overcome when we look past our biases and beliefs. We can do so much more together – after all, I am because we are!"

BIANCA PIEDE,
ACCOUNTS PAYABLE MANAGER, CURITIBA, BRAZIL

Citizen Day 2022

14,700 participations	**320** activities
105 sites worldwide	**€50,000** donated to local NGOs

#4

In the US, employees organized 15 different activities at our Alpharetta, Georgia site, which is known for its year-round engagement with DEI topics. These included a talent show, a ceremony to recognize the site's veterans and facilitating mock interviews to help students applying to historically black colleges and universities, as well as a potluck lunch celebrating the site's multicultural diversity. The wide variety of activities gave Alpharetta employees multiple opportunities to build positive relationships with their colleagues, while also giving back to the local community.

"Diversity and inclusion is a way of life in Alpharetta – we celebrate our differences as well as what brings us together. DEI is about belonging and the attendance numbers for the activities we organize show that people want to belong."

DONNA DRAKE,
HEAD OF CORE LABS US,
ALPHARETTA SITE MANAGER

Employee Resource Groups take center stage

— Solvay's Employee Resource Groups (ERGs) play a key role in promoting DEI at Solvay. These grassroots groups led and run by employees organized various global workshops for Citizen Day, covering topics such as LGBTQ+ allyship, the role of men in DEI and the experiences of women in the workplace. We also took the opportunity to launch a new ERG, ADAPT, focused on people with disabilities and their allies.

ADAPT is sponsored by Solvay's Chief People Officer (CPO), Hervé Tiberghien, who shared his own personal experience with the nearly 400 employees worldwide who joined the launch event: "My family has firsthand experience of what it feels like to be different, and how painful it can sometimes be. But what our experience has taught me is just how important it is to be open about it in order to deal with the difference. Diversity is something we need to discuss again and again if we are to move forward as a society, and the best way to help others embrace it is by helping them to understand it."

Solvay4Sport: supporting athletes that embody Solvay values

— Helping people understand and embrace difference is exactly what our Solvay4Sport initiative aims to do. To kick off Citizen Day, Solvay CEO Ilham Kadri hosted an inspiring discussion with Solvay4Sport athlete Kgothatso "KG" Montjane, designed to show Solvay employees that opportunity, possibility and greatness are achievable when we collectively recognize, respect and celebrate our differences.

Solvay4Sport is a partnership between Solvay and three athletes: Italian para-athletic sprinter Ambra Sabatini, American para-athletic long jumper Trenten Merrill and South African wheelchair tennis player KG. The partnership aims to support these three athletes in achieving their sporting goals, while also reinforcing Solvay's DEI program, by showing that it is unity and not uniformity – or all of our individual differences combined – that allows society to achieve exceptional results. Our Solvay4Sport athletes embody everything Solvay stands for – performance, dedication, perseverance and a desire to go beyond – making them perfect role models for Solvay employees.

"When you have a positive attitude you actually develop the ability to bounce back or tackle every challenge that you come across. There is always a solution, there is always a possibility – that's what I believe"

KGOTHATSO MONTJANE (KG)
SOUTH AFRICAN WHEELCHAIR TENNIS PLAYER

€50,000 donated to local NGOs

— To ensure our Citizen Day actions have a lasting impact on the communities Solvay serves, the Group committed to converting employee participation in Citizen Day activities into financial contributions to local charities and DEI organizations in 14 countries. This contribution amounted to €50,000.

The success of our yearly Citizen Day event, and this edition in particular, reflects the commitment of Solvay people to the Group's values. This shared culture will prove vital in driving performance moving forward, both for Solvay as it is now and for the two new companies that will be created through our Power of 2 project. —

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G.R.O.W. strategy in action

We are now reaping the benefits of a three-year transformation process that has enabled us to accelerate organic growth and deliver on the financial objectives set out in our G.R.O.W. strategy three years ahead of schedule. With a simplified and more robust business structure, we are ready to advance our strategy and continue to strengthen our businesses, making sure that we are prepared to move on to Solvay's next chapter.

G.R.O.W. strategic roadmap

OUR PURPOSE

We bond people, ideas and elements to reinvent progress

OUR VISION

At Solvay, we create sustainable shared value for all

MATERIALS

G

Accelerate GROWTH

Extend position as #1 pure-play advanced materials business

Prioritize investments in high-margin MATERIALS businesses with high-growth potential, which are also our most sustainable solutions.

Key asset
Unique high-performance polymers and composite technologies.

Businesses
Specialty Polymers, Composite Materials

Markets
Automotive and Aerospace, Healthcare, Electronics, Energy

Global business trends
- Lightweighting
- Electrification
- Advanced connectivity
- Resource efficiency
- Evolving demographics
- Renewable energy

CHEMICALS

R

Deliver RESILIENT cash

Become #1 cash conversion chemical player

Maximize cash flow generation from our resilient CHEMICALS businesses where we have a competitive advantage

Key asset
World leaders in chemicals that are essential to daily life

Businesses
Soda Ash & Derivatives, Peroxides, Silica, Coatis

Markets
Industrial applications, Building, Home and Personal Care, Consumer Goods, Food, Automotive, Electronics, Environment

Global business trends
- Advanced connectivity
- Resource efficiency
- Naturalness, sustainable resources and sustainability
- Evolving demographics

SOLUTIONS

O

OPTIMIZE returns

Unlock Value

Optimize our SOLUTIONS and businesses to unlock value and increase returns

Key asset
Unique formulation and application expertise

Businesses
Novecare, Technology Solutions, Special Chem, Aroma Performance, Oil and Gas Solutions

Markets
Industrial applications, Home and Personal Care, Consumer Goods, Agro, Food, Healthcare, Mining

Global business trends
- Resource efficiency
- Advanced connectivity
- Naturalness, sustainable resources and sustainability
- Evolving demographics

W

Solvay One to WIN

Create a new operating model to support a performance-driven culture and better serve our customers.

→ Customer and supplier engagement programs
→ Growth initiatives
→ Industrial footprint optimization
→ Organization reshaping
→ Performance-driven culture

Creating sustainable value through G.R.O.W.

Record financial results in 2022, despite challenging business conditions

Mid-term objectives reached ahead of schedule

		2024 G.R.O.W. Targets, set in Nov 2019	2022 Achievements	Improvement 2019-2022
Net sales		-	€13,426m	9.7% CAGR (organic)
Underlying EBITDA	✓	Mid-single digit growth (annual average growth)	€3,229m	12.1% CAGR (organic)
EBITDA margin		-	24.0%	+1.3pp
Cost savings	✓	Exceed €350m annual run rate (raised to €500m)[1]	€79m	€467m cum.
FCF		-	€1,094m	+€3,506m cum.
FCF conversion	✓	Exceed 30%[2]	34%	+6.1pp
Working capital	✓	Reduce WC/ sales ratio by 2pp	12%	-3.5pp
Cashout (interest payments & pension cash service)	✓	Reduction by €75m (pensions >40, interests >35)	€245m	-€204m
Underlying net debt		-	€3,591m	-€1,795m
Underlying leverage ratio		-	1.1x	-1.0x
Pension liabilities		-	€1,057m	-€1,637m
ROCE	✓	Exceed 11%	16.0%	+7.9pp

— Our transformation over the past four years has made us a stronger and better company. In 2022, we achieved several new financial records, meeting our strategic goals well ahead of schedule. Our strong pricing initiatives more than offset €1.6 billion in inflationary costs and we achieved an EBITDA of more than €3 billion for the first time in our history. Through continuous and strict cost management, we have now delivered 15 consecutive quarters of positive free cash flow (FCF). This enabled us to invest more than €1 billion in capital expenditure, about half of which we invested in growth and energy transition projects. It also enabled us to strengthen our balance sheet, leading to an underlying leverage ratio of 1.1 – half the 2019 level. Our strong return on capital employed (ROCE) of 16% is double the 2019 level, reflecting our strong operational performance and upgrades to our portfolio.

1. Original target set in 2020 and upgraded to €500m run rate by 2024. **2.** Total FCF to Shareholders: 2019-22: €3.5bn.

▸ MORE INFORMATION PAGE 87

"I am proud of our teams as they overcame headwinds to deliver outstanding results in 2022, with records on many fronts – EBITDA, margins, cash and returns. Our balance sheet is strong and we are investing to drive growth and accelerate our path towards carbon neutrality. The best is ahead of us."

KARIM HAJJAR,
MEMBER OF THE EXECUTIVE LEADERSHIP TEAM,
CHIEF FINANCIAL OFFICER

Transforming our businesses

— Driven by our G.R.O.W. strategy and our Solvay One Planet sustainability roadmap, we have accelerated our operational transformation over the four past years, while reshaping and upgrading our portfolio in alignment with evolving global trends. We have dramatically improved the quality and performance of our Solutions business segment, leading to a complete transformation in our Novecare and Aroma Performance businesses. These businesses have refocused resources on fewer markets, driven by strong business trends relating to natural products and sustainability. They have also upgraded their portfolios with more specialty solutions, investing in new capabilities and innovation to develop new areas of growth for the Group. This has enabled the segment to significantly exceed its optimization mandate and create value.

Going beyond to serve our customers

Under difficult conditions – raw material issues, high energy prices, and huge logistics and supply constraints – we have benefited from the strong improvement programs we have implemented over the past three years through our G.R.O.W. strategy. They have enabled us to strengthen our operations, our supply chains and our balanced geographical footprint, ensuring that we can remain close to our customers and supply them locally.

The progress made by our teams is reflected in the many awards we received from customers in 2022. These included:

- → Supplier of the Year from Boeing, which uses our high-performance materials for aerospace applications
- → Elite Supplier from Lockheed Martin, a top defense customer to which we supply composite materials, for achieving 100% on-time deliveries and zero quality defects
- → Best Partner from Samsung, in recognition of our great performance in difficult supply environments
- → Best Supplier of the Year from Brazil's Oxiteno, for service, delivery, quality and sustainable practices. —

Strengthening our businesses and preparing for the future

The significant amount of cash we generated, and the important opportunities we see in a lot of our end market, enabled us to make 2022 a great year for investments. These investments are aimed at upgrading our portfolio, expanding our production and innovation capacity and strengthening our leadership positions in strategic markets, as well as accelerating the decarbonization of our plants.

Expanding production capacity to meet growing demand in strategic markets

Battery materials

In 2022, we invested to increase PVDF production capacity in three regions, responding to increased global demand and extending our leadership position in the global lithium-ion battery market. This included a €300 million investment at our site in Tavaux, France, to expand production capacity of our high-performance polymer Solef® PVDF by 35kt and make the plant the largest PVDF production site in Europe. We also doubled PVDF capacity at our Changshu site in China and have partnered with Orbia to create the largest suspension-grade PVDF production facility in North America.

Semiconductors

To supply the growing semiconductor manufacturing market in the US, we are building a new high-purity electronic grade hydrogen peroxide (eH2O2) facility in Arizona, which will be powered by electricity from renewable sources. The new facility will become our seventh eH2O2 unit and will strengthen our position as an eH2O2 technology leader.

Rare earth magnets

To serve customers in the fast-growing electric vehicle, wind power and electronics markets, we invested in expanding our rare earth operations in La Rochelle, France, allowing us to enter the magnets value chain and develop a powerful hub for rare earth magnets in Europe. We also took full ownership of our rare earth joint venture in Japan, advancing our global plans in this area.

▸ READ MORE PAGE 66

Soda ash and bicarbonate

To extend our position as a global leader in trona-based soda ash production, we resumed a 600kt soda ash capacity expansion at our Green River site in the US and took on full ownership of the site. Production is expected to start at the end of 2024 and will meet our customers' growing need for a secure and cost-competitive source of supply. In 2022, we also unveiled one of the biggest sodium bicarbonate plants in the world. Located in Devnya, Bulgaria, it will help us meet growing demand for this essential product, which can be used for removing pollutants from flue gas in industrial applications.

Creating the largest PVDF capacity in North America

In 2022, we announced a joint venture with Orbia to create the largest PVDF capacity in North America, for a total investment of around $850 million. The partnership brings together two strong, complementary leaders to create a locally produced, vertically integrated and competitive supply chain, with Orbia providing the key raw materials from which Solvay will produce the PVDF. This will enable us to produce suspension-grade PVDF for some of the leading battery makers in North America. We intend to use two production sites, one for raw materials and the other for finished products, which are both expected to be fully operational by 2026. The partnership is a significant milestone in our electrification strategy, enhancing our global leadership and contributing to the establishment of the battery supply chain infrastructure in the United States.

Investing in new technology and process innovations

Upgrading our sites through Star Factory

— We have launched a comprehensive transformation program for our manufacturing plants. Through our Star Factory program, we aim to ensure our sites are best in class in all areas, including manufacturing and digital excellence, sustainability, safety and people. In doing so, we can ensure that we are providing our customers with more sustainable solutions. Read Story page 20.

Accelerating the decarbonization of our soda ash plants

— To advance our carbon-neutrality roadmap, we announced major investments to phase out coal at our soda ash plants in Devnya, Bulgaria and Dombasle, France, while we are implementing an innovative new technology to cut process emissions at our Green River, Wyoming plant in the US. Read page 36.

Reinventing our processes to meet the increasing need for more sustainable solutions

— We have reinvented our 160-year-old soda ash manufacturing process and are currently piloting this new process innovation at our Dombasle site, in France. The development will enable us to reduce CO_2 emissions from soda ash production by 50%, while reducing resource consumption and significantly reducing limestone residues. Read page 18.

Enhancing our portfolio to align with strong business trends

— Our investment in Suanfarma's Cipan manufacturing site in Lisbon, Portugal will improve our capacity to produce natural ingredients for the food, flavors and fragrance market. It will allow us to build on our expertise as a leading producer of natural vanillin and develop our capabilities in biotechnology, aligning perfectly with the aims of our new Renewable Materials and Biotechnology platform and with the key business trends that drive our end markets.

As part of our open innovation strategy, we invest in early-stage startups dedicated to making sustainable material advancements. We have also strengthened our partnership with Chinese venture capital fund Longwater Investment. This partnership will support innovation in new and sustainable chemistries that can be used to further key market trends in transportation, electronics and smart devices, enhancing our portfolio and complementing the work of our four growth platforms. It also illustrates our commitment to growing our operations in Asia.

Accelerating innovation in our strategic markets through our growth platforms

Our three strategic growth platforms focused on battery materials, thermoplastic composites and green hydrogen drive innovation to support the energy transition. They answer market needs driven by high-priority business trends, such as electrification and lightweighting. Our materials are key enablers for developing the sustainable mobility solutions of the future and our diverse portfolio features technologies at different stages of development in alignment with industry roadmaps.

In 2022, we created a **fourth growth platform, focused on Renewable Materials and Biotechnology.** The platform aims to meet growing demand for sustainable solutions by increasing the share of renewable carbon in Solvay's product offering and developing new business opportunities enabled by biotechnology. It will help us develop more environmentally friendly, natural and circular products using renewable feedstocks, as well as new approaches to managing the end of life for these products.

▸ READ MORE PAGE 22

Run by focused and agile teams with a start-up mindset, the platforms offer customers access to some of our most innovative solutions. They also foster cross-innovation throughout the Group, enabling us to develop tailor-made solutions that meet our customers' specific application and performance requirements.

Partnering with customers to develop tailor-made solutions

Our application centers foster close collaboration with our customers. In 2022, we opened a new application development center in Alpharetta, Georgia, in the US. This expands our research and innovation capabilities in the region, allowing us to support customers in the electric vehicle, renewable energy and aerospace industries. It will serve as a workshop for Solvay and our customers to develop advanced prototyping, virtual engineering validation, special testing and secondary operations activities. Engaging customers in real time with our versatile engineering teams enables us to co-create innovative solutions much more efficiently than before.

A unique Battery Materials platform addressing the key challenges of the industry

— The automotive industry is undergoing a transformation driven by several factors, including a shift in consumer mobility preferences and increasing regulations. Many regions around the world have set ambitious goals for decarbonization and major players are investing massively in capacity and infrastructure to reach their targets. Demand for lithium-ion electric vehicle (EV) batteries is witnessing significant growth as a result.

Solvay has been supplying solutions to the automotive industry for more than 30 years, forming strong partnerships with original equipment manufacturers (OEMs) and their Tier 1 suppliers. We enjoy a strong leadership position in the EV battery market, and are pioneers in exploring technologies for the battery of the future. We also provide solutions in other areas, including battery cases, packs and recycling. Our battery materials platform brings together all of our relevant technologies and expertise, enabling us to collaborate with our customers on finding solutions to their unmet needs.

€2.5bn

Estimated sales by 2030

Uniquely positioned in the value chain

— With our extensive and proprietary range of high-performance polymers and innovative compounds, we can meet our customers' critical needs: making safer, more powerful, longer-lasting and lower-cost batteries. We supply materials for the different components of battery cells, cases and packs, and are also working on solutions to recycle them. Li-Ion battery cells, for example, have four main components: the cathode, the anode, the electrolyte and the separator. We have solutions for all four and our materials make them perform better.

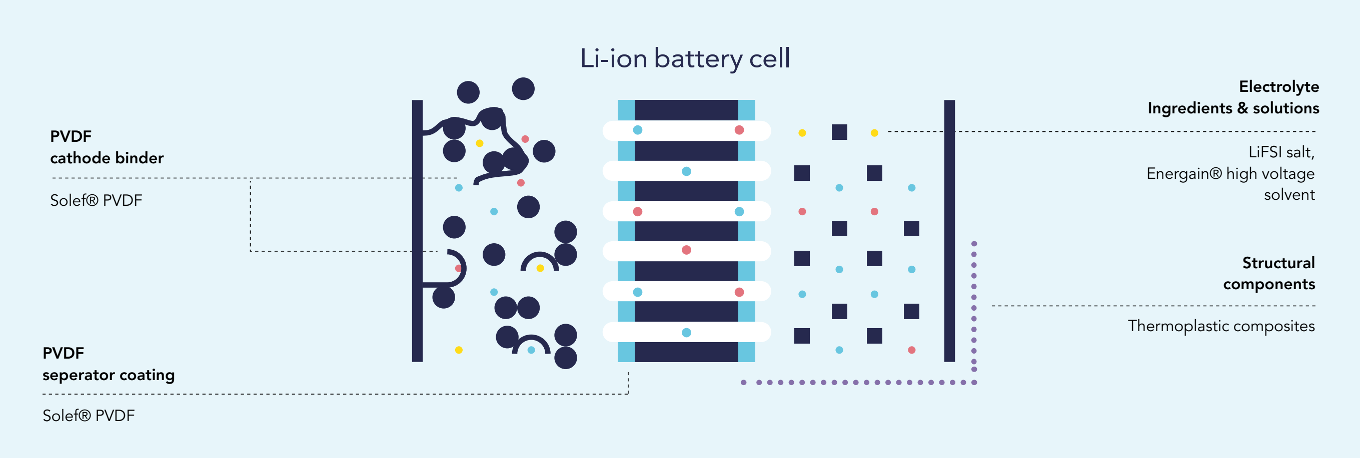
The cathode plays a significant role in determining battery capacity. Solvay's polyvinylidene fluoride (PVDF) is used as a binder for cathodes, where it improves energy density, and as a coating on the separator, where it helps improve safety. And while PVDF adds significant value and performance benefits to the battery, it only represents a minor portion of the total battery cost.

Our materials surround the battery, in more ways than one, with our polymers and composites being used to make battery modules and packs lighter. Our thermoplastic composite technology, for example, is used for battery enclosures. It reduces the weight of the enclosure by 25% compared to aluminum and 40% compared to steel, and makes the battery safer, while allowing for all battery components to be easily integrated.

Increasing driving range with our Solef® PVDF for binders

Our Solef® PVDF specialty polymers for binders are the most advanced in the world. Developed using Solvay's research and innovation expertise in fluorinated chemistry and polymerization technology, Solef PVDF allows us to create more energy-dense batteries that enable increased driving range. This product has been recognized as a sustainable and profitable solution by the World Alliance for Efficient Solutions and was an essential component of the Solar Impulse plane, the world's first solar-powered aircraft to circumnavigate the world.

Our materials circle the battery



Creating a circular economy in batteries
— Thanks to our recycling activities, we are helping the battery industry close the circularity loop. We have partnered with Veolia in an effort to create a European consortium in which Solvay's role is to purify and extract lithium, cobalt and nickel from end-of-life batteries and production scraps. Our solutions enable us to recover 95% of high-purity metals, which can be used in new cathodes. We are currently in the demonstration plant engineering phase of this project. Integrating EV batteries into the circular economy will ensure access to critical raw materials and decrease recycling costs. It will also lower the CO_2 footprint of the battery-making process, as the carbon footprint associated with battery metal recycling is far lower than that of primary metal extraction or mining.

Our innovation addresses the key challenges of the battery industry
— We have aligned our research and innovation priorities with the future needs of the battery industry. This involves developing new chemistries that will solve the most difficult challenges as we develop the next generations of batteries. Through our platform, we are using our unmatched portfolio of technologies and our strong relationships with our customers to develop unique solutions that solve their specific application and performance requirements.

Third-generation batteries, for example, require higher performing salts and additives that can increase high-and-low temperature battery performance. In addition to the Li-salts and advanced solvents that we currently provide, we are developing LiFSI and other proprietary additives, which will meet this need.

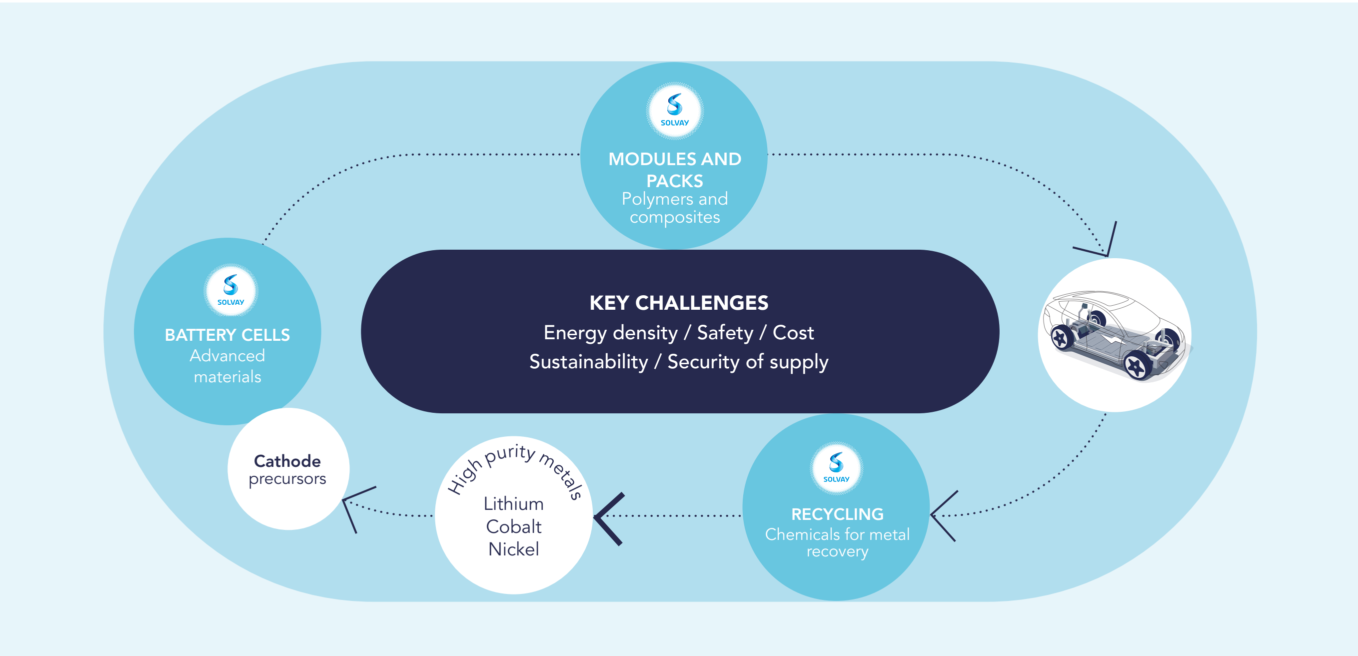
Another example is our Energain® solvent for electrolytes, which responds to the need for high-voltage resistant solvents, used in emerging cathode technologies, such as high manganese cathodes and very high nickel cathodes. These two cathode technologies make up the largest share of the market today. They are expected to grow in the coming years, and Solvay provides solutions for both. As a leader in suspension PVDF, which is the technology of choice for the higher-end battery segment, we are able to continuously innovate to solve our customers' performance requirements.

Fourth-generation batteries, known as solid state batteries, are expected later this decade and promise significant improvements in energy density and safety. Our Solgain™ technology, a solid film with an encapsulated electrolyte, will allow the industry to achieve this. Solvay is the front-runner in Europe in the development of this new technology.

A state-of-the-art innovation pilot unit in Europe

In 2022, we inaugurated a new pilot research unit at our plant in La Rochelle, France. This will enable us to scale up development of advanced inorganic materials for solid electrolytes to be used in the next generation of automotive batteries. Solid state batteries are expected to complement lithium-ion batteries in the coming years, offering increased safety, improved performance and a reduction in the total cost of ownership. The pilot unit will enable us to respond to customers' needs by delivering products on a semi-industrial scale, and we will also carry out process studies to help prepare for the upcoming industrialization phase. The French state has supported Solvay on this project, as part of plans to build a European value chain for EV batteries and boost battery innovation in Europe.

Our portfolio addresses the key challenges of the battery industry



Accelerating innovation in Thermoplastic Composites (TPCs)

— TPCs are strong, chemically resistant, lightweight and inherently more recyclable materials that enable the high-build rates necessary for mass production. These features make TPCs perfect for use in a number of demanding applications and environments across several industries, including aerospace, advanced air mobility, automotive and energy transition.

€1bn

Addressable market for Solvay by 2030

A TPC roadmap for long-term innovation and growth

— Solvay is the only company in the world with a diversified portfolio of specialty polymers and composite processing technologies capable of meeting all application needs. Our TPC growth platform brings end-to-end innovation – from molecules to composites – under one roof. Our state-of-the-art application and product development centers in Brussels, Belgium, and Alpharetta, Georgia, in the US, allow us to collaborate with customers from concept to commercial application, providing support in early-stage design, prototyping and testing of parts. This drastically reduces the time to market of our materials.

Solvay's thermoplastic composites are a critical enabler for lightweight and corrosion-free tubular structures in the energy transition space, and for high-volume rate production in aerospace, including the fast-growing advanced air mobility segment. In automotive and other industries, our TPCs bring flexibility, functional integration and recyclability.

Our three world-class manufacturing facilities in the US, in Anaheim, California; Havre de Grace, Maryland; and Greenville, South Carolina, use several manufacturing technologies to produce state-of-the-art unidirectional composite tape from a wide range of high-performance polymers, targeting a broad array of industries and applications.

Part of our success comes from our strategic collaborations with our partners and customers. Through our Joint Lab agreement with Leonardo, we are able to focus on developing composite materials and production processes critical for the future of the aerospace industry. Our partnership with 9T Labs helps bring additively manufactured carbon fiber-reinforced plastic (CFRP) parts to mass production. These can replace metal as structural parts in the aerospace, medical, automation, and oil and gas industries. Solvay is also at the center of key technology developments, working with leading institutions such as the National Institute for Aviation Research (NIAR) in the US, the ThermoPlastic composites Research Center (TPRC) in the Netherlands and Politecnico di Milano in Italy.

Enabling the future of flight at the Solvay-NIAR Manufacturing Innovation Center

Solvay and Wichita State University's National Institute for Aviation Research (NIAR) opened a joint Manufacturing Innovation Center in 2022, dedicated to enabling the future of flight through advances in composite technologies. The innovation center will provide leading aviation companies in the US with access to 150,000 square feet of International Traffic in Arms Regulations (ITAR) compliant development, testing and prototyping facilities, as well as the latest in advanced aviation material research.

Solvay and NIAR engineers will work hand-in-hand with customers to test ideas and innovative structures in real time, and companies will be able to fabricate entire aircraft structures, such as wings and fuselages, at a fraction of the cost of making it themselves. Our partnership with NIAR marks an important milestone in our ambition to help key customers across the US advance developments in aerospace, defense, space and advanced air mobility, demonstrating how our advanced material innovation can help our customers reduce time and excess costs when testing new applications.

Responding to the urgent global need for Green Hydrogen

— Growing recognition of the need to accelerate the energy transition, combined with the energy crisis in Europe, has led to a dramatic increase in global interest in developing a green hydrogen (H2) economy. Following the outbreak of war in Ukraine, the EU has introduced plans to maximize its production of green H2, and thus reduce its dependence on Russian fossil fuels, by doubling its domestic green H2 production target to 10 million metric tons by 2030. This makes development in this area more urgent than ever.

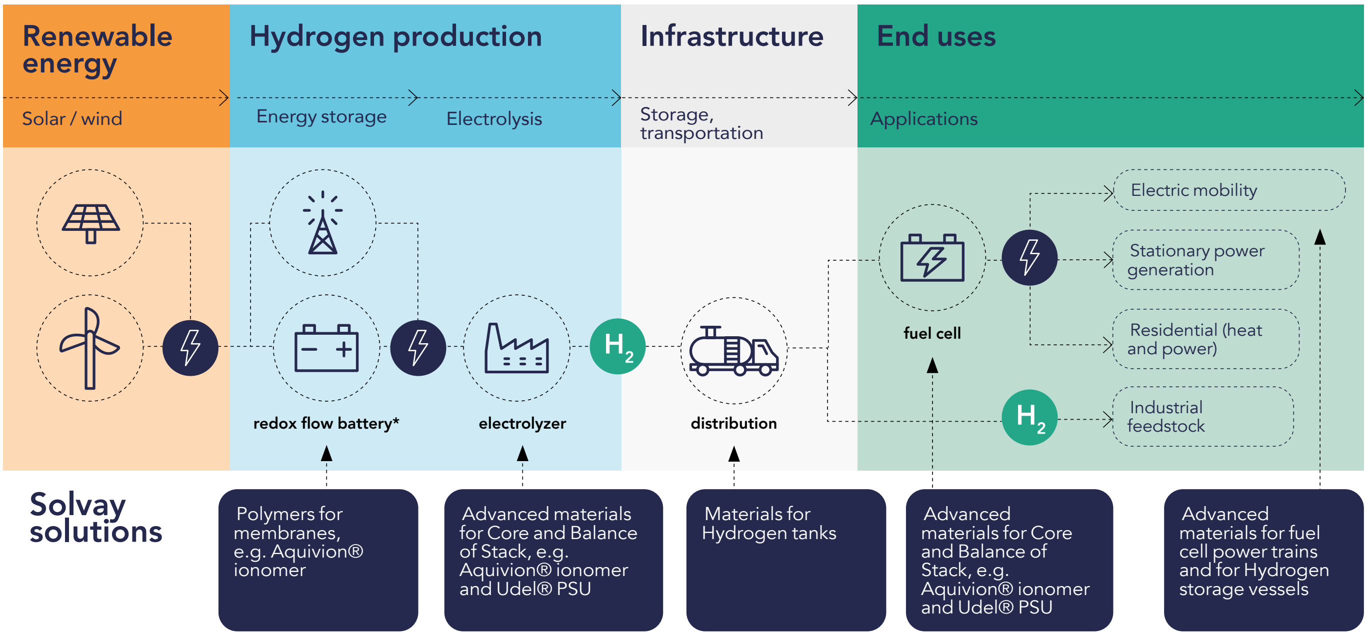
Green hydrogen is needed to reach the target of net-zero carbon emissions by 2050. It can be used to decarbonize the existing hydrogen economy, as well as in new applications, such as clean mobility, and has a key role to play in the decarbonization of hard-to-abate sectors, such as heavy-duty transportation, and emissions-intensive industries, like steel manufacturing. While conventional hydrogen is produced from fossil fuels, green hydrogen is produced using renewable energy only – and it is chemistry that holds the key to transforming it into the green energy solution of the future.

Governments and companies are mobilizing. More than 50 countries have now built or are about to issue their hydrogen economy roadmaps, committing to the investments necessary to achieve their objective of net-zero carbon emissions in 2050, which are estimated at around $500 billion by 2030.

€5bn

Addressable market for Solvay

Solvay solutions at every step of the Green Hydrogen value chain



*electrochemical energy storage devices, where energy is stored in a liquid electrolyte solution

Solvay products at every step of the green hydrogen value chain
— Accelerating the development of a green H2 economy involves improving the viability and scalability of green hydrogen technologies. To achieve this, we not only need the necessary political will and huge investments, we also need the right materials.

Solvay is one of the few companies in the world capable of providing the highly advanced materials needed for the green hydrogen economy. Our green hydrogen growth platform provides the advanced materials needed for green H2 production, but also for usage and – in the future – for storage.

What makes us unique is our ability to provide materials both across the green H2 value chain and to today's leading hydrogen technology platforms. This includes polymers, such as fluoro-ionomers, for use in membranes with high proton conductivity and superior mechanical properties, and low-weight, high-resistance polysulfones, which are essential in the production and utilization of hydrogen. These materials are at the very heart of green hydrogen technology – without them it is impossible to produce the components or systems needed for green H2. Our Aquivion® ionomer and our Udel® polysulfone (PSU), for example, are both used in the core of hydrogen systems, where the key reaction happens, to enable hydrogen production and conversion in fuel cells.

In addition, we are expanding our offering for green hydrogen applications. For example, we are developing advanced material solutions for auxiliary components in fuel cells and electrolyzers in the balance of stack, the layers that surround the core. Our solutions provide a lightweight alternative to the metal parts that are currently used in hydrogen systems; replacing metal is vital to meet weight expectations, and also to increase production rates, allowing for automation, scalability and speed, while also helping to tackle waste.

Committed to a faster transition to green hydrogen
— With relevant products and solutions all along the green hydrogen value chain, our ambition is to be a leading material solutions provider for the green hydrogen economy. Our green hydrogen platform brings together all of our innovative material and chemical solutions and competencies, concentrating our resources and efforts in one place to better serve and advise customers across industries.

We have also significantly increased the resources dedicated to this emerging market, including in research and innovation. Our innovation efforts focus on improving system durability, efficiency and total cost of ownership to help our customers improve the viability and scalability of green hydrogen technology. We have teams located across continents, from the Americas, to Europe, to Asia. With a global reach and local presence, our focus is on building intimacy with our customers along the value chain and co developing solutions tailored to their unique requirements.

Solvay's commitment to this growth industry is demonstrated by our Membership in the Hydrogen Council, a global CEO-led initiative that brings together leading companies with a united vision and long-term ambition to make green hydrogen a catalyst for the clean energy transition.

Solvay One Planet delivering progress faster than planned

Climate, environment and respect for human dignity are now top priorities for governments, businesses and consumers. Our Solvay One Planet sustainability roadmap reflects this, helping us to raise the bar to tackle climate change and resource scarcity and foster a better life for all. Built around three pillars, the roadmap is an integral part of our Strategy, setting out ten targets to achieve before 2030 that will help us develop more sustainable solutions and achieve our ambition to reach carbon neutrality across all our businesses before 2050.

Solvay One Planet 2030 Goals

baseline 2018

Climate

Align greenhouse gas emissions with Paris Agreement and SBTi[1]

- Reduce Scopes 1 & 2[2] by 30%
- Reduce Scope 3[3] by 24%

Phase out coal and solid fuels[4]

- Exit 5 plants

Pressure on biodiversity[5]

- Reduce by 30%

Resources

Sustainable solutions

% of Group sales

- Achieve **65%**

Circular economy[6]

% of Group sales

- More than double

Non-recoverable industrial waste

- Reduce by 30%

Intake of freshwater

- Reduce by 25%

Better life

Reportable Injuries and Illness Rate (RIIR)[7]

- Aim for zero

Diversity

Women in mid & senior management

- Achieve 50%

Gender equality

Extend maternity leave

- 16 weeks for all co-parents regardless of gender

✔ Achieved in January 2021

We talk to... **Nordea**

What is the Nordea Global Climate Engagement Fund?

Nordea — Rather than investing in the already recognized climate leaders and solution providers, the Nordea 1 – Global Climate Engagement Fund seeks to generate alpha and impact by engaging with management teams that have opportunities to reduce transition risks and seize opportunities arising from the low-carbon future. The strategy invests in companies where the valuation is being overly penalized for energy transition risks, or is not reflecting the future potential of the business in the low-carbon future, and then works with management teams to unlock this underappreciated value.

What are Nordea's expectations for Solvay?

Nordea — As shareholders we have high expectations for Solvay's progress towards having sustainability at the core of the business. We have been encouraged by developments over the course of 2022, and we will continue to hold the company accountable for the ambitious targets management has set out over the coming years.

1. SBTi: Science Based Targets initiative. **2.** Total emissions from Solvay operations. **3.** Emissions upstream and downstream in the value chain (suppliers and customers). **4.** Wherever alternatives exist. **5.** In number of animal or plant species potentially impacted in one year. ReCiPe method for biodiversity impact assessment. **6.** Our new KPI is defined according to the Ellen MacArthur Foundation Circulytics framework. It comprises products either based on recycled or renewable materials, produced with renewable energy, with increasing longevity in the use phase or enabling recycling at the end of life. **7.** Number of work-related injuries and illnesses (employees and contractors) resulting from an accident with severity above first aid, according to US OSHA 29 CFR 1904, per 200,000 work hours.

CLIMATE

€2.5bn

sales from solutions that reduce our customers' overall climate impact

Fighting against climate change

2030 Goals baseline 2018

Align greenhouse gas emissions with Paris Agreement (and SBTi[1])

- Reduce Scopes 1 and 2[2] by 30%

2022: **10.3Mt CO_2 eq.**

19% (-15% structural)

- Reduce Scope 3[3] by 24%

2022: **24.2Mt CO_2 eq.**

Phase out coal solid fuels[4]

- Exit 5 plants

2022: **28PJ**

-15%

Reduce pressure on biodiversity[5]

- Reduce by 30%

2022: **-5% YOY**

-28%

Big steps toward reducing greenhouse gas emissions, nearly twice the Paris Agreement trajectory

We accelerated our efforts to reduce emissions in 2022, delivering an outstanding 19% reduction in Scope 1 and 2 greenhouse gas (GHG) emissions in just four years. Out of this, 15% is structural, which represents a pace that is almost twice that required by the Paris Climate Agreement. We also met another significant milestone in 2022, unveiling our goal to reduce Scope 3 GHG emissions by 24% by 2030. This sets Solvay apart from most other leading companies in the global chemical sector by ensuring that our emissions targets are aligned with the Science Based Targets initiative (SBTi) criteria. In early 2023, our Scope 1, 2 and 3 climate targets were validated by SBTi, reaffirming our commitment to reduce greenhouse gas emissions across the board, in accordance with scientific principles. As part of the validation process, our 2030 Scopes 1 and 2 emissions reduction target was upgraded slightly, from a 30% reduction to 31% as compared to our 2018 baseline.

1. SBTi: Science Based Targets initiative. **2.** Total emissions from Solvay operations. **3.** Emissions upstream and downstream in the value chain (suppliers and customers). **4.** Wherever alternatives exist. **5.** In number of animal or plant species potentially impacted in one year. ReCiPe method for biodiversity impact assessment.

Fifty-nine projects to accelerate our energy transition

— In 2022, we reduced our structural Scopes 1 and 2 GHG emissions by 4% (from -11% to -15%), or 1.9Mt of CO_2, compared to 2018. In addition, we launched 23 new projects to accelerate our energy transition. These are focused on continuing to phase out coal from our energy mix at our soda ash plants, switching to green electricity globally, and accelerating electrification and process efficiency. Since 2018, we have launched 59 emissions-reduction projects. When these have all been commissioned, we expect to achieve a total emissions reduction of 3.5Mt of CO_2 annually. In response to the gas crisis we had to temporarily adjust our energy-sourcing strategy in Europe to ensure business continuity. This is reflected in the 2022 result for our coal phase-out KPI, which only remained stable year-on-year. Our commitment to achieving our targets remains unaltered and we expect the completion of key projects currently under construction in France, Germany and the US will deliver a further step change in progress, allowing us to reduce coal consumption by at least 50% by 2025, compared to 2018.

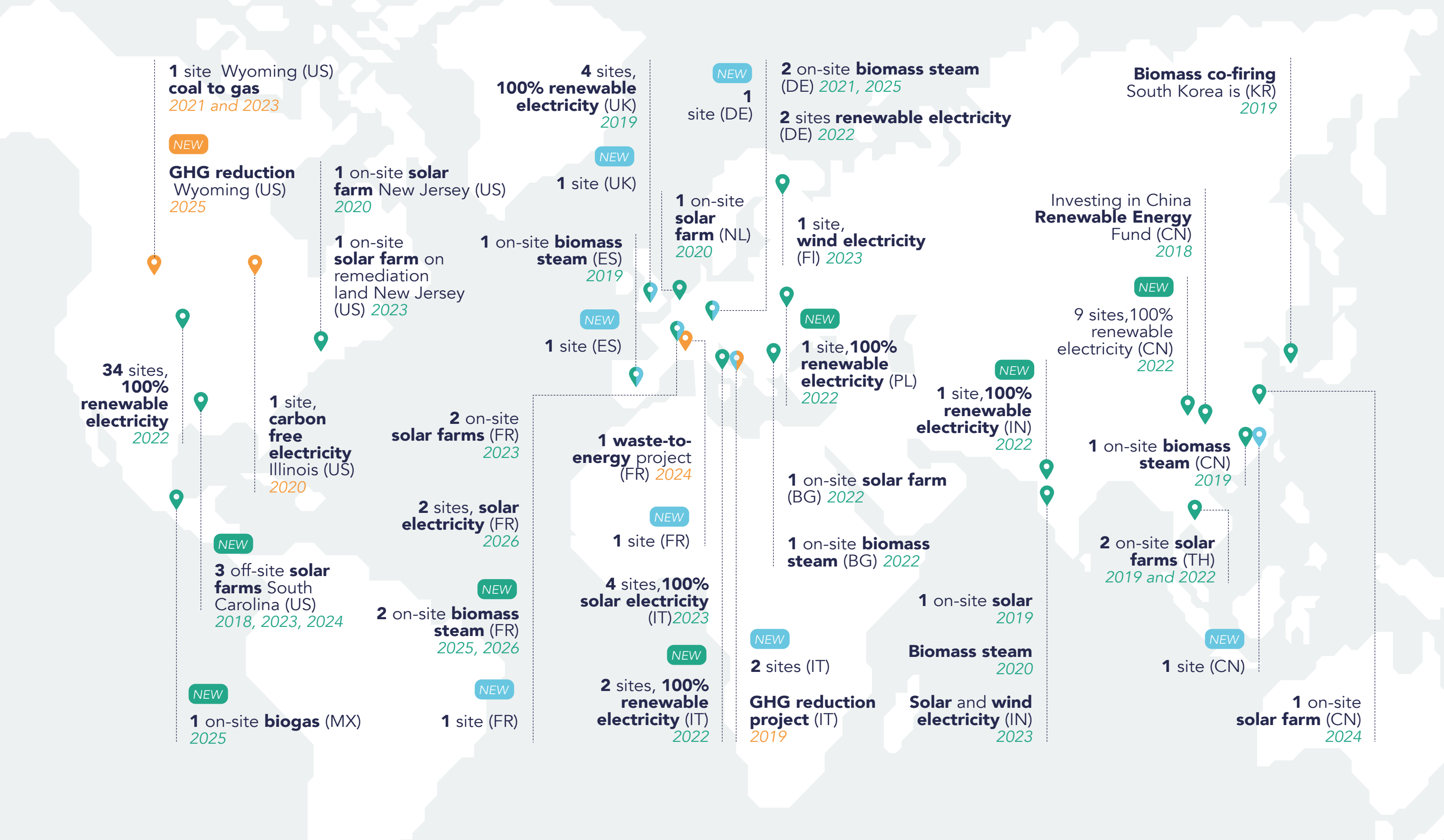
Phasing out coal from the energy mix at three soda ash plants and paving the way for more
— Since the launch of Solvay One Planet, we have been exploring sustainable alternatives to coal that allow us to produce heat in our plants while lowering carbon emissions. As part of this process, we have launched projects at three of our European soda ash plants – Rheinberg in Germany, Dombasle in France, and Devnya in Bulgaria – and in our US soda ash plant in Green River, Wyoming.

These projects will cut the Group's overall global emissions by 9.5% by 2025.

- At our soda ash plant in **Dombasle, France,** we are partnering with Veolia to completely phase out the use of coal and fossil fuels for energy generation at the site. Planned for a start in 2024, the project involves replacing three coal-fired boilers with a cogeneration unit that will produce energy from non-recyclable local waste. This will ensure the plant's competitiveness and cut its emissions by 50%. We are also investing in the site to test an innovative and sustainable new soda ash production process that would allow us to cut CO_2 emissions by half.
- In February 2022, we announced a plan to invest in one of the existing boilers at our largest European soda ash plant, located in **Devnya, Bulgaria,** to increase its co-combustion rate. The boiler, which went into operation at the end of 2022, is powered by 30% biomass fuel, which reduces CO_2 emissions at the plant by 20%.
- In **Rheinberg, Germany,** a second biomass boiler is scheduled to be operational in 2025, phasing out the use of coal for energy production at the site and making it the world's first soda ash plant to be powered primarily by renewable energy.

59 projects underway to accelerate energy transition, representing 3.5 Mt of CO_2 per year – equivalent to taking 1.9 million cars off the road

- Renewable energy
  Solar / Biomass / Wind & biogas
- Process Efficiency
  Electrification / Waste heat recovery / Equipment optimization
- Other
  Energy mix / Industrial emissions



In addition to these projects, we are also innovating and preparing to be the first in the world to transfer regenerative thermal oxidation to trona mining operations at our soda ash plant in Green River Wyoming, in the US. With this technology breakthrough, we expect to reduce the total greenhouse gas emissions for the plant by 20%. Using trona is another way to produce soda ash. The Green River plant is also progressing on plans to phase out coal entirely from its energy mix.

Accelerating our shift to renewable electricity worldwide
— Renewable electricity projects are now underway at our plants worldwide. Many new projects were launched over the course of 2022. These projects enable us to power our operations with renewable energy sources rather than fossil fuels, thus lowering our carbon emissions.

- In the US, 34 of our plants are now fully supplied by green electricity, covering the needs of six GBUs, double the level of 2021.
- In China, 100% of our operations, covering nine plants, are now supplied with renewable electricity.
- We continue to make progress in each of the European countries in which we operate. For instance, two new projects were launched in 2022:
  - From 2023 onward, our Voikkaa peroxides site in Finland will operate on 100% wind-generated electricity. This is the result of a ten-year utility power purchasing agreement (PPA), signed with Statkraft, to help decarbonize the production of hydrogen peroxide at the site.
  - In 2022, we announced that we are teaming up with Iberdrola on a new solar facility project that will provide green electricity for our Tavaux and Saint Fons plants in France. The facility will be one of the largest such installations in Europe, producing nearly 75 gigawatts of energy and therefore significantly reducing the energy footprint of our Specialty Polymers and Aroma businesses in France. The plant is expected to be operational by the end of 2025.

Setting our Scope 3 emissions target

— In 2022, we announced our plan to reduce by 2030 our Scope 3 emissions by 24% as compared to 2018. In early 2023, SBTi approved our 2030 climate targets for Scope 1, 2 and 3 emissions. In the process, our target for Scope 1 and 2 emissions was slightly adjusted, from a 30% reduction to 31%.

Scope 3 includes greenhouse gas emissions occurring in the value chain that are associated with our activities, namely those occurring at suppliers' and customers' sites, when the consumer uses the product or at the end of a product's life. We are one of the few companies in the global chemical sector to have set such a target. In 2022, we reached 18% in structural reductions since 2018 through reduced sales of essential products with significant downstream impact, up from 14% structural in 2021. An additional 6% reduction comes from variations in sales mix and activity level since 2018, up from 3% in 2021, and is not secured for future years.

Accelerating mobilization of our supply chain and reducing the upstream Scope 3 impact of raw materials is our leading Scope 3 priority, to consolidate achieving our goal and to improve our offering of low carbon-footprint products to our customers. We are also mobilizing our suppliers. In 2022, we started to engage with suppliers on high-impact raw materials. In addition, climate performance and commitments will form the basis for future relationships with strategic suppliers.

Our Scope 3 strategy includes switching to bio-based and recycled-based raw materials. Through our new Renewable Materials and Biotechnology growth platform, we are also developing partnerships with our customers to ecodesign new products, processes and business models that will reduce emissions from cradle to end of life. There are clear synergies here with our efforts to develop circular solutions, which also focus on increasing the use of renewable carbon feedstock in our product offering. Examples include renewable

Two major initiatives to move us closer to carbon neutrality

Star Factory program

Our **Star Factory program**, the goal of which is to reshape our plants and manufacturing processes,which is expected to contribute to significant reductions in CO_2 emissions. At our pilot site in Tavaux, for example, we have developed a roadmap to achieve an 80% reduction in GHG emissions by 2030.

READ STORY PAGE 20

New soda ash production process

Our **new soda ash production process** is currently being piloted at our Dombasle site in France. This new innovation will enable us to reduce CO_2 emissions from soda ash production by 50%, while reducing resource consumption and eliminating limestone residues.

READ STORY PAGE 18

materials to make home and beauty care circular, recyclable-based products for a more sustainable specialty polymers, using biotechnology to create more circular plastics economy, and other circular cases. Read more on page 43.

A leader in assessing emissions across the value chain

Solvay is partnering with industry leaders in several breakthrough alliances to develop the next generation of product carbon footprint (PCF) assessments and accelerate transparency in the value chain with customers and suppliers. Examples include initiatives launched by the World Business Council for Sustainable Development's Partnership for Carbon Transparency (WBCSD PACT) and Together for Sustainability (TfS). Solvay is already a leader in the assessment of greenhouse gas impact across the value chain, using robust tools, such as our Sustainable Portfolio Management (SPM) tool and Life Cycle Analysis. —

Providing solutions that reduce our customers' overall climate impact

— Another way in which we achieve climate benefits is through Solvay's sustainable solutions, which accelerate the shift to renewable energies or increased energy efficiency, such as lightweighting in mobility. €2.5 billion of the Group's sales come from solutions that reduce our customers' overall climate impact. The associated reduction in emissions is not accounted for in the Scope 3 emissions of Solvay and other chemical companies under the GHG reporting framework. We strive to bring new climate solutions to the market and support the transition to a net-zero world by building up the necessary value chains.

For example, we are partnering with Inaventa Solar, an innovator in solar thermal collector technology, to help them develop a new solar collector that uses our Ryton® PPS instead of metal. Ryton® PPS offers significant advantages as a replacement for metal, including greater design flexibility and automated manufacturing. Crucially, it enables weight reduction and more efficient large-volume production, ensuring a lower carbon footprint along the value chain.

Another partnership that contributes to lowering emissions is our joint venture with Orbia. Facilitating the production of suspension-grade polyvinylidene fluoride (PVDF) – vital to the development of electric vehicle batteries – the partnership will fill a significant supply gap in North America. It will provide a local solution for the North American automotive industry capable of optimizing energy storage efficiency by increasing battery energy density, safety and power.

Reducing our impact on biodiversity

As stated in the COP15 Global Biodiversity Framework, preserving the world's ecosystems is essential for human, animal and plant health and, with 50% of the global economy estimated to be reliant on nature, it's vital for the economy too.

Since 2020, Solvay has been a pioneer in biodiversity, combining a global and local approach with the aim of reducing pressure and damage, and progressively restoring biodiversity around our sites.

A 28% reduction in our global pressure on biodiversity in 2022 brings Solvay close to achieving our 2030 target

— As part of our Solvay One Planet sustainability ambition, we have committed to reducing by 2030 our pressure on biodiversity by 30% compared to 2018, and after just four years we are now close to achieving this target. Our efforts to decrease our impact on biodiversity focus on four drivers, which represent more than 90% of our impact: greenhouse gas emissions (50%); marine ecotoxicity (17%); freshwater eutrophication (15%); and soil acidification (12%).

We calculate the Group's pressure on biodiversity across the value chain, from cradle-to-gate, for our entire portfolio of products. This is a global approach, based on a Life Cycle Impact Assessment (LCIA) methodology known as the ReCiPe method. This method translates emissions and resource extraction into an environmental impact score.

Significant progress in assessing our impact on local biodiversity

— All of Solvay's sites have been assessed on their sensitivity toward biodiversity using two international reference tools: the International Union for Conservation of Nature (IUCN) Integrated Biodiversity Assessment Tool (IBAT) and the World Wide Fund for Nature (WWF) Water Risk Filter. These tools identify protected species and areas around a specific location, as well as "Key Biodiversity Areas," which play a significant role in biodiversity conservation and sensitive ecosystems. Of our 185 sites, 48 are within five kilometers of one of these areas.

On the basis of this evaluation, we have prioritized 30 manufacturing sites, for which we are developing and implementing biodiversity roadmaps. All our roadmaps aim to:

- develop a vision for better integrating the site into its local environment and communities;
- identify and implement projects on the sites and in the surrounding area to protect biodiversity and support regeneration;
- develop "nature-based solutions" that will bring economic, environmental and social benefits.

Several sites have already started implementing their roadmaps, including Rosignano in Italy, Paulinia in Brazil and Oldbury in the UK. The development of our biodiversity roadmaps is integrated into our Star Factory program.

Promoting biodiversity at our Oldbury site

At our Oldbury site, more than 50 four-meter-tall trees have been planted along the site's main avenue, creating a nature corridor and providing shade for employees. In fall 2022, they added to this by planting 300 spring bulbs. These two initiatives were part of a site-wide sitewide effort organized by the Site Biodiversity Group. They also carried out tree-thinning activities in a small wooded area on the site in early 2022, and installed bird boxes and houses for bugs and hedgehogs alongside wildlife cameras to monitor the visitors. Foxes, squirrels, many birds – some of which have nested in the bird boxes – and at least one sparrowhawk have been spotted.

Establishing nature-based solutions

— In the 1960s, our soda ash plant in Rosignano, Italy built a lake to supply the site with water. The lake has since become a natural reserve and is certified as a Natura 2000 protected area.

In addition to supplying the Rosignano site with water, the reserve is now used for educational and scientific projects, including a project run by the Italian League for Bird Protection (LIPU) to monitor the species that visit. The reserve is also closely connected with the local Santa Luce community, which organizes tourist visits there and recognizes the importance of the reserve for economic, environmental and social activities.

"The Lake of Santa Luce has become the symbol of an area where the work of man has been skillfully integrated into a landscape of rare beauty. The lake, which is part of many hikers' itineraries, brings added value to the municipality, while providing important infrastructure for Solvay's Rosignano site."

GIAMILA CARLI,
SANTA LUCE MAYOR, ITALY

In December 2022, the IUCN selected this case study for publication as a "Nature-based Solution" – a project that provides environmental, economic and social benefits. The project, as well as Solvay's strategy on biodiversity, was presented during a workshop organized by the IUCN as part of the United Nations' COP15 Biodiversity Summit.

"I have always been convinced that the challenge for chemistry is to gain more and more awareness about its role in researching nature-based solutions, to manage both natural and modified ecosystems in a sustainable way, for the benefit of biodiversity, human well-being and quality of life," says Nicolas Dugenetay, Rosignano Site Manager.

Solvay signs COP15 biodiversity pledge

The COP15 on Biodiversity, which was chaired by China and organized in Montreal, Canada, ended with the adoption of the Global Biodiversity Framework, an ambitious program of targets and recommendations relating to biodiversity conservation and restoration. The private sector was invited to participate in negotiations and Solvay played an active part in the discussion. The resulting "Make it mandatory" pledge, which Solvay signed, requires businesses to measure and report their impact and dependency on nature.

"We were really pleased to hear about successful conservation and restoration efforts from Solvay and others that go beyond regulatory requirements. We are hopeful that the company will show leadership in conserving nature in the coming years."'

STEVE EDWARDS,
IUCN SENIOR PROGRAM MANAGER.

RESOURCES

€5.7bn

sales from solutions that reduce global resources consumption

Protecting natural resources

2030 Goals baseline 2018

Sustainable solutions % of Group sales	Circular economy[1] % of Group sales	Non-recoverable industrial waste	Intake of freshwater
Achieve 65%	More than double (10%)	Reduce by 30%	Reduce by 25%
2022: **55%**	2022: **9%**	2022: **56kt**	2022: **330 Mm³**
+5%		-36%	

Enabling a circular economy

Chemistry has a key role to play in helping us transition to a circular economy by reinventing the way we manufacture products – from sourcing to end of life. In 2022, our circular sales reached 9% of Group sales, progressing faster than average growth. Consumer markets lead the way, following accelerated trends for nature-based portfolios and biodegradable solutions, and going beyond existing solutions such as biosolvents, natural vanillin and bio-based polymers like Bio Kalix® and Bio Amodel®.

A focus on renewable materials and biotechnology
— Our new growth platform on Renewable Materials and Biotechnology was launched in 2022. It will help us meet the growing demand for circular and sustainable solutions by increasing the share of renewable carbon in Solvay's product offering and developing new business opportunities enabled by biotechnology or biodegradable solutions. More than 200 researchers work on these topics at Solvay in Brazil, the US, Europe and India, focusing on accelerating the integration of sustainable renewable feedstocks into our products, using biotechnologies to transform these raw materials into products and developing new approaches to manage their end of life.

Our technologies are essential for enabling the circular economy in many fields, but reinventing progress in this area requires collaboration with partners. We aim to do this through our role in the Ellen MacArthur Foundation, through the growth platform, and through multiple partnerships, such as those we have with Mitsubishi Chemicals Advanced Materials relating to polysulfone (PSU), with Carbios for PVDC and other bio projects, and with Veolia for batteries.

Developing solutions that reduce global resource consumption

Renewable products to make home and beauty care circular
— In 2022, we added two new high-performance biosurfactants to our Mirasoft® range. Made from 100% biobased ingredients and fully biodegradable, they provide excellent cleansing, solubilization and emulsification properties, as well as health benefits for the skin and scalp. Produced from renewable materials, namely rapeseed oil and sugar, they have a low environmental and carbon footprint

1. Our new KPI is defined according to the Ellen MacArthur Foundation Circulytics framework. It comprises products either: based on recycled or renewable materials, produced with renewable energy, with increasing longevity in the use phase or enabling recycling at the end of life.

▸ READ MORE: STORY, PAGE 22

and are manufactured through a cost-efficient fermentation process, biodegrading naturally once used. They can be utilized in a wide range of beauty care applications.

We are also now able to produce a bio-circular intermediate, Fentamine® DMAPA UP for use in surfactants, helping our customers reduce the environmental footprint of their home and beauty care formulations and cater to consumer needs. It is produced at our site in Zhangjiagang, China, using the mass balance (MB) method*, which allows us to track and trace renewable and circular content across the value chain. The site recently received the International Sustainability and Carbon Certification (ISCC) PLUS designation, an internationally recognized standard for bio-based and recycled-based materials.

Recycled-based products for more sustainable specialty polymers

— We have developed a number of high-performance products with a reduced carbon footprint as part of our efforts to transition our specialty polymers portfolio to the circular economy. Our ReCycle MB Specialty Polymers are used for applications ranging from automotive and household appliances to electronics, and use the mass balance method to ensure responsible sourcing.

With our Augusta, Georgia site in the US now ISCC-PLUS certified, we will be able to manufacture a recycled-based sulfone monomer for our Udel® PSU ReCycle MB and Radel® PPSU ReCycle MB, which are used in hemodialysis membranes and other applications.

The certification process will cover a growing portfolio of products. Additional certified high-performance materials will soon become available globally, starting with Ryton® PPS ReCycle MB and Amodel® PPA ReCycle MB, both of which are used in the automotive and electronics industries.

*The Mass Balance (MB) approach tracks the sustainability of a product through the whole value chain, driving the industry toward adopting critical environmental best practices.

Partnering to accelerate the circular economy

Using biotechnology to create a more circular plastics economy with Carbios

— Polyvinylidene chloride (PVDC) is used to coat flexible Polyethylene terephthalate (PET) films. These films are used in applications like food packaging because of their impressive barrier properties, but their multilayer structures make them difficult to recycle. Providing a feasible and sustainable end-of-life management solution for PVDC-coated PET films will help the industry "close the loop," while also opening up new possibilities for our high-barrier specialty polymers in other markets, such as the packaging of pharmaceutical products. To address this, we partnered with biochemical company Carbios, which has developed a unique enzymatic biological recycling technology. Through a joint study, we were able to demonstrate that this technology is capable of fully recycling multilayer PET films coated with Solvay's Diofan® PVDC2 high-barrier polymer.

Creating an open loop business model for single-use surgical instruments with Ostium

— Our customers in the healthcare industry must meet strict regulatory demands, while minimizing the carbon footprint of their products and reducing waste. To help them, we teamed up with French start-up Ostium to enable the mechanical recycling of single-use surgical instruments molded in glass-fiber reinforced Ixef® polyarylamide (PARA) from our specialty polymers portfolio.

This collaboration, which is still in the development and evaluation stage, is the first such initiative aimed at recycling and upcycling valuable polymers from used healthcare devices and would make single-use surgical instruments a more sustainable and cost-effective alternative to metal. The recycled product could be used in high-end markets such as automotive, and sports and leisure equipment, thus integrating end-of-life surgical instruments into an open loop circular ecosystem.

We have proven it is possible to recycle and upcycle the polymer material and are now developing a way to ensure consistently high recycling standards, which involves controlling every step in the loop from the original Ixef® PARA to the upcycled PARA compound. Our intention is to use what we learn from this experience to help us develop ways of recycling other medical device applications in the future.

Our progress in waste and water management

Improving waste recovery and water-use efficiency will reduce our impact on the environment and preserve scarce resources. It also helps us to create value; by improving the sustainability of our sites and processes, we improve the sustainability of our products, allowing us to better cater to the needs and expectations of our customers.

Outstanding achievements in industrial waste reduction

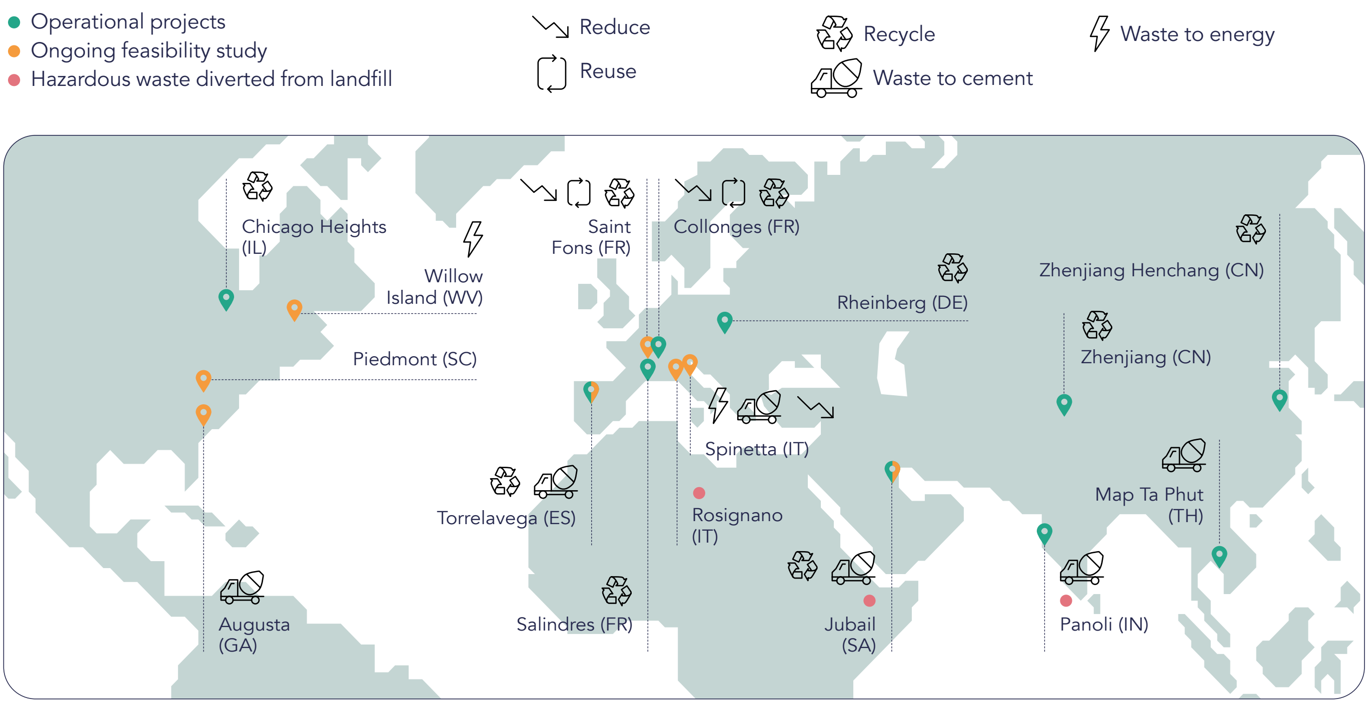
— Non-sustainable industrial waste (NSIW) is waste that is landfilled or incinerated without energy recovery. One of our Solvay One Planet objectives is to reduce this waste by 30% by 2030, compared to 2018. This means finding ways to revalorize it, either by reducing it at the source, reusing it in the same process, recycling it in another process or recovering energy from it.

We reached our 2030 Solvay One Planet target in 2021 and consolidated that result by achieving a 36% reduction in 2022, compared to the 2018 baseline, more than compensating for the additional waste generated by growth. More than 53 projects have been deployed to address non-sustainable industrial waste and this will continue to grow through the Star Factory program.

Four major projects to reduce industrial waste at our sites

- **Panoli, India:** The calcium fluoride (CaF2)-rich sludge produced at the site is now being reused as an additive in a cement plant instead of going to landfill. CaF2 helps to reduce the temperature of the kiln, minimizing energy consumption and CO_2 emissions while ensuring continued production of high-quality cement. The experience at Panoli has helped us to develop our knowledge of valorization opportunities like this one and improved our ability to develop similar solutions at other sites.
- **Piedmont, South Carolina, US:** To help achieve their target of zero waste to landfill, the site is segregating and sorting waste based on what can be valorized, recycled or used in waste-to-energy programs. Since it started in July 2022, the program has contributed to reducing the annual volume of the site's waste disposed in landfill by 15% compared to 2021. The site is passing on their lessons learned to other Solvay locations.
- **Collonges, France:** Rather than disposing of any silica that doesn't meet the required specifications for sale in landfill, we are using this discarded silica to create a range of products sold for other uses.

More than 60 projects addressing more than 60,000 tons per year of non-sustainable industrial waste – Our most advanced reduction projects



Following the success of this project in Collonges, the business is now implementing it at other sites.

→ **Augusta, Georgia, US:** To avoid disposing of their polymer waste in landfill, the site has developed a partnership to recycle it. In 2022, the site reduced the volume of the main waste polymer stream by 76% compared to 2021.

Reducing our freshwater intake

— Record high temperatures and long periods without rainfall around the world, and especially in Europe, over the summer of 2022 underlined the importance of addressing water scarcity. Our Star Factory program, which is currently being rolled out globally across all of our sites, aims to define a clear roadmap for each plant, with targeted actions to reduce our freshwater intake that will be pursued long term. Water is essential to our operations and shortages can have a significant impact, even leading to production losses. With projects underway at more than 20 sites across all geographic zones, we are on track to meet our 2030 target to reduce our freshwater intake by 25% compared to 2018.

In 2022, we experienced two droughts and two cases of severe freezing with an impact on water intake. To address water scarcity at our sites, we have launched various water management initiatives. These include putting in place a dashboard that monitors around 90% of the Group's daily freshwater intake.

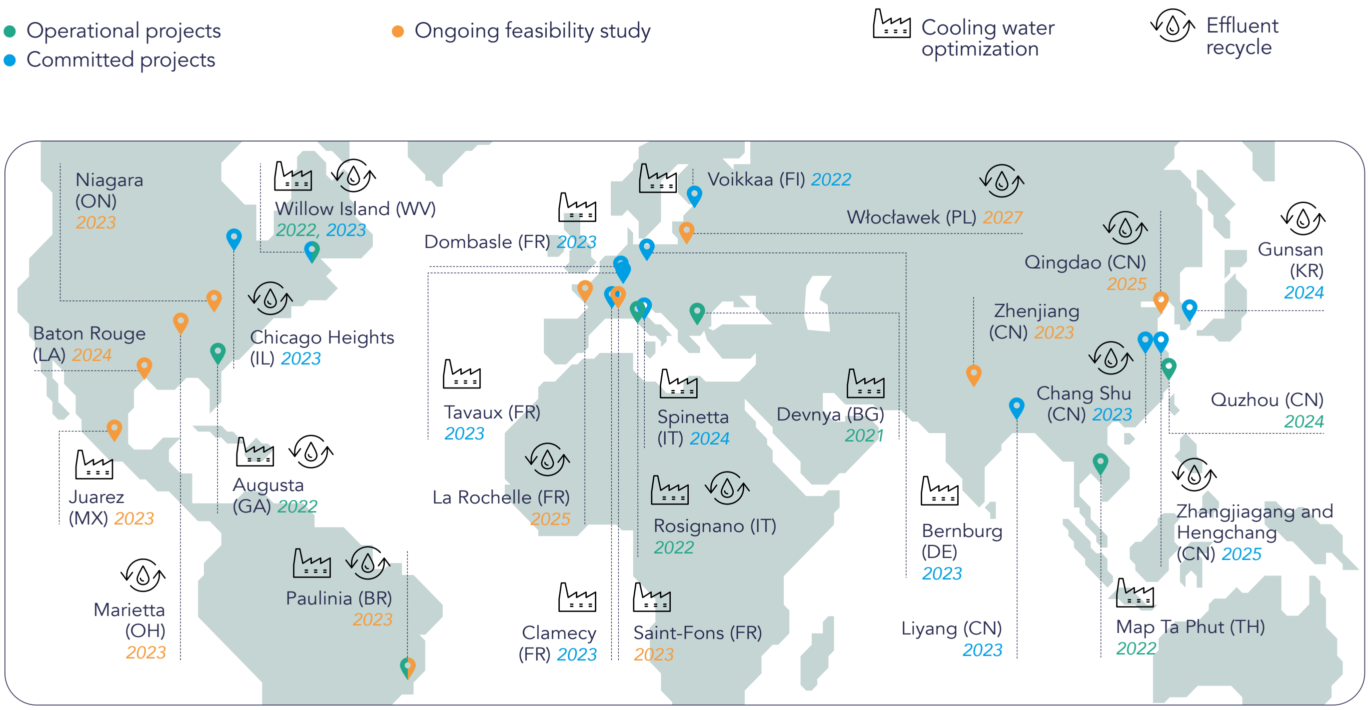
In 2022, we began significant work to improve the resilience of our sites in relation to water risks. We conducted a review of water risks, which assessed about half of our sites according to several criteria includingwater scarcity, quality of effluents and risks related to regulations, and led to longer-term initiatives. At our site in Paulinia, Brazil, for example, we are working to avoid future water shortages by holding regular roundtables with authorities and local stakeholders to better manage the water basin. Three projects have been approved so far that will reduce water intake by 5.6Mm³ per year. Seven sites have designed roadmaps to improve their resilience, with the potential to achieve 30 million cubic meters in water intake reduction.

Two examples of how we are reducing freshwater intake at our sites

→ **Tavaux, France:** To minimize the consumption of surface water and control well water intake, the site has been working to optimize the functioning of its water tower, which is used for cooling in chemical processes. Through this and other initiatives introduced as part of the Star Factory program, the site will be able to double its production output in line with our target to reduce freshwater intake.

→ **Willow Island, West Virginia, US:** The site has introduced a number of measures to reduce freshwater intake. This includes improving automation of chemical and cooling water processes, reducing water tower overflow, using recycled water in two processes and installing automated building hose stations. The improvements are expected to reduce water consumption by about 260,000m³ per year.

Projects to reduce freshwater intake underway at more than 20 sites across the world –
On track to reach our -25% target by 2030



Raising the bar in sustainability at our soda ash facility in Rosignano, Italy

Solvay's Rosignano facility has been manufacturing soda ash and sodium bicarbonate since 1912. These products are made from three natural materials – limestone, salt brine and water – and are used in essential applications, such as the production of glass and air-pollution control systems, and in healthcare applications, where it has a role to play in hemodialysis treatmen. At the end of the soda ash production process in Rosignano, the remaining inert, natural materials are conveyed to the sea. These consist of powdery limestone mixed with gypsum, sand and clay – none of which are toxic or dangerous, though it is fully acknowledged that these residues have a significant visual impact on that part of the coast.

Over the past 20 years, we have invested more than €400 million in improving sustainability at Rosignano, helping decrease freshwater consumption, lower energy use, reduce greenhouse gas emissions and increase recycling at the plant. In 2022, we announced a new investment, as well as projects to ensure continued optimization of operational efficiency and sustainability in Rosignano.

Reducing limestone residues

— In September 2022, in line with the conditions of our operating permit, which was renewed in January 2022, we announced an estimated €15 million investment in new technical and process solutions at the site to reduce limestone residues remaining from the production cycle. Our objective is to lower the maximum volume of residues released to the sea currently specified in the Integrated Pollution Prevention and Control (IPPC) permit by 20% by 2030, and by 40% by 2040, through targeted improvements at different steps of the production process, as well as an optimization of the limestone granulometry and quality.

This commitment brought an end to Bluebell Capital Partners' Environmental, Social and Governance (ESG) campaign against Solvay.

Partnering to create a circular economy

— In addition to this investment, we announced that we are partnering with two companies to collect and reuse the limestone residues produced in Rosignano. Pending further tests, these new partnerships could accelerate efforts to reduce the amount of limestone residue released into the sea, repurposing it for use in construction and agriculture, and therefore contributing to the creation of a circular economy for our soda ash production in Rosignano.

Together with IPSIIS, a startup established in Wallonia, Belgium, which specializes in the manufacture of environmentally friendly, non-flammable, lightweight and geo-sourced insulating mineral foams, we are testing how soda ash manufacturing residues can be used to produce specialized construction products. IPSIIS has been labeled a Solar Impulse Efficient Solution since 2018.

We are also working with the Italian subsidiary of German company Ferro Duo, which specializes in recycling industrial materials, using the inert solids produced during soda ash manufacturing in fertilizers to enrich soils in which precious elements like calcium, sulfur, potassium, magnesium and iron are found.

Reinventing the soda ash process to reduce our footprint

— In addition, Solvay is taking another important step toward achieving our 2050 carbon neutrality objective by completely reinventing our soda ash process, targeting zero limestone discharge globally by 2050. This new process, which is the result of nearly 30 years of fundamental research, would lead to three revolutionary improvements in the process: 50% less CO_2 emissions; a reduction in water, brine and limestone consumption; and the elimination of limestone residues. It would allow our plants to operate more efficiently and sustainably, while enhancing their competitiveness. The development is progressing as planned and on schedule. The pilot plant in Dombasle, France, which was announced in September 2022, is expected to start by the end of the first quarter of 2023.

BETTER LIFE

€4.8bn

sales from solutions that improve society's quality of life

Improving quality of life for employees and society

2030 Goals baseline 2018

Reportable Injuries and Illness Rate (RIIR)[1]	Diversity	Gender equality
	Women in mid & senior management	Extend maternity leave
		16 weeks for all co-parents regardless of gender
Aim for zero	Achieve 50%	Achieved in January 2021
2022: **0.34**	2022: **26.5%**	
	+2.8pp	

A human approach to promoting inclusion and well-being at work

Addressing well-being and inclusion at work first requires listening to our employees to find out their concerns, their needs and what they are satisfied with. We do this through our Pulse survey. We must then show our employees that everyone at Solvay has the same opportunities for development, which we do through our Solvay One Dignity program. Going a step further, we also put in place initiatives that improve our employees' quality of life, offering benefits such as the same parental leave for all and our Employee Assistance Program.

1. Number of work-related injuries and illnesses (employees and contractors) resulting from an accident with severity above first aid, according to US OSHA 29 CFR 1904, per 200,000 work hours.

"Through Solvay One Dignity, we show our employees that each and every one of them has the same opportunities to develop their careers at Solvay."

HERVÉ TIBERGHIEN,
MEMBER OF THE EXECUTIVE LEADERSHIP TEAM, CHIEF PEOPLE OFFICER (CPO)

10%
turnover rate

~267,000
hours of training

Caring for our people

Inspired by our Solvay One Planet sustainability roadmap, we continue to roll out bold initiatives to further Ernest Solvay's pioneering social vision, focusing on responsible capitalism and safeguarding the well-being of employees and communities.

Our comprehensive social benefits program provides employees with the support they need to perform at their best, and ensures that we have a positive impact on our local communities. It groups together all of our key social initiatives, focusing on three different areas: physical; mental and social; and financial. In 2022, we introduced several new initiatives.

"Care and Dare" at the heart of our culture

— At Solvay, we are developing a human-centered approach to leadership. This means having inclusive leaders who encourage people to bring their whole self to work, and empowering our people, and encouraging them to go beyond and take risks.

In 2022, we took a step forward in helping our leaders progress in their Care and Dare journey, launching new programs focused on Care and Dare leadership. Every senior leader has benefited from highly effective and specialist personal coaching, enabling them to develop greater personal awareness, and be more present, attentive and better at listening to the needs of others, while also promoting a safe environment in which to give and receive feedback.

We improved our Leadership Academy, focusing on:
- Care: leading by example with humility and integrity, having the courage to change and initiate change, or to investigate when "the story" does not align with "the facts"

AND
- Dare: valuing human skills as much as technical skills, being more DEI-driven, coaching and being ready to be coached, and, in particular, making it safe to try and safe to fail.

We insist on the power of "and," assigning equal value to being both caring and daring, breaking down silos and being able to deal with the ambiguity inherent in all Solvay projects.

>1,200

Leaders trained through the Leadership Academy in 2022

Promoting health and well-being

— Well-being at work is a priority at Solvay. We have created flexible working frameworks in all of the countries we operate in, and we supply our managers with the data and training they need to anticipate difficulties and provide employees with necessary support.

>7,500

Solvay employees working in hybrid mode across **35** sites in **19** countries in 2022

Quarterly Pulse surveys to monitor employee well-being

— Our **quarterly Pulse surveys** allow us to monitor the motivation and well-being of our employees, so that we can identify areas for improvement and take action, at both global and team levels. Our November 2022 Pulse survey focused specifically on inclusion and well-being at Solvay, allowing us to conduct the first Group-wide health diagnosis of our organization. The results provide us with a strong foundation to continue building a truly inclusive work environment.

64.6%*

response rate to Solvay Pulse survey

79%*

employees feel committed to Solvay

*Solvay Pulse survey, November 2022

In 2022, we also launched our unique and comprehensive **Better Life at Work Dashboard.** This gathers all internal well-being indicators in one place, allowing managers to identify key trends and patterns at the site, entity or global level as soon as they emerge and take immediate action to address issues.

A comprehensive approach to employee health
— The Covid-19 pandemic, the war in Ukraine and an expected recession are continued reminders of how important it is to be able to navigate uncertainty. This includes learning how to protect our mental health and improve our resilience.

As part of our Better Life at Work program, we launched a broad range of well-being webinars and workshops for employees across the world. One of these is Resilience in Times of Change, a series of workshops developed to help our employees understand change and better adapt to it.

We also offer an Employee Assistance Program, which includes free psychological support, well-being advice, life coaching and mindfulness for all employees and members of their households. In addition, our Speak Up service enables colleagues to safely report or seek assistance if they witness any inappropriate or unethical behavior.

1,150

employees trained in well-being webinars and workshops provided in **10** languages; **83%** found it useful

As a global company, we must adapt our approach to well-being to suit different regional needs. In China, for example, we are introducing our well-being initiatives gradually and have observed real and impactful change as a result. In the US, our approach has helped to structure, organize and coordinate dialogue.

Providing social support

— Our social initiatives are aimed at providing our employees with the support they need to perform at their best and face life's challenges, including hardship. In addition, they ensure that our impact on our local communities is a positive one, enabling us to develop strong and mutually beneficial relationships.

Special benefits for all through Solvay Cares
— Through our Solvay Cares social program, we ensure that all Solvay employees globally are guaranteed minimum social benefits. These benefits include 16 weeks of parental leave for all parents, health insurance, and disability and life insurance. In 2022, we made our parental leave policy even more flexible by allowing parents to choose whether to take their 16-week leave all at once or over several periods of time.

Families of >200 babies

have benefited from Solvay's universal 16-week parental leave

We talk to... **Claire Wang**

COUNTRY HR MANAGER AND LABOR RELATIONS, CHINA

How have Solvay's efforts to improve well-being at work been received by our employees in China?

Claire Wang — Many of our practices are market-leading in China, which is recognized and appreciated by our employees. We are a pioneer in hybrid working, for example, and several employees in China have benefitted from the support of the Solvay Solidarity Fund, which has made everyone feel that they can grow with us and count on us to provide them with the support they need in tough times.

One of the initiatives we are most proud of is Union Cares, which enables high quality social dialogue. Employees are especially grateful for the care provided by the union during the pandemic, which included food supplies and health assistance. Solvay China even won the national award for harmonized labor relations in 2022.

Solvay China is also notable for its inclusive working environment, where employees are able to speak openly and share different views through channels such as the One Pulse survey. Hiring managers are increasingly eager to offer opportunities to female candidates and we have undertaken pay equity exercises with managers, which has been highly appreciated by employees.

What are we doing to attract and retain talent in China?

C.W. — At Solvay, everyone is given the opportunity to develop to their full potential. We believe in empowering our young talents, so that they feel valued and dare to explore the unknown. In 2022, we partnered with two top universities – Fudan University and East China University of Science and Technology – to set up a Solvay China scholarship for full-time students in chemical engineering-related subjects. The move aims to attract top talents and outstanding graduates to join Solvay China and energize our talent pool.

Our award-winning Solvay Solidarity Fund
— We continue to support Solvay employees and local communities in need through the Solvay Solidarity Fund. Since 2020, the Fund has donated more than €9 million to individual and collective causes. In 2022, we supported more than 50 projects in 14 countries, funding post-pandemic research, helping employees and charity partners navigate uncertainty, and aiding reconstruction efforts after flooding in 2021. A major focus was on supporting those affected by the war in Ukraine, donating around €1.5 million to various initiatives organized at global and site levels. In recognition of our efforts, Solvay was named one of the winners of the 2022 European Chemistry Industry Council (Cefic) European Responsible Care Awards in the category of Humanitarian Aid.

Three important financial initiatives in 2022

— In line with our vision to create sustainable shared value for all, and reflecting our human-centered Care and Dare approach to leadership, we introduced three key financial initiatives for employees in 2022, as well as increasing our Global Performance Sharing Plan budget.

Helping employees cope with high inflation
— Solvay was one of the first companies to provide support for employees significantly impacted by inflation. In July 2022, we announced that €9.5 million would be distributed among the Solvay employees proportionally most affected, who are located in high-inflation countries that are not protected by national schemes.

Advancing on our pay equity journey
— We have now set out concrete actions to move forward with our pay equity journey, ensuring that we do this in a gender-neutral way. We conduct off-cycle reviews throughout the year to close gaps that are the result of regular business decisions such as promotions, transfers or new hires, looking both outward, using comparative ratios as an external benchmark, and inward, using an internal equity check. As of 2021, our Annual Integrated Report provides full clarity on salary ratios for managerial positions in the Group.

Sharing growth through our employee share plan
— We launched our first employee share plan in 2022, achieving an impressive participation rate of 27.73%, which is ahead of the benchmark for similar initiatives. The plan was open to all employees in the 22 countries in which local regulations permitted us to offer it. The initiative aims to enhance belonging, improve employee commitment and ensure that our employees are better able to share in our growth and performance.

~28%

of employees are Solvay shareholders

"The fact that so many employees from all around the world have elected to invest personal funds in becoming shareholders in Solvay is a source of pride and a strong signal that an "owner mindset" is taking hold in Solvay."
KARIM HAJJAR,
MEMBER OF EXECUTIVE LEADERSHIP TEAM,
CHIEF FINANCIAL OFFICER

Rewarding everyone's contributions to Group performance
— In 2022, we increased our Global Performance Sharing (GPS) budgets to €15 million, up from €11 million in 2021, with outcomes largely determined by financial and sustainable performance. These schemes apply globally to our "non-cadre" employees – those without managerial responsibilities – and ensure that we further align rewards with performance.

Creating a more inclusive company

76%*

of employees feel they can be themselves at work

77%*

of employees believe that investing in diversity and inclusion drives performance

*Solvay Pulse survey, November 2022

"Diversity is a key driver of performance. It leads to better risk management, customer relations, innovation and more."
NATHALIE VAN YPERSELE,
CHIEF DIVERSITY, EQUITY AND INCLUSION OFFICER.

Having established our vision and baseline for diversity, equity and inclusion (DEI) in 2021, in 2022 we put in motion the major cultural change that will make this ambitious vision a reality. We put DEI on the agenda of leadership meetings and made it the focus of our annual Citizen Day event. And we are now starting to see results, especially in the area of non-inclusive behaviors, which was our first priority. Our 2022 Pulse inclusion survey showed an 18% decrease in reports of non-inclusive behaviors, in comparison to the results of our 2021 survey, and a similar increase in the number of people reporting that they would speak up if they witnessed these behaviors.

We believe that equity and inclusion are the building blocks for diversity: being an inclusive company will enable us to keep and attract the diverse talents we need to ensure continued success. "At Solvay, we often use the expression "bring your whole self to work," meaning that we value our employees no matter who they are, both for their visible diversity as well as their diversity of thoughts, experiences and backgrounds," explains Hervé Tiberghien, Chief People Officer (CPO). "We want to help our employees feel empowered about having diverse backgrounds, which will allow them to feel more comfortable in speaking up and putting forward their opinions."

Our Care and Dare culture encourages leaders to include their teams in projects, reflections or decisions. These experiences help our employees grow and contribute to providing them with the skills needed to ensure more equal career opportunities. This is reflected in our Solvay One Dignity DEI program, which sets out nine objectives with associated action plans to be achieved by 2025.

Solvay One Dignity program: main achievements in 2022

- DEI policy updated and promoted
- Quarterly measurement of the diversity of our teams in terms of gender, age and nationality, using our new Homogeneity Index
- Publication of first gender pay gap report and launch of first Group-wide pay equity correction exercise
- Design of an "Inclusive Leadership workshop" and certification of 38 internal facilitators
- 300 participants in the A Effect program for women leaders in 2022
- First virtual Employee Resource Group (ERG) convention in June with 300 participants
- Nine active ERGs, after the launch of the Disability Inclusion and Voice of Asia ERGs in 2022
- Partnership agreements signed with two organizations: Out and Equal and Disability:IN
- Second Solvay-wide inclusion survey also addressed well-being questions

▸ READ MORE STORY PAGE 24

Inclusive leadership and mindset

— In 2022, we focused on initiatives aimed at fostering a long-term change in culture and mindset that will carry over into the two future companies we plan to create.

- We created a new Senior Leadership Community (SLC), designed to ensure that senior management reflects diverse cultures, skills, ages and experiences. The SLC is made up of 50 leaders and nearly half of them are women.
- We set up inclusive leadership workshops, with a plan to reach 500 leaders by mid 2023, and we developed training and mentoring programs to help embed DEI into our culture. Since 2021, 450 Solvay women, which represents 20% of our female junior manager population, have taken part in the 100-day A Effect program, designed to help women boost their careers by focusing on three key pillars: confidence; risk-taking; and influence. We have also recruited more than 50 Solvay executives to act as mentors.
- We supported the launch and expansion of a number of new Employee Resource Groups and established partnerships with external DEI organizations.
- We made Solvay a more inclusive working environment for people with disabilities. This involved participating in the Disability:IN Global Index to determine what steps we needed to take. We also launched a global ERG, known as ADAPT, to provide resources and support for employees with disabilities and care-givers, which is sponsored by our Chief People Officer, Hervé Tiberghien. In addition, we focused on accessibility, making digital accessibility a part of the selection criteria for our new service desk provider and carrying out an accessibility diagnosis at our headquarters so that we can make a plan for improvements. A training course on inclusive hiring was introduced for recruiters and hiring managers and, as we are now an official partner of Disability:IN, we have the opportunity to measure our progress on a yearly basis.

A DEI pledge signed by Solvay's Senior Leadership Team

By creating two new companies through our Power of 2 project, we have a unique opportunity to ensure that our commitment to DEI is firmly embedded in their foundations. Solvay's Senior Leadership Team (SLT), including our CEO, have therefore all signed a DEI pledge with three concrete commitments to Solvay colleagues:

- Not to tolerate any behaviors that contradict the values of respect, openness, care and trust
- To personally engage in conversations with employees from under-represented groups, starting with taking part in two ERG-led events to expand understanding of issues that may not directly affect them
- To reserve time, as we do for safety topics, to discuss DEI within their leadership team and during their entity meetings

Our commitment to developing a more inclusive company is illustrated by our annual Citizen Day event, which brought DEI to more than 100 Solvay sites.

A responsible employer, enhancing social dialogue

We believe that good social dialogue drives commitment and, consequently, business success. We have a clear rule: employees' representatives at Solvay are informed about strategic decisions and encouraged to give feedback, because we believe that understanding the Group's intentions helps to instill trust and increases motivation. This allows us to ensure a high level of transparency, maturity and trust between senior management and social representatives.

In 2022, we renewed our Solvay Global Forum* and Global Framework agreements with IndustriALL, the global union for the chemical industry. The agreements confirm Solvay's existing commitments in the areas of health – both mental and physical – and safety at work, the fight against discrimination, the promotion of diversity and respect for the environment, as well as respect for all international standards, such as those provided by the United Nations and the International Labor Organization.

We talk to... **Marco Roumen**

COORDINATOR OF THE SOLVAY GLOBAL FORUM

Solvay claims to be a responsible employer. What do you think about this?

Marco Roumen — Solvay is a very responsible employer. In fact, outside of Europe, where social policies are less developed, Solvay is seen as being distinctive because it proactively supports employees in ways that other companies are often slow to do. The special bonus offered to many employees in 2022 to help them deal with the high cost of living is a good example of this, as is the Group's global parental leave policy, which the Solvay Global Forum worked closely with Solvay management to achieve.

What would you say about Solvay to prospective employees?

M.R. — I would emphasize two points in particular. First, there is a lot of trust and transparency between the company and its employees. For example, employees are informed about strategic decisions and encouraged to give feedback, which increases trust and motivation. Second, Solvay really takes care of its employees. The social package offered through Solvay Cares and initiatives like the global agreement with IndustriALL Global Union really differentiate the Group from the rest of the industry, as does the Solvay Solidarity Fund, which was created during the Covid crisis to help Solvay employees, their families and the communities they live in when they need it most.

How could Solvay become an even more attractive employer?

M.R. — Solvay is always looking for areas to improve. Even now, with the Power of 2 project at the top of the agenda, we continue to make progress on a number of initiatives. One big challenge moving forward will be ensuring that all of our social policies are transferred to the two new companies. We hope to achieve this by continuing the constructive dialogue we have had with Solvay management since the start of the Po2 project. In the social area, we believe that everyone in Solvay should work on the continuous improvement of social dialogue in all the regions where the Group is active in the world. In addition, following the success of the Solvay Shares program, it would make sense for employees to be represented on Solvay's Board.

*Solvay Global Forum is an important platform for dialogue between top management and employee representatives. It is composed of nine representatives from the Group's main countries.

Solvay and P&G join forces to double the global supply of sustainable guar

Solvay is a world leader in guar-based business and acts as a change agent in this field through the Sustainable Guar Initiative (SGI). The SGI helps to make guar cultivation in Rajasthan, India, more sustainable, while empowering women farmers through training in hygiene, health and nutrition. We set it up in collaboration with NGO Technoserve and our customer L'Oreal, with another customer, Henkel, joining the initiative shortly after. And in 2022, we welcomed P&G Beauty to the initiative.

A natural and renewable resource, guar helps us respond to the growing demand for natural and sustainable products, and is used in our Jaguar® hair and body care formulations. As one of the market leaders in the beauty category, P&G Beauty will help us accelerate the sustainable growth of guar at scale, empower more women farmers and further improve the livelihoods of smallholder guar bean farmers in India by almost doubling the SGI's reach.

The partnership will expand the total reach of the SGI program to slightly more than 11,000 farmers, including 1,800 women, helping equip guar farmers, and especially women, with the tools and knowledge about good agricultural practices that will increase yield production and crop productivity, improve financial stability, and promote better living and working conditions. In addition, we will be able to double the number of women trained in hygienic household practices and the building of kitchen gardens to almost 900, facilitating better nutrition, hygiene and food security in their communities.

▸ READ MORE PAGE 69

Phasing out the use of fluorinated surfactants across our product lines

Wherever possible, Solvay's goal is to use non-fluorosurfactant technologies in our polymer manufacturing. Our journey to voluntarily phase out the use of fluorosurfactants from the PFAS family of chemicals globally is ongoing thanks to our investment in new technological innovations that advance our sustainability ambitions.

Since 2019, we have quadrupled our investment in research and innovation to develop new, breakthrough non-fluorosurfactant technologies that meet the performance needs of our customers in a more sustainable way. As a result, in July 2021, we were able to completely eliminate the use of fluorinated surfactants at our West Deptford, New Jersey facility in the US, transitioning our customers to more sustainable fluorinated polymers.

In 2022, we took another step forward: we announced that by 2026 we will manufacture nearly 100% of our fluoropolymers without fluorosurfactants, leading the industry in expanding our proprietary non-fluorosurfactant technology across our product lines. The fluorosurfactants have been used as process aids and Solvay did not sell these commercially in the market. One small product line at our Spinetta Marengo site in Italy – critical for the semiconductor and energy industries and representing less than 1% of production volume – will require further research and development to completely phase out the use of fluorosurfactants. While we continue our research, a tightly controlled, closed-loop and zero-liquid discharge production process will be used for this production line.

Fluoropolymers are needed to make materials that are critical for a sustainable society such as renewable energy installations, lithium-ion batteries and medical device components. Solvay's new polymerization process doesn't require the use of fluorosurfactants, yet it still provides the unique properties of fluorinated polymers that our customers need to make their products.

While we work to phase out fluorosurfactants from our processes, we also continue to introduce state-of-the-art technologies to eliminate remaining fluorosurfactant emissions from our plants. We recently announced that we will invest €40 million euros in new technology at our Spinetta Marengo site. This will be used to improve water treatment systems, ensuring that fluorosurfactant emissions are eliminated at a level known as "technical zero".

BUSINESS ENVIRONMENT

Business environment

Global business trends driving our markets

The unsustainable rate at which we are currently consuming products poses a threat to our planet. Chemistry is a core component of everyday products and solutions, but it is also the key to recycling what we use, saving natural resources, fighting climate change and improving quality of life. Reflecting the powerful business trends driving growth in our end markets, Solvay's wide and diversified portfolio of products are designed to help address the global challenges we face and secure access to natural resources for generations to come.

A challenging global economy

At the start of 2023, the economic outlook appears to be turning toward more positive expectations, with a stabilization of energy prices and continued easing of supply chain pressures. Inflationary pressures appear to have peaked, though the pace at which they may fall remains uncertain and prices in the short term are expected to remain high. Consumer and business confidence is improving from historically low levels, and macroeconomic forecasts from various institutions, including the International Monetary Fund, indicate that the prospects of a global recession are receding.

Our businesses are aligned with seven global market trends

Electrification

Climate neutrality is a greater priority than ever and electrification is essential to achieving it. Many of the green stimulus packages introduced by governments worldwide focus on the automotive industry's transition to electric and hybrid vehicles, with China, the EU, and California and other US states all having announced targets for 2035. In addition, major original equipment manufacturers (OEMs), such as GM, Ford, VW and Mercedes, all plan to shift to electric fleets by 2030.

These fundamental changes in the regulatory environment, massive investments in capacity and infrastructure, and a buoyant consumer electronics market have helped spur demand for batteries, as well as a strong push for a green hydrogen (green H_2) economy.

Challenges for customers

- **Security of supply:** The availability of raw materials such as lithium and rare earths as the need for electric vehicle (EV) battery materials grows dramatically
- **Infrastructure:** The need for increased electrical grid capacity and for vehicles to be able to plug into and receive power from the system
- **Recyclability:** Conventional recycling processes come with high costs and a high CO_2 footprint, while critical metals are not always recovered from EV batteries at their maximum value and lower-grade metal mixes are not always suitable for new battery production.
- **Innovation for the next generation of batteries:** The need for cost-effective solutions for creating fast-charging and safe batteries with increased drive range.

Opportunities for Solvay

The transition to EVs will double the addressable market for Solvay, replacing or adding to our current Internal Combustion Engine (ICE) business.

- We have an unrivaled leadership position in EV batteries:
  - We are a leader in PVDF suspension solutions, which help meet higher performance requirements in batteries.
  - We are the European front-runner for the development of solid-state battery technology, which will improve battery safety and energy density.
- We are partners with all of the major industry players and we continuously innovate in collaboration with our key customers.
- With plants in each major region, we can support customers globally and locally.
- We provide materials for eMotors and eDrive components, power electronics, and electrical and electronics systems.
- Our chemical refining process optimizes the extraction and purification of critical metals, such as cobalt, nickel, and lithium, and transforms them into high-purity raw materials for new batteries.

We are developing green hydrogen solutions, a key lever for the decarbonization of hard-to-abate sectors such as heavy-duty transportation and other emissions-intensive industries.

- Our innovation focuses on enhancements to system durability, efficiency and total cost of ownership to help our customers improve the viability and scalability of green hydrogen technology.
- Used within electrolyzers, fuel cells and other facets of hydrogen systems, Solvay's products and solutions support today's leading hydrogen technology platforms.

Our offer includes ionomers, Aquivion®, and other high-performance materials such as Udel® PSU, which can be used in areas ranging from the core, to the stack and the plant. —

€25bn
Total addressable market

~50%
Amount of electric or hybrid vehicles in global production by 2030[1]

>20%
Compound Annual Growth Rate (CAGR) in batteries between 2018 and 2030[2]

> €400bn
OEM investment in EVs over the next 10 years[3]

SOURCES: **1.** LMC Automotive. **2.** World Material Forum, Global Battery Alliance. **3.** OEM / company public disclosures.

▸ READ MORE: BATTERY MATERIALS PAGE 30 AND GREEN HYDROGEN, PAGE 32

LIGHTWEIGHTING

Lightweighting

The global drive to reduce CO_2 emissions and use natural resources efficiently makes lightweighting critical. For example, reducing the weight of a vehicle by 10% can result in 6% to 8% better fuel economy. Replacing metal with plastic alternatives lowers weightand provides other benefits, such as design flexibility, improved safety, enhanced durability and lower maintenance costs, depending on the application. Novel machining capabilities, such as additive manufacturing, have made a wide variety of customized and modular products possible, while the rise of electric vehicles presents new opportunities for the use of these adapted materials.

Challenges for customers

In addition to being lightweight, materials also need to:
- Be sustainable and recyclable
- Exhibit high mechanical properties
- Enable fast production cycles
- Enable easy part integration

Opportunities for Solvay

OEMs are looking for solutions to help them adapt to the EV market and respond to demand for lightweight parts in a variety of other markets. Solvay is in a strong position to provide them with the lightweighting solutions they need.
- Our high-performance polymers are used to improve automotive and aerospace engine efficiency, and for lightweighting.
- We offer world-leading solutions for the aerospace industry, including thermoset composites that provide unique benefits for aerodynamics, design, part integration and corrosion resistance.
- Our lightweight, chemical- and corrosion-resistant composites and polymers can be used to replace metal in the energy industry. Our high-performance pipe systems, for example, are quicker and cheaper to install, and have a lower total expenditure cost and carbon footprint.
- Our high-performance thermoplastic composites (TPCs), which are durable, chemical and corrosion-resistant, lightweight and recyclable materials, with the high build rates necessary for mass production, provides us with a unique position in the market. They combine our broad specialty polymers portfolio with our in-depth expertise in composite material technologies, providing solutions in demanding aerospace, automotive, advanced air mobility and energy transition applications. —

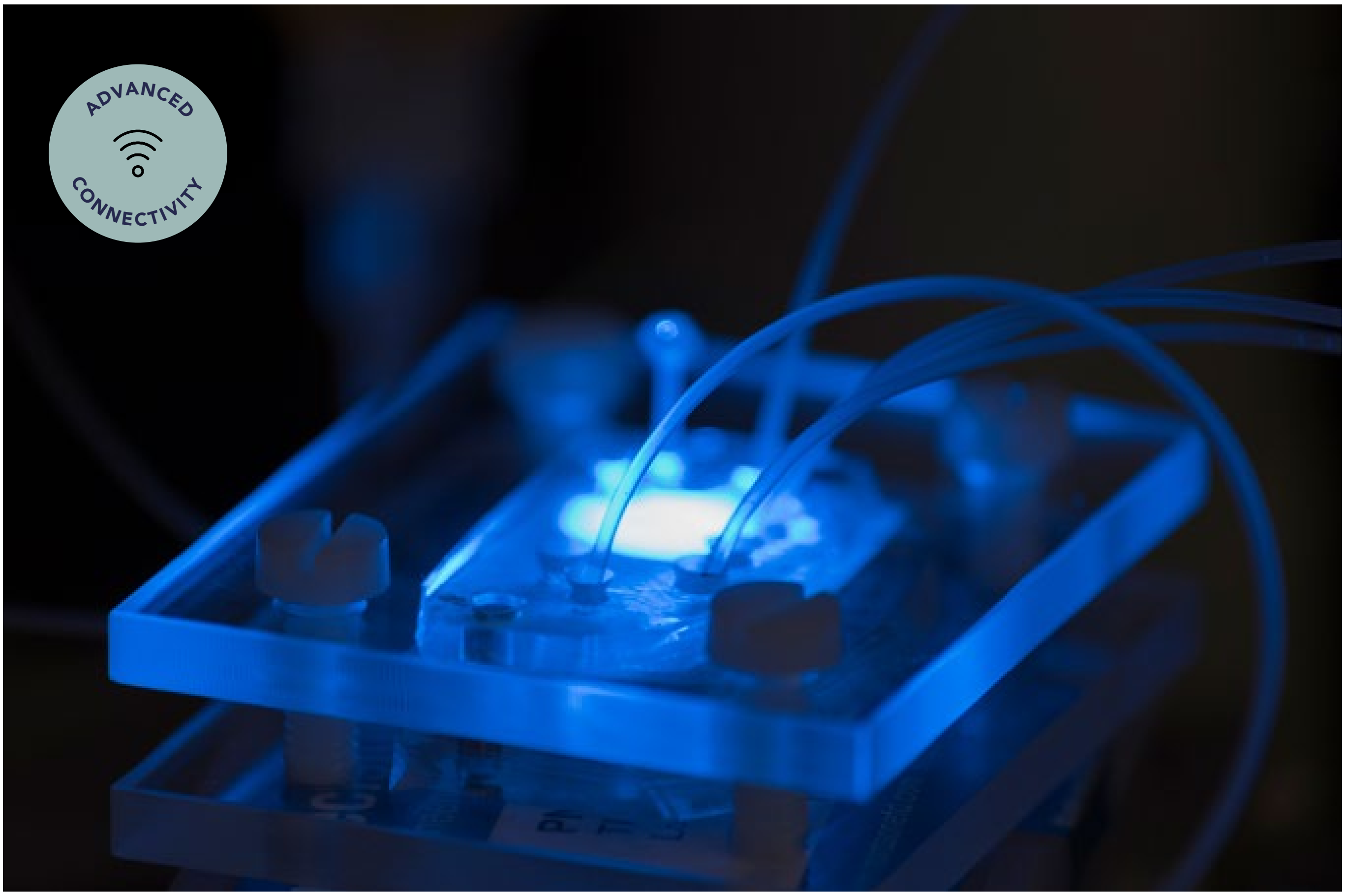
>€10bn
Total addressable market

- 7.6g/km
Carbon emissions for every 100kg weight reduction[1]

+7.3%
CAGR in lightweight automotive materials by 2025[2]

SOURCES: **1/2.** International Organization of Motor Vehicle Manufacturers.

▸ READ MORE: THERMOPLASTIC COMPOSITES PLATFORM, PAGE 32



Advanced connectivity

Digital technologies are generating disruptive new business models. The growing demand for hyper-connectivity, the rapid development of 5G and the exponential growth of data are key market drivers. This is resulting in miniaturization, the development of the Internet of Things (IoT) and a need for components that consume less energy. New opportunities are created by 5G, which relies on high-performance polymers with specific magnetic and electrical requirements.

Challenges for customers

As technology and 5G networks continue their rapid expansion, there is a need for:

- Semiconductor miniaturization
- Faster connectivity speeds
- Higher frequencies and low-loss signals
- Coatings for sensing and monitoring systems

Opportunities for Solvay

- Our advanced materials for applications meet the growing demand for hyper-connectivity, including miniaturization technologies.
- Our semiconductor industry consumables offer solutions based on high-purity chemicals and can be used in high temperatures, and with chemical-resistant materials.
- The high chemical and temperature resistance of our advanced materials will prove increasingly beneficial as we transition to the even harsher production environments required for miniaturization.
- Our high-performance polymers are used in new-generation OLED and flexible displays.

>€50bn	+14%	+9%	>12%	+24%
Total addressable market	smartphone unit shipment forecast[1]	CAGR in semiconductors by 2023[2]	CAGR in IoT devices from 2020-2030[3]	CAGR in the extended reality optics industry by 2032[4]

SOURCES: **1.** VLSI (TechInsights) IC, October 2021. **2.** VLSI Forecast November 2021. **3.** OMDIA, October 2021. **4.** IDTechX.

Resource efficiency

Air, soil and water pollution, the growing pressure on biodiversity and the ever-increasing importance of reducing CO_2 emissions are driving the urgent search for new resource-efficient solutions. This has inspired increased industrial innovation, which has enabled more efficient use of resources through modular design and manufacturing methods that incorporate the principles of recycling and the circular economy.

Challenges for customers

- The shift toward a net zero economy, which requires a more virtuous approach to chemistry
- The pressure to do more with less
- The need to work toward creating a circular economy.

This includes lightweighting to ensure energy savings and reducing dependence on raw materials

Opportunities for Solvay

Solvay offers leading technologies to many of the markets where resource efficiency is a key driver.

- We ensure our customers are able to optimize their operations through the digitization of mines. Our unique methodology makes it easier for them to increase mineral recovery in general, and we offer a broad range of solvent extractants for the purification and concentration of metals.
- Rare earths are essential for the green energy transition. Our investments in the magnet value chain will help Europe develop more autonomous and sustainable solutions for electric mobility, clean energy generation and sensitive electronics applications.
- Our soda ash is used to develop eco-efficient glass for triple-glazed windows.
- Our formulations for eco-friendly production processes are used in water and soil management.
- Our silica for sustainable tires forms part of the TECHSYN platform created with Bridgestone and Arlanxeo, which produces tires with unrivaled strength and environmental performance, reducing raw material consumption.
- Our polymers are used to manufacture food packaging that can be safely reused and recycled, and are used in filter bags and membranes to treat gases emitted by multiple industries. —

>€50bn	x6	x5	50%	+4%
Total addressable market	Lithium supply by 2030[1]	Copper demand for batteries from 2021 to 2030[2]	Consumers ready to pay more for a product designed to be reused or recycled[3]	Growth in water treatment by 2024[4]

SOURCES: **1.** World Material Forum, Global Battery Alliance. **2.** Bloomberg NEF. **3.** Accenture 2019. **4.** Solvay internal research.

Naturalness, sustainable resources and sustainability

Consumer behaviors are shifting toward a concern for wellness, including better quality of life, healthier work-life integration and higher quality food. These new priorities drive consumer behavior, with many people demonstrating a preference for organic and natural products – a trend that will only strengthen as consumers become more health conscious and aware of the impact products may have on the environment. Reflecting customer demands, chemical companies are increasingly investing in the biospace, with potential changes in the value chain for the consumer space. Solvay's fourth growth platform is designed to enable the adoption of renewable carbon, biotechnology and biodegradable solutions to speed up the transition toward a more sustainable and circular portfolio. Our customers embrace and accelerate trends related to naturalness, sustainability, carbon neutrality and sustainable sourcing.

Challenges for customers

- Increased pressure on businesses to produce more eco-friendly products
- Higher costs compared to using fossil-based technologies
- Increasingly strict international and local emissions regulations faced by industries around the globe

Opportunities for Solvay

- We are a market leader in a number of bio-based ingredients:
  – We are a top producer of natural vanillin, bio-sourced from rice bran, and will enhance our capabilities to develop natural ingredients for the food, flavors and fragrance markets over the coming years.
  – We are the world leader in the chemical modification of guar, which is used in the agro and nutrition, and home and personal care markets.
  – We produce bio-sourced solvents, such as Augeo®, based on glycerin and developed for cleaning products and fragrances.
- Our waterborne coating solutions address the challenges of adhesion to difficult substrates and overall durability while complying with ever-stricter regulations, and we are developing new coating monomers with increased durability and sustainability.
- Our polyphthalamide (PPA), which is used for demanding electrical and electronic applications in e-mobility, is made from non-food competing bio-based sources, reducing environmental impact without compromising on material performance.
- Our Solvair® range, made from soda ash, cleans the gases emitted by multiple industries, such as energy-from-waste operators, industrial boilers, maritime transport and energy from biomass installations. —

>€10bn
Total addressable market

>10%
CAGR in natural vanillin by 2024[1]

+5.7%
CAGR in waterborne coatings by 2025[1]

+3.1%
CAGR in organic shampoos through 2025[1]

$19.5bn
Market for agricultural biologicals by 2031[2]

SOURCES: **1.** Solvay internal research. **2.** IDTechX.

Evolving demographics

The world's population reached 8 billion people in November 2022 and, even though population growth is expected to slow slightly, it is projected to reach 9 billion in 2037*. This unprecedented growth is due to the gradual increase in the human lifespan resulting from improvements in public health, nutrition, personal hygiene and medicine, as well as high and persistent levels of fertility in some countries. Managing this growing and aging population requires constant improvements in healthcare and hygiene, as well as solutions to ensure adequate food and water supplies today and in the future.

Challenges for customers

→ Feeding the world's growing population
→ Improving health and wellbeing for a growing and aging population and an expanding middle class:
  – ensuring access to healthcare, and managing increased incidences of diabetes and cardiovascular diseases
  – answering the growing need for more biocompatible and high-performance materials that can withstand the aggressive disinfectants and chemicals used to prevent hospital-acquired infections
  – meeting the need for high-performing cleaning disinfectants that kill microbes upon application without negatively impacting the cleaning experience
→ Securing global water supply, despite human activity and climate change, by increasing access to clean and drinkable water

Opportunities for Solvay

→ Our products and solutions improve the productivity of the agricultural sector – from crop protection to plant nutrition and grain and seed care – and encourage more sustainable agricultural practices. We also support digitization and the development of equipment in the industry that will contribute to establishing Agriculture 4.0.
→ Solvay products can be found in integral parts of the most advanced wearable devices, which are worn by people to monitor and promote health and well-being. This includes our smartphone polymers.
→ We are the market leader for high-performance polymer technologies and our products can be used in a range of applications:
  – our revolutionary, high-performance and biocompatible polymers used for hemodialysis membranes
  – our biomaterials suitable for prolonged or permanent exposure to bodily fluids and tissues, enhancing the functional performance of implantable devices
  – our innovative Actizone™ technology provides for reliable, long-lasting disinfection and other desirable cleaning properties
→ Our materials, chemicals and solutions products are used across the value chain to treat industrial, municipal, drinking, ground and fresh water. —

9bn
World population at the end of 2037

$19.5bn
Market for agricultural biologicals by 2031[1]
***$7.5bn** for biostimulants*
***$1.2 million** for biopesticides*

+6%
Patients needing kidney replacement therapy per year
***14.5 million** by 2030[2]*

SOURCES: ***United Nations report. **1.** IDTechX. **2.** Fresenius 2030 vision.

Renewable energy

Renewables, including solar, wind, hydro and biofuel, are essential for transitioning to a less carbon-intensive and more sustainable energy system. The increased investment in this area reflects an acceleration in demand for clean energy supplies to tackle the ongoing global energy and climate crises.

Challenges for customers

- Energy generation and energy storage sectors need to be more energy-efficient and environmentally friendly.
- Industrial production processes need to be cleaner.

Opportunities for Solvay

- We manufacture highly resistant films, such as Halar® ECTFE, that provide excellent UV protection for photovoltaic panels without compromising on solar energy capture. We also have a number of research and innovation projects underway that will allow future generations of batteries to offer better performance, durability and safety.
- Our PFSA and Aquivion® materials can be used in redox flow batteries, which store energy. We recently opened a new pilot research unit in La Rochelle, France, which will enable us to scale up development of advanced inorganic materials for solid electrolytes – a key component for the next generation of automotive batteries.
- Our products are used for structural and electrical parts in wind generation, including seals, cables and epoxy compounds for wind turbine blades. —

$226bn
Global investment in renewable energy in the first half of 2022[1]

64%
Average share of wind and solar energy in overall electricity supply in 2050[2]

SOURCES: **1/2.** BNEF.

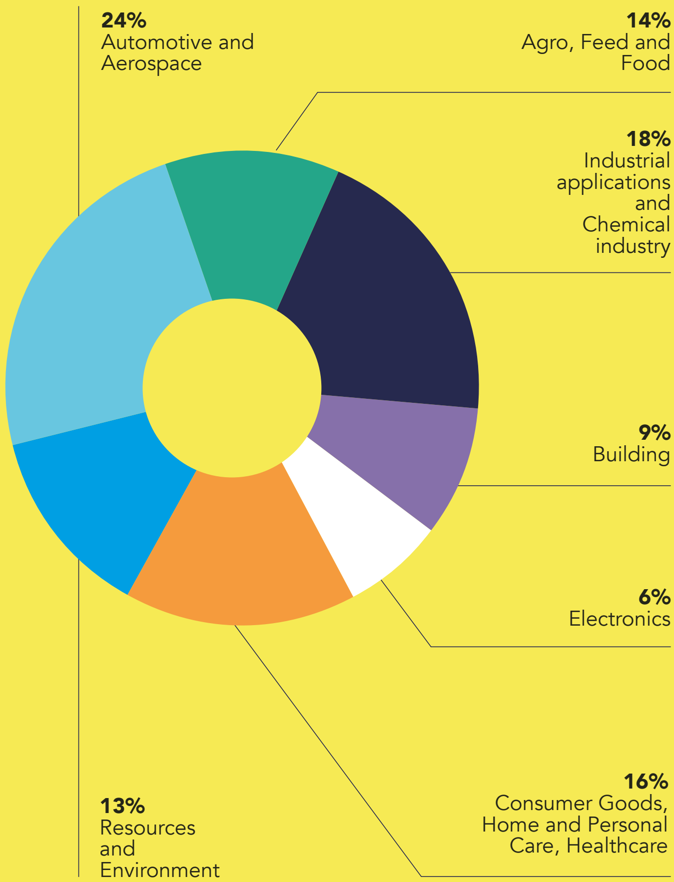
Our solutions serving fast-growing markets

Solvay's businesses are closely aligned with the global trends driving growth in our end markets. Our G.R.O.W. strategy ensures that we focus our resources on key markets impacted by these trends, such as automotive and aerospace, home and personal care, healthcare, electronics, agro and food. Through our broad portfolio of technologies and products, our expertise and our close relationships with customers, we have been able to build a top three position in about 90% of our markets.

We continued to transition to a more sustainable product offering in 2022: 55% of the Group's portfolio is now positioned as Sustainable Solutions, with sales generated in markets relating to strong sustainability trends, like electrification and lightweighting, advanced connectivity, resource efficiency, sustainability and naturalness. We focus innovation on areas where our technologies can help the industry progress and meet major challenges. This includes clean technology, which is at the core of our Battery Materials, Thermoplastic Composites and Green Hydrogen growth platforms.

In 2022, 9% of Group sales were generated by products based on circular raw materials or energy, and the launch of our new Renewable Materials and Biotechnology growth platform will help us accelerate and embed circularity into our businesses.

So far, 13 of our solutions have been awarded the Efficient Solutions label by the Solar Impulse Foundation's World Alliance for Efficient Solutions, in recognition of their role in protecting people and the environment in a profitable way.



% of Group sales

Automotive and Aerospace

24%
of Group sales

Customer demand for sustainability and stringent regulations on CO_2 and particulate emissions are driving the development of cleaner mobility systems in the automotive and aerospace industries. This requires solutions that facilitate lightweighting and greater fuel efficiency, as well as the shift to hybrid and electric vehicles. Solvay provides electrification solutions and materials to reduce vehicle weight, which enable our customers to reduce emissions and improve performance.

Automotive

Lighter, more performing electric power
— We help the automotive industry decrease emissions, enabling original equipment manufacturers (OEMs) to make vehicles lighter, safer and more efficient by replacing metal with high-performing polymers. Our advanced specialty polymers for e-motors are characterized by their ability to retain desirable mechanical, thermal and chemical properties when subjected to harsh environments, such as high pressure, high temperatures and corrosive chemicals, while improving energy density and system integration. They include **Amodel® Bios PPA,** a high-performance, bio-based polymer made from non-food competing biomass, using 100% renewable electricity, and **KetaSpire® PEEK,** one of our highest-performing thermoplastics, which offers a combination of fatigue and chemical resistance and can be used in temperatures up to 240°C.

Safer electric vehicle charging stations
— EV charging stations supply electrical power for plug-in electric vehicles and present major efficiency, durability and reliability concerns. With our portfolio of high-performance technologies that enable critical properties, such as electrical insulation and thermal dissipation for enhanced user safety, Solvay is leading trends in the EV charger market.

* this product is labeled an Efficient Solution by the Solar Impulse Fondation
** classified as a Substance of Very High Concern (SVHC) by REACH

Ryton® PPS: a unique solution for more fuel-efficient and better performing cars

Ryton® PPS (polyphenylene sulfide) is a high-heat polymer that offers exceptional dimensional stability for precision-molded components. It is used in automotive components required to withstand high temperatures, mechanical stress and corrosive automotive fluids. By replacing metal, it reduces fuel consumption, lowers costs and improves system integration. It is also well-suited to electric vehicle charging station solutions, due to its combination of mechanical and electrical properties at elevated temperatures.

More performing batteries
— Solvay is at the cutting edge of battery innovation. We offer the broadest selection of technologies, materials and ingredients for battery cells, cell structural components and battery enclosures that increase the performance, safety and recyclability of current and future batteries. Our **Solef® PVDF*** is a partially fluorinated polymer with excellent chemical and thermal properties, used for electrode binder materials and separator coating layers to enhance performance, processability and safety. Our innovative, high-purity, conductive lithium salts, **LiTFSI** and **LiFSI,** are market references, offering outstanding electrochemical properties that increase performance and safety, and enable high-voltage solutions. And our **Xencor™** long fiber thermoplastics (LFT) portfolio targets challenging metal replacement and semi-structural applications. (Read more in Battery Materials growth platform, page 30).

More sustainable tires
— Solvay offers the widest performing range of highly dispersible silica (HDS) for sustainable mobility and energy-efficient tires. Our TECHSYN technology won an environmental award at TireTech 2022. Launched in 2021 alongside Bridgestone and Arlanxeo, TECHSYN uses Solvay's unique advanced silica developments, enabling tires to achieve up to 30% better wear efficiency and up to 6% less rolling resistance, without compromising performance. This helps to reduce fuel consumption and CO_2 emissions, and to cut raw material consumption.

In early 2023, we launched a bio-circular silica, made with bio-based sodium silicate derived from rice husk ash. Supported by global tire manufacturers, it will significantly increase the use of sustainable raw materials and reduce the CO_2 footprint in the tire industry.

Alve-One®*: "safe and sustainable by design" chemistry

Our Alve-One® foaming solutions are an innovative generation of high-performance, sustainable and cost-effective chemical blowing agents. They help fulfill the plastic industry's need to move toward a circular economy, while providing the specific properties needed for insulation, strength and lightweighting. Based on sodium bicarbonate, a 100% safe raw material, they offer customers a safe alternative to azodicarbonamide (ADCA)**, ensuring that environments such as car interiors contain negligible quantities of volatile organic compounds (VOC) and contributing to significantly improved vehicle indoor air quality. Alve-One® was awarded the 2022 Pierre Potier Prize in France.

Aerospace

Offering materials for all major parts of the aircraft
— Solvay offers the broadest portfolio in the aerospace market, which encompasses commercial, defense and space. Our portfolio includes composites, adhesives, aircraft film and specialty polymers for fixed-wing aircraft, rotorcraft, aircraft propulsion and systems, space and launch, and advanced air mobility applications. We offer materials for all major parts of the aircraft, from primary and secondary structures to interiors, engines, bonding and coatings. With decades of experience as a trusted aerospace materials supplier and long-standing customer relationships, we support our customers throughout the entire development cycle, from design and certification to product industrialization, helping them save time, money, fuel and emissions.

Advanced materials for lightweight and high-performing aircraft
The aerospace and defense market faces unique sustainability and performance-related demands. This has led to the increased adoption of composites, which now comprise up to 50% of the weight of a plane. Our composite technology offers an attractive value proposition for aircraft manufacturers: it makes planes lighter and more aerodynamic, which increases fuel efficiency by up to 25%, reducing emissions and operation costs. With more than 50 years of progressive partnerships and expertise, Solvay is an industry leader in the development of advanced materials for increasingly lightweight and high-performing narrow-body, wide-body and defense aircraft, developing aerospace composites that are suitable for high build rates, and for some of the most complex and unique challenges in the aerospace industry.

Preparing for the future of air mobility
— The breadth and depth of our technical and innovation expertise means we are well positioned to drive innovation for the future of aviation. Areas we are working on include out-of-autoclave composite manufacturing, bonding technologies, resin infusion, multi-functionality and thermoplastic composites. Our focus is on industrialization and productivity, greener transportation, and new and more demanding applications such as advanced air mobility (AAM).

CYCOM®*: a lightweight, cost-competitive alternative to aluminum

Our CYCOM® range of products offer solutions for the most technically challenging composite applications. This range of prepegs and resin systems are the industry standard for stiffness, impact resistance and thermal performance. Some grades of CYCOM®* also deliver ten and 20 times faster manufacturing rates, enabling a lower total cost of ownership in line with industry expectations for high-volume composite use. This makes it a cost-effective alternative to aluminum.

Consumer goods, Home and Personal Care, Healthcare

16%
of Group sales

Growing consumer demand for sustainable sourcing, natural ingredients, and biodegradable and safer end products is driving consumer markets. In response, we are transforming our portfolio, making it more circular by using bio-based or renewable raw materials, producing products using renewable energy and working on their end of life to make them biodegradable by design. In doing so, we aim to improve consumer quality of life while reducing the impact on climate and resources.

Home care

— Sustainability, high-performance cleaning and competitiveness are important drivers for home care markets. For fragrance markets, the priority is finding bio-renewable, sustainable and safer alternatives to petrochemical solvents, which also provide good solubilization features, stability, adequate volatility and improve how long a fragrance lasts. Solvay's home care solutions cater to these needs. They include our Augeo® line of bio-based solvents. Developed from glycerin, a renewable source, they offer a safer, more sustainable and high-performing alternative to petrochemical solvents for air and surface care. Another example is our recently launched Rhovanil® MB, the first certified mass balance** vanillin on the market, which meets demands for products based on renewable feedstock. Both solutions help customers reduce the carbon footprint of their products.

* Labeled an Efficient Solution by the Solar Impulse Fondation. **The Mass Balance (MB) approach tracks the sustainability of a product through the whole value chain, driving the industry toward adopting critical environmental best practices

Actizone®: 24-hour surface disinfectant technology

Actizone® is an innovative, patented technology that delivers long-lasting surface disinfection. It instantly kills more than 99.9% of microorganisms, including coronaviruses, for up to 24 hours. This long-lasting protection differentiates it from other disinfectants currently on the and helps to dramatically reduce chemical use. This ready-to-use, broad-spectrum disinfectant for hard surfaces is now available for purchase throughout the US.

Dermalcare® LIA MB: a sustainable alternative to non-volatile silicones for hair care**

Dermalcare® LIA MB is a readily biodegradable, 100% plant-based hair moisturizing emollient that can be used as a sustainable alternative to non-volatile silicones in hair care, body and skin care applications. It is COSMOS1 certified and also classified as a microbiome-friendly ingredient, enabling formulators to design silicone-free solutions that guarantee top quality results while respecting the planet.

Personal care

— Formulators aim to develop high-performing products with more natural-based ingredients to comply with stringent global regulations and changing consumer preferences. As the industry leader in natural and naturally derived polymers and specialty surfactants, Solvay's extensive scientific knowledge and formulation and application expertise enables us to support customers with an innovative range of advanced hair and skin care ingredients.

Our personal care portfolio is driven by a focus on sustainability and more than 80% of our hair and skin care products are derived from natural origin, according to ISO 16128. This includes our guar gum-based Jaguar® line, a 98% plant-based range of ingredients that provide conditioning and thickening features for hair and skin care products. An example is our new biodegradable and 100% natural rheological agent Jaguar® NAT SGI, which is made from guar sourced through our Sustainable Guar Initiative (SGI) program. Read more page 54.

We talk to... **Marcus Ringdahl,**
SENIOR VICE PRESIDENT PURCHASING, P&G BEAUTY

"We are proud to partner with Solvay in our continued commitment to Responsible Beauty and to being a positive force for beauty in the world. As an important supplier of ingredients for our beauty care formulations, we partner with Solvay to ensure the highest quality of products for our consumers, and also work together to create a more sustainable future for our planet."

A comprehensive offer for hair health
Solvay's Polycare® range offers formulators active ingredients that address one of the biggest trends in hair care: hair health. This range includes Polycare® Split Therapy, a natural, guar-based ingredient providing the first-ever cure for split ends, Polycare® Frizz Therapy to style and protect, and the recently launched Polycare® Heat Therapy, a natural, guar-based ingredient that protects hair from thermal damage caused by high-temperature hair styling appliances.

Healthcare

— A growing population, advances in treatments and health technologies, increased sterilization capabilities and wider availability of healthcare coverage in developing regions are all market drivers in healthcare. Our high-performance polymers are used in medical devices and equipment, surgical instruments, implantable devices, surgical robots and biopharmaceuticals.

We are a world leader in high-barrier polymers, which are used in pharmaceutical packaging to shield active molecules in medicines from potentially harmful oxygen and moisture, guaranteeing their efficacy and helping save lives. In addition, our Interox® range of high-purity hydrogen peroxide (H2O2) offers the highest possible sterilization quality on the market, and can be used by the pharmaceutical aseptic filling industry or as a disinfectant for medical devices.

A leading provider of biomaterials for implantable devices
— We provide biomaterials for long-term exposure applications, such as implantable devices and orthopedics. Due to an aging population, the use of long-term orthopedic and cardiovascular medical implants is growing more commonplace. Solvay's Solviva® range, which includes our Zeniva® polyetheretherketone (PEEK) polymer, offers a proven alternative to metal for implantable devices. It is also safer, because it is fully biocompatible, and it even offers other advantages, such as more easily legible X-rays.

Polymers to extend the lifetime of medical equipment
— Polymers can replace metal in medical instruments and devices. They also offer significant advantages, such as design flexibility and lightweighting, which can facilitate innovative medical procedures, such as non-invasive surgery. Solvay's Radel® PPSU, a remarkably strong polymer that can be steam sterilized over more than a thousand cycles without any significant loss of properties, is now the top material in this field, replacing stainless steel and aluminum in products ranging from surgical accessories and endoscopic devices to anesthesiology equipment, sterilization cases and trays.

Veradel® PESU and Udel® PSU: solutions for hemodialysis

The need for hemodialysis is rising globally, due both to increasing kidney failure factors, such as obesity, and better access to healthcare, particularly in Asia. Solvay is a world leader in thermoplastics used to manufacture dialysis membranes. Our high-purity, high-performance polymers for hemodialysis membranes, Udel® polysulfone (PSU) and Veradel® polyethersulfone (PESU), were developed in collaboration with equipment manufacturers and have excellent biocompatibility, meaning a reduced risk of adverse effects for patients. Bicar® Pharma, our pharmaceutical grade sodium bicarbonate, is also at the heart of the hemodialysis process. It is used as one of the concentrates in the blood filtration process.

Consumer goods

— Solvay's solutions for household goods are utilized in several cooking and home applications. They represent the consumer market's largest portfolio of high-performance polymers for small and large appliances. Our specialty materials improve performance by providing strong, lightweight alternatives to metals, boosting the design flexibility and aesthetics of widely-demanded home appliances and meeting increasingly stringent compliance requirements and regulations.

Omnix® ReCycle: a recycled-based polyamide for consumer appliances

Omnix® ReCycle is Solvay's first-ever recycled-based high-performance polyamide (HPPA), with 50% glass fiber reinforcement. A real breakthrough in the polyamide market for household appliances, it offers a unique performance and sustainability profile, enabling brand owners and manufacturers to increase the amount of recycled content in their products without compromising stability, stiffness, impact resistance and processability. It can replace metals and lower-performing polyamides, delivering higher durability alongside its sustainability credentials. Its excellent surface appearance can also eliminate the need for painting, adding to its sustainability benefits and facilitating end-of-life recyclability in the increasingly circular plastics economy.

Agro, Feed and Food

14%

of Group sales

Agro

The record dry and adverse weather conditions experienced in 2022 are becoming increasingly common, affecting crop yields worldwide. At the same time, there is pressure to ensure greater yields and better resource management to feed a growing global population, while adapting to increasingly strict regulations and changing consumer preferences for residue-free and better quality food. Solvay's products and technologies enable all segments of the agricultural industry to improve yield with more sustainable agricultural practices, from seed care to crop protection. These include formulation aids for agrochemicals and biologicals, green solvents, on-target drift control adjuvants and seed care technologies.

A market leader in green solvents

— Our **Rhodiasolv® IRIS** is a biodegradable solvent with reduced environmental impact. It is an efficient and safe solution used in many applications, such as the formulation of phytosanitary products and agrochemistry. This low VOC and non-CMR (carcinogenic, mutagenic and reprotoxic) product offers a better performance compared to conventional petrochemical solvents. In addition, it gives a second life to chemical waste, contributing to our ambition of ramping up our circular portfolio.

Covering seeds today and tomorrow

— Solvay is now in a much stronger position to offer its innovative technologies to the seed industry through the successful integration of the seed coating business acquired in 2021, which placed us among the world's top three players in this market. Our **Peridiam®** coatings offer solutions tailored to different crops, climates, growing conditions and market needs. It is specifically designed to improve the adhesion of seed treatments, provide better seed coverage and ensure all active compounds stay on the seed, leading to enhanced crop yield. Our new-generation seeds solutions include multifunctional products combining Peridiam® coatings with biostimulants, and the recently launched microplastic-free seed coatings for all major row crops.

AgRHO® S-Boost™: our bio-based seed booster to fight worsening droughts

Incorporating biostimulants in seed coatings helps them germinate faster and stronger, thus stimulating the healthy development of plants and increasing crop yields. Our AgRHO® S-Boost™* biostimulant is made from guar beans – a 100% natural and renewable raw material. It is unique in being able to shape soil properties around the seed to favor water and nutrient uptake, it enhances germination and strengthens root development, helping crops to cope with increasingly dry conditions, and it exhibits a notable improvement in crop yield.

Accelerating the use of biologicals for crop protection — In response to pest resistance issues, regulation and the urgent need to become more sustainable, the agricultural world is adding a new generation of crop protection products based on biologicals to their toolbox. These biocontrol products use naturally-occurring active ingredients, such as microorganisms and plant extracts, which complement conventional crop protection solutions. As the industry leader in the development of co-formulants for plant protection products for over 40 years, we are now reapplying our expertise to designing innovative solutions that address the specific application challenges of biopesticides. The result was the launch in 2022 of AgRHEA™, a new product line specifically designed for biological crop protection formulations.

Food

Strict regulations are in place to ensure global food security for a growing population. Consumers are also demanding healthier, more natural and bio-based food products. Solvay provides the food and beverage industry with flavors, aromas and ingredients to answer these challenges. We are a market reference for vanillin and natural vanillin solutions, as well as for sodium bicarbonate in the food industry.

Offering packaging solutions that extend food shelf life — Minimizing food waste by extending shelf life and improving packaging barrier technology is vital. Solvay offers solutions for packaging, cleaning-in-place and food contact sanitizing. For instance, our High Barrier Polymers, which combine water vapor, an oxygen barrier and good heat-sealing properties, provide a safe, reliable and convenient packaging solution, and our powerful antioxidants significantly extend the shelf life of baked foods, fats, and oils.

* Labeled an Efficient Solution by the Solar Impulse Foundation

Rhovanil® Natural: the market reference for natural vanillin solutions

Vanillin is the most popular food flavoring in the world. However, the vanilla bean's supply is subject to variable availability, price and quality. Solvay's Rhovanil® Natural is a natural vanillin alternative, obtained through the bioconversion of ferulic acid, found in non-GMO rice bran oil. The Rhovanil® Natural range allows manufacturers to provide the natural flavor that consumers are looking for with transparent and reassuring labeling. Our recent investment in Suanfarma will enable us to enhance our position in the natural vanillin value chain and develop our biotechnology capabilities.

Resources and Environment

13%

of Group sales

Solvay's tailored materials and chemical formulations enable the recovery, purification and reuse of natural resources, including the air we breathe, the water we use, and the metals and minerals on which society depends. With our products, industry can meet ever more challenging regulations while improving quality of life across the world.

Water and air treatment

— Our solutions to support air and water treatment address challenging regulatory requirements and growing concerns over the availability of clean water. For example, our researchers have developed Udel® PSU to purify water through various treatment processes. This high performance polymer can be used to manufacture reverse osmosis water treatment membranes, for instance, which are essential to removing contaminants and making fresh water out of seawater through desalination.

SOLVAir®*: for a cleaner and safer environment

SOLVAir® provides simple, innovative and efficient flue gas cleaning solutions. This sodium-based sorbent efficiently removes acid gases, such as HCl, SOx and HF, from exhausts in a range of sectors, including energy from waste, industrial, industrial and energy production. SOLVAir® can remove up to around 99% of SOx, HF and HCl emissions and we also offer SOLVAir® Marine*, a sodium-based exhaust gas treatment process for ships using heavy fuel oil. —

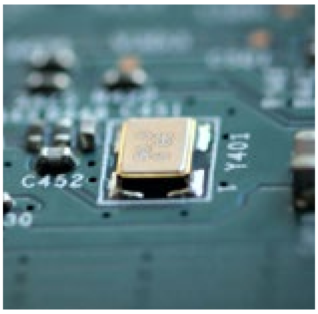
Mining: a more efficient use of scarce resources

— Solvay's specialty mining reagents help our mining customers improve metal yield while reducing water and energy consumption compared to traditional recovery methods. They meet the most stringent safety and environmental requirements while reducing operating costs in the recovery of many metals and minerals. We have also been introducing digital solutions for mining; by connecting to customer plant data, Solvay can make more informed and quicker process improvement recommendations and provide near-real-time reagent formulation services. This results in tailored formulations, better dosing and, ultimately, better metal recovery, all while reducing water and energy inputs for improved mining productivity.

SmartFloat™: our new digital solution for the mining industry

In 2022, we launched SmartFloat™, a first-of-its-kind digital system based on artificial intelligence (AI), which enables more efficient and sustainable base metal flotation. SmartFloat™ is the latest in Solvay's connected chemistry offer for the mining industry, which aims to harness the power of data to help mines make better and faster decisions, increase productivity and achieve their sustainability targets. —

* Labeled an Efficient Solution by the Solar Impulse Foundation



Electronics

6%

of Group sales

Consumers and industries want multifunctional electronic products that are compact, stylish, energy efficient and safe. Growing demand for hyperconnectivity, the development of 5G and the exponential growth of data are also driving the market, resulting in miniaturization, the development of theInternet of Things (IoT) and a need for components that consume less energy. To facilitate these developments, there is increasing demand for materials that operate effectively and safely at high temperatures.

Solutions for semiconductors

— With our extensive technical industry experience and a broad product portfolio, Solvay is a leading supplier of specialty polymers and chemicals for the semiconductor industry. Our high-performance and high-purity polymers for structural and internal parts are used in all stages of chip fabrication. They support semiconductor processes, providing excellent chemical stability and high heat tolerance, as well as the ultra purity required by customers. Our **Galden® PFPE** fluids, for example, act as heat-transfer liquids in high-temperature conditions, ensuring the long-term reliability and efficiency of advanced semiconductor applications.

We also provide high-purity chemical solutions needed for advanced cleaning. This is becoming increasingly important as electronic devices become smaller. Our **Interox® Pico Plus** hydrogen peroxide, which is used primarily in the cleaning and etching stages of semiconductor chip production, is the market reference in this area.

Solvaclean®*: an environmentally friendly cleaning gas for semiconductor tools

Semiconductor chip manufacturers use a variety of gases to pattern silicon wafers. After a number of wafers are processed, the process chambers must be cleaned. Made from environmentally friendly fluorinated gas mixtures that do not remain in the atmosphere, Solvaclean® can be used by the semiconductor industry as an alternative to usual cleaning options. Not only does it help reduce the industry's climate impact by lowering emissions, but as less gas is required for the cleaning process, it is also more efficient, helping to save energy and water. Solvaclean® can also be used as an environmentally-friendly cleaning gas for the production of solar panels. —

Structural components for smart devices
— Smart sensing is driving market growth in smart devices and components. This includes smartphones with advanced functionalities, such as infinity display, artificial intelligence or 5G. Solvay's Kalix® high-performance polyamide (HPPA) can be used instead of metal in products where strength, rigidity, aesthetics and unparalleled design flexibility are important, such as mobile phones, tablets and laptops. In 2022, we launched our **Kalix® 10000** series, a partially bio-based material made with renewable feedstock from non-food competing sources and produced with 100% renewable electricity. Suitable for use in electronic applications with more demanding customer requirements, it responds to customer needs by delivering on both performance and sustainability.

Building

9%

of Group sales

Buildings represent 40% of the world's energy consumption. Solvay's solutions answer the growing demand for longer-lasting residential and commercial buildings that consume less energy, facilitate safe water management and enhance user well-being.

Energy savings
— Solvay offers insulation, cooling and heating solutions for more energy-efficient buildings. We help develop solutions for energy-saving triple-glazed windows using our soda ash, and provide sustainable foaming agents used for insulation.

Improving durability and performance with coating solutions
— We answer paint and coating formulators' need for improved functional performance and sustainability in architectural, industrial, ink and adhesive applications with our waterborne solutions. Our **Sipomer® PAM 600** specialty monomer, for instance, offers exceptional corrosion resistance and adhesion to difficult substrates. In addition to adhesion, we also provide solutions that improve water resistance, pigment dispersion and color development, among other functional improvements. By improving durability, our coating solutions contribute to longer end-product lifetimes, facilitating the circular economy. Our low-VOC and low-odor solutions help improve air quality, and we contribute to healthy living and environments through solutions that are biodegradable and free of chemicals such as alkylphenol ethoxylates.

Protecting resources with high-performance plastics
— With more and more people living in urban areas, there is an increasing need for reliable and safe infrastructure. Solvay helps to modernize water management through our specialty polymer solutions, which can be used in a range of water-related applications, such as filtration and plumbing. We also offer UV and thermal stabilizers, which help extend the lifetime and appearance of plastics used in building and construction applications.

CYASORB CYNERGY SOLUTIONS®: extending the life of plastic-based construction materials

Our CYASORB CYNERGY SOLUTIONS® UV stabilizers prolong the service life of polyolefin plastic-based construction materials, improving their durability by offering optimal performance under harsh UV and thermal conditions. Our stabilizers enable plastics to successfully replace traditional materials – such as wood, bitumen and PVC – lowering end-product maintenance costs and enhancing sustainability profiles. A good example of this is our collaboration with 3Trees, to help extend the lifetime of building-integrated photovoltaic panels (BIPVs) used in roofs, skylights and facades. In addition to photovoltaics, Solvay's stabilizers are used in applications ranging from polyolefin roofing membranes and geomembranes, to composite decking, stadium seats and artificial turf. —

Industrial applications and Chemical industry

18%

of Group sales

Manufacturers must comply with ever-stricter regulations and are reliant on innovations to develop more sustainable, efficient and competitive processes and products. They also face constraints on resources, including requirements to reduce energy and water consumption.

Metal and surface treatment

— Solvay creates ingredients and formulates products that modify and clean the surface of several metallic and organic substrates, improving the performance of finished products and enhancing their shelf life. Our additives improve adhesive bonding and paint adhesion in organic-to-metal and plastic-to-metal application.

Addibond™*: A unique solution for improving adhesive bonding and paint adhesion

Adding Solvay's Addibond™ to a surface prior to bonding improves adhesive strength and enhances durability over time, especially in harsh conditions. It also offers Health, Safety and Environment (HSE) benefits by enabling a chrome- and heavy metal-free process that results in minimal waste while saving water and lowering temperature requirements. It can be used in various industries, including automotive, where it is currently the only technology available that meets the most demanding requirements for aluminum-intensive cars. —

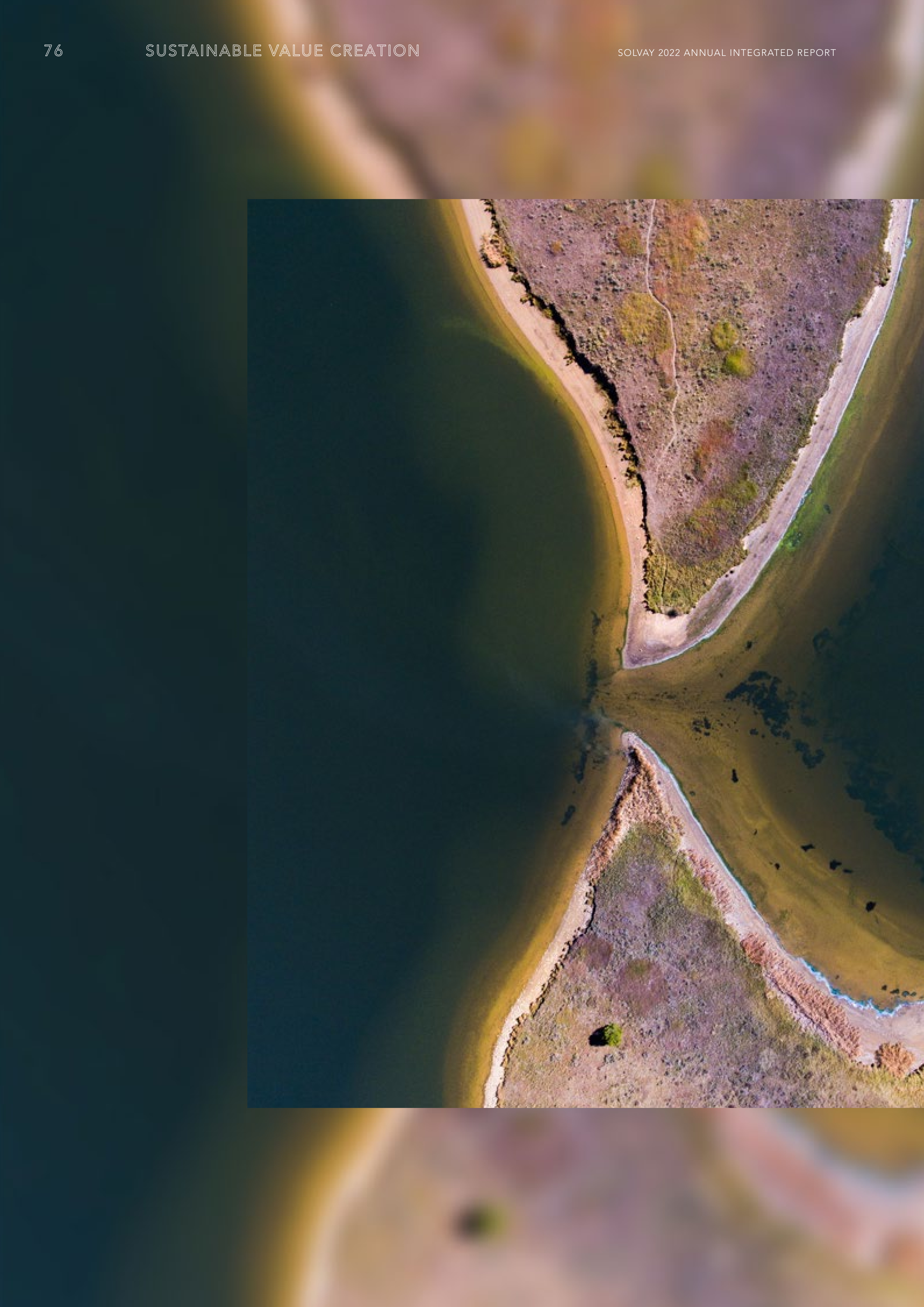
Industrial and protective coatings

— We have created and formulated specific polymer products that can be used to replace metal in harsh conditions. They are suitable for highly demanding industrial equipment applications as they combine resistance to corrosion, extreme temperatures and aggressive chemicals.

Reactsurf®0092: An eco-friendly surfactant for paints and coatings

Waterborne epoxy resin paints and coatings are critical for a wide range of industrial applications, such as storage tanks, shipping containers, bridges, railcars, metal buildings, commercial architecture, water towers and pipes. Solvay's Reactsurf® 0092 surfactant is designed to enhance reactivity in emulsification and outperform conventional solvent-based coatings, while also emitting a much lower of VOCs. It offers outstanding corrosion resistance, excellent freeze-thaw stability and a good sustainability profile, responding to the coating market's need for eco-friendly solutions while remaining cost efficient. —

* Labeled an Efficient Solution by the Solar Impulse Foundation



SUSTAINABLE VALUE CREATION

Sustainable value creation

Sustainable value creation model

In line with our Purpose and our Solvay One Planet sustainability program, we are committed to optimizing the use of our resources to reduce our impact on people and the environment. Our G.R.O.W. strategy is aligned with global business trends that drive growth in our end-markets, and we are transforming our portfolio and leveraging our new Growth platforms to meet customers' needs for more sustainable and circular solutions. In 2022, we delivered record financial results and are advancing on our Solvay One Planet sustainability objectives faster than planned. We are committed to creating even more sustainable value for our stakeholders.

1. Excluding hydrid bonds. **2.** Excluding the contribution from corporate and business services. **3.** Recommended to the Shareholders meeting on May 9, 2023. **4.** Total emissions from Solvay operations. **5.** Emissions upstream and downstream in the value chain (suppliers and customers). **6.** In number of animal or plant species potentially impacted in one year. ReCiPe method for biodiversity impact assessment. **7.** Our new KPI is defined according to the Ellen MacArthur Foundation Circulytics framework. It comprises products that are based on recycled or renewable materials, are produced with renewable energy, have increased longevity in the use phase or enable recycling at the end of life. **8.** Number of work-related injuries and illnesses (employees and contractors) resulting from an accident with severity above first aid, according to US OSHA 29 CFR 1904, per 200,000 work hours. **9.** All employees worldwide S14 grade or below. **10.** Solvay Pulse survey, November 2022.

RESOURCES WE USE

Human

Representing more than 100 nationalities, 47% of our employees are located in Europe, 26% in North America, 9% in Latin America and 18% in Asia and the Rest of the World. Another 9% work in Research & Innovation.

22,000
Employees

24%
Women

Financial

We have invested more than €1 billion in growth and energy transition projects, and €349 million to develop innovative sustainable solutions.

€8.9bn
Equity attributable to Solvay share[1]

€3.6bn
Underlying net debt

€1bn
Capex in continuing operations

€2.3bn
Personnel expenses

Natural

Our net energy costs represented about €1.6 billion. The Group's overall raw materials expenses amounted to circa €4.6 billion.

4,450kt
Raw materials

98PJ
Energy consumption

HOW WE CREATE VALUE

Our **G.R.O.W. strategy** is aligned with global business trends that drive growth in our end markets.

G Materials

Unique high-performance polymers and composite technologies
Innovative solutions for cleaner mobility (lightweighting, batteries, CO_2 and energy efficiency), Electronics and Healthcare

38% of Group EBITDA[2]

R Chemicals

World leaders in essential chemicals for daily life
Chemical intermediates used in a broad range of applications in end markets like Building, Industry, Healthcare, Personal and Home Care, Feed and Food

35% of Group EBITDA[2]

O Solutions

Unique formulation and application expertise
Customized specialty formulations for surface chemistry and liquid behavior, maximizing yield and efficiency, and minimizing environmental impact. Used in diverse markets like Agro, Food, Electronics and Consumer Goods

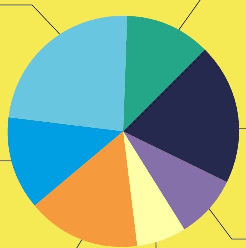
27% of Group EBITDA[2]

W Solvay ONE

New customer-centric operating model and performance-driven culture

Our **Solvay One Planet** sustainability roadmap is an integral part of our strategy. It focuses on climate, resources and better life.

WHERE WE CREATE VALUE



% of Group sales

VALUE WE CREATE

Economical

€3.2bn Underlying Ebitda	**€1.1bn** FCF to Solvay shareholders from continuing operations	**€4.05 per share** Recommended 2022 dividend[3]
€453M Income taxes	**410** Core suppliers	

Environmental

Greenhouse gas emissions		Air emissions
10.3Mt CO_2eq. Scopes 1 and 2[4]		**5.6kt** Nitrogen oxides
24.2Mt CO_2eq. Scope 3[5]		**3.3kt** Sulfur oxides
28PJ Solid fuels	**-5%** Pressure on biodiversity[6]	**56kt** Industrial waste not treated in a sustainable way
330Mm³ Intake of freshwater	**55%** Group net sales with sustainable solutions	**9%** Group net sales from circular economy[7]

Social

0.34 Reportable Injury and Illness rate[8] (RIIR)	**26.5%** Women in mid and senior management	**27.7%** employees are Solvay shareholders
€9.5M to employees most affected by inflation	**€15M** Global Performance Sharing plan[9]	**€5M** Group donations
64.6% Response rate to Pulse survey[10]	**76%** Employees feel «ok or better»[10]	**8%** Self-identifying in ethnically under-represented groups[10]

Operating segments and Global Business Units

Materials

— MATERIALS offers a unique portfolio of high-performance polymers and composite technologies that are used primarily in sustainable mobility applications. These solutions enable weight reduction and enhanced performance, while improving CO_2 and energy efficiency. Major markets served include next-generation mobility in automotive and aerospace, healthcare and electronics.

Specialty Polymers
— With more than 1,500 products, Specialty Polymers offers the widest range of high-performance polymers in the world. This allows us to create tailor-made solutions, including pushing the limits of metal replacement in the electronics, automotive, aerospace and healthcare industries. Specialty Polymers has unparalleled expertise in three technologies: aromatic polymers, high-barrier polymers and fluoropolymers.

Composite Materials
— Composite Materials is a top-tier supplier of advanced composite and adhesive materials to the aerospace industry. Known for our expertise in material formulation and formatting, design and process engineering, we deliver optimal solutions that address our customers' need for high-performance, lightweighting, improved aerodynamics and lower total costs.

Chemicals

— CHEMICALS hosts chemical intermediate businesses focused on mature and resilient markets. Solvay is a world leader in soda ash and peroxides, with the major markets we serve including building and construction, consumer goods and food. Our Silica, Coatis and RusVinyl businesses are also high-quality assets, holding strong positions in their markets.

Soda Ash and Derivatives
— Solvay is a world leader in the production of soda ash and sodium bicarbonate, which we sell primarily to the flat and container glass industries, but is also used in detergents and in the pharmaceutical, feed and food industries. Our Soda Ash and Derivatives production sites are located both in the US (trona) and in Europe ("Solvay" process) to serve all continents.

Peroxides
— Solvay is a market leader in hydrogen peroxide, both in market share and technology. Hydrogen peroxide (H_2O_2) is used mainly by the paper industry to bleach pulp and as an intermediate for the production of chemicals, such as propylene oxide and caprolactam. Its properties are also of interest in a number of other applications, including electronics, food, mining and the environment. Solvay Peroxides' advanced production process includes three HPPO* mega plants, based on Solvay technology and operated with Joint Venture partners.

Silica
— Solvay's Silica business is a worldwide innovation leader in Highly Dispersible Silica (HDS), which is primarily used in fuel-efficient and performance tires, but is also an essential component in several other applications in the home and personal care, and feed and food industries. Solvay is the inventor of HDS for tire applications. Our Silica business offers global tire manufacturers the broadest HDS portfolio available, enabling lower fuel consumption and extended battery range in electric vehicles, while also increasing circularity in the industry.

Coatis
— Coatis provides high-performance solvents, phenols and derivatives, polyamide derivatives and smart, functional and sustainable yarns and polymers, predominantly for the Latin American market. We enjoy an undisputed market leadership position in Brazil for phenol and derivatives, which are used in the production of synthetic resins employed in foundries, construction and abrasives.

*Hydrogen Peroxide to Propylene Oxide

Solutions

— SOLUTIONS offers unique formulation and application expertise through customized specialty formulations for surface chemistry and liquid behavior. These maximize the yield and efficiency of the processes in which they are used, while minimizing the eco-impact. Novecare, Technology Solutions, Aroma Performance, Special Chem, and Oil & Gas Solutions focus on specific areas. These include: resources, improving the extraction yield of metals, minerals and oil; industrial applications, including coatings; and consumer goods and healthcare, including vanillin and guar for home and personal care.

Novecare
— Novecare is a worldwide leader in specialty chemicals, offering a portfolio of customized and sustainable solutions. Our diverse teams combine Novecare's core technologies – surfactants, natural and synthetic polymers, and green solvents – with formulation know-how and application knowledge to deliver high-performing, differentiated solutions across the agro, home and personal care, coatings and industrial markets. Novecare's manufacturing and research capabilities are global in reach, with dedicated teams in each region to meet local needs and requirements.

Technology Solutions
— Technology Solutions is a global leader in specialty mining reagents, phosphine-based chemistry and solutions for the stabilization of polymers. Our portfolio includes world-class, leading-edge technologies and unrivaled technical service and application expertise that supports our customers in developing tailor-made solutions. This is particularly true for mining, where Solvay's products allow customers to extract metal concentrates from increasingly complex and depleted ores.

Special Chem
— Special Chem produces fluorine and rare-earth formulations for automotive, electronics, agrochemical and construction applications. With our industrial know-how, global presence and proximity to research and innovation, we position ourselves as a strategic partner for the automotive sector, as a producer of materials used in emission-control catalysis and aluminum brazing, and as a producer of cleaning and polishing materials for semiconductors.

Aroma Performance
— Aroma Performance is a leading global producer of diphenols and the world's largest integrated producer of vanillin for the food, flavors and fragrances industries. We also produce a wide range of value-added intermediates used in monomers and polymers, pharmaceuticals, agrochemicals and electronics. Aroma Performance is strongly committed to supporting consumer demand in the food and beverage market by innovating and developing natural solutions that address nutrition, naturalness and wellbeing challenges. One example is our natural vanillin.

Oil & Gas Solutions
— Oil & Gas Solutions offers a wide product portfolio in the upstream oilfield chemicals sector designed to improve efficiencies and protect resources in cementing, stimulation, production and enhanced oil recovery applications. Outside of the oilfield, the business also produces sodium hypophosphite for metal plating and other applications, as well as PROBAN®, a technological process that gives durable flame retardant properties to cotton-based textiles.

Corporate and business services

— Corporate and Business Services includes corporate and other business services, such as Group research and innovation, or energy services, which works to optimize energy consumption and reduce CO_2 emissions across the Group.

Value chain

End-to-end value creation

Our core activity as a chemical manufacturer is the production of synthetic and natural ingredients which we are committed to produce using processes that have a reduced environmental impact.

Depending on our different business models, we are involved upstream in the value chain, producing some of the raw materials we use, or downstream, processing chemicals or producing formulations. To offer more innovative features and bring greater added value to customers, we also blend or transform products. Our surfactant and solvent formulations, our copolymer blends or compounds in pellet form, and our composite materials are all good examples of this.

Solvay collaborates with brand owners and their suppliers to develop tailor-made solutions based on our products.

Main inputs

Raw materials
- Minerals
- Fossil-based
- Renewable/ recycled

Primary energy
- Fossil (gas, solid, liquid)
- Renewable/ recycled

Secondary energy
- Electricity
- Heat
- Cooling

Businesses	Raw materials	Production of ingredients	Processing/ formulation
MATERIALS			
Specialty Polymers	Partially involved	Core activity of the business	Partially involved
Composite Materials	Partially involved	Core activity of the business	Partially involved
CHEMICALS			
Soda Ash and Derivatives	Fully involved	Core activity of the business	Partially involved
Peroxides	Partially involved	Core activity of the business	Fully involved
Silica	Partially involved	Core activity of the business	Partially involved
Coatis	Partially involved	Core activity of the business	Fully involved
SOLUTIONS			
Novecare	Not involved	Core activity of the business	Fully involved
Technology Solutions	Not involved	Core activity of the business	Fully involved
Special Chem	Not involved	Core activity of the business	Partially involved
Aroma Performance	Not involved	Core activity of the business	Fully involved
Oil & Gas Solutions	Not involved	Core activity of the business	Fully involved

End markets

- Automotive and Aerospace
- Consumer Goods, Home and Personal Care, Healthcare
- Resources and Environment
- Agro, Feed and Food
- Electronics
- Building
- Industrial Applications and Chemical Industry

Involvement of businesses in production steps

- Fully involved
- Partially involved
- Not involved
- Core activity of the business

Solvay's solutions go through many different modifications before they become part of our everyday lives, including raw materials extraction, production, processing, formulation and assembly. We work closely with suppliers, partners, customers and brand owners to share knowledge and unlock shared value for all across the value chain. This includes constantly raising the bar to reach our sustainability commitments by working together to build a greener, more agile and resilient supply chain. In 2022, we not only committed to reducing our Scope 3 emissions, we also launched initiatives to strengthen bonds with our suppliers.

Bonding with our suppliers to make the value chain more sustainable

— In April 2021, we launched our Supplier Engagement Program, aimed at encouraging our suppliers and buyers to adopt a sustainability mindset. Guided by our Solvay One Planet ambitions, we have been engaging with our suppliers to build a greener, more agile and resilient supply chain that ensures sustainable shared value for all.

We believe that the best ideas come from working together, so we called on our strategic suppliers to share collaborative ideas or projects that could help us achieve our goals in five areas: carbon footprint; circular economy; waste management; diversity, equity and inclusion (DEI); and human rights in the supply chain. This initiative, which is unique in our industry, produced around 60 different project ideas. Of these, more than 20 innovation projects are now underway, focused on areas such as bio-based and recycled sourcing, reducing greenhouse gas emissions, waste recovery and human rights. Our 2022 Solvay Supplier Engagement Day gave us a chance to showcase these innovation efforts, fostering longer-term supplier collaboration that will improve sustainability across the value chain.

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core suppliers

Transforming the supply chain

— Solvay is a founding member of Together for Sustainability (TfS), a global procurement-driven initiative that supports chemical companies and their suppliers in their efforts to improve sustainability performance.

In September 2022, TfS launched its Product Carbon Footprint Guidelines. These provide clear guidance for suppliers and corporations on how to calculate, monitor and reduce emissions across chemical supply chains.

To assess how advanced our suppliers are on this topic, and to make progress in reaching our Scope 3 target, at the end of 2022 we called on our top suppliers to collect and share the product carbon footprint (PCF) of the raw materials they supply. A second wave of requests is planned for 2023.

We talk to... **Fabienne Prost,**

DIRECTOR KEY ACCOUNTS,
GROUPE SÉCHÉ ENVIRONNEMENT

Groupe Séché Environnement is a French company specializing in environmental services. Our strong partnership with them has developed over many years. We share several common interests and priorities, including the development of the circular economy, the recycling of specific materials, the decontamination of polluted soils, the management of hazardous waste and the treatment of effluents.

How would you describe your relationship with Solvay?

Fabienne Prost — Transparency, responsiveness, innovation, synergy between the Solvay and Séché teams, and good communication through constructive exchanges are the key factors that have enabled us to develop a successful relationship based on trust over many years. A good example of this relationship is our agreement with Solvay's Tavaux site to manage all their hazardous and non-hazardous waste, and to design and operate their biological sludge dehydration unit. Following the progress made to implement innovative digital solutions and a plan to encourage recycling, we renewed this contract for an additional three years in January 2022.

How do Séché and Solvay work together to create sustainable value for all?

F.P. — One example is our subsidiary Speichim, which has developed a specific loop for recycling some effluents produced at Solvay's Salindres site. This solution enables the site to reuse around 800 metric tons of raw materials per year, following separation and purification. This allows the site to reduce its consumption of raw materials, lower the associated costs and improve their carbon footprint.

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Progressing with our stakeholders

HOW WE BOUNDED IN 2022

Customers

- Engaging major customers on common high materiality topics
- Direct contact with GBU teams (management, R&I, sales, supply chain)
- Close collaboration between Key Account Managers and strategic customers
- Rating questionnaires (CDP, EcoVadis)
- Sustainable Portfolio Management (SPM) profiles
- Net Promoter Score (digital surveys every two years)

Employees

- Solvay Solidarity Fund enhancing solidarity between employees
- Pulse surveys every six weeks on employee well-being, one survey per year on Diversity, Equity and Inclusion (DEI)
- Regular communication between CEO and employees
- Digital communication with employees
- Regular dialogue between managers and employees
- Labor relations dialogue with employee representative bodies at site, country, European and Group levels. Partnership with IndustriAll Global Union
- Annual Citizen Day

Investors

- **48** events with institutional investors (**7** digital roadshows, **37** conferences in Europe, North America and Asia)
- **5** webinars to improve understanding of our key activities
- Responding to rating agency questionnaires, credit rating agencies, proxy voting agencies
- Participation in diverse shareholder events
- One Solvay ESG webinar

HIGH MATERIALITY TOPICS

Customers

- Product design and life cycle management
- Customer welfare
- Hazardous materials

Employees

- Employee health and safety
- Inclusion and diversity
- Employee engagement and well-being

Investors

- All high materiality topics

OUR STAKEHOLDERS' EXPECTATIONS

Customers

- Increasing number of customers assessing Solvay's performance through EcoVadis, CDP or specific questionnaires, confirming focus on risks and opportunities in supply chain
- Increasing number of customers expressing need for innovative solutions aligned with circular economy

Employees

- Employee engagement on sustainability, from top management to shop floor
- Covid-19 crisis management
- Well-being at work
- Impact of inflation on well-being

Investors

- Record financial performance and consistent shareholder rewards
- Sustainability and focus on long-term value creation
- Strong focus on innovation, governance, ethics and transparency
- Rapid evolution of sustainability reporting frameworks, including the new International Sustainability Standards Board in the USA and the future European sustainability standards in the CSRD

OUR RESPONSES

Customers

- **>150** customers (>25% of sales) require Solvay's EcoVadis evaluation
- Solvay in the top **2%** of companies assessed by EcoVadis in the chemical industry
- Set our goal to reduce Scope 3 GHG emissions by **24%** by 2030. Our Scope 1, 2 and 3 targets validated by SBTi in early 2023
- New growth platform focused on Renewable Materials and Biotechnology
- Partnership with the Ellen MacArthur Foundation

Employees

- Solvay One Dignity (**9** DEI objectives and action plans). 2022 achievements include assessing and closing gender pay gaps; a roadmap to improve inclusion for people with disabilities; mentoring programs, including **300** Solvay women participating in A Effect program; **9** active Employee Resource Groups (ERGs) and first ERG convention; partnerships with NGOs (e.g. Disability:IN); more than **100** sites and **40%** employees participating in Citizen Day on DEI
- **~28%** employees shareholders following launch of first employee share plan
- **€9.5M** bonus for employees most affected by inflation
- Global Performance Sharing Plan budget for "non-executive" employees increased to **€15M**
- **267,000** hours of employee training
- Employee Assistance Program offers mental health support and more to employees and relatives: **1,150** employees trained in well-being webinars (**10** languages)
- **100%** employees covered by collective agreement
- Renewal of Solvay Global Forum and Global Framework agreements with IndustriAll Global Union

Investors

- Extension of the carbon neutrality targets (Scope 3)
- Roadmap to phase out fluorosurfactants
- Strong investments promoting sustainability of our products and processes
- Success of employee share purchase plan
- Solvay One Dignity DEI roadmap and actions
- Dividend increase of **€0.20** to **€4.05** per share
- Capex of **€1,022M** targeting growth businesses
- Commitment to significantly reduce the amount of limestone residues released directly into the sea at Rosignano, which ended Bluebell Capital Partners' One-Share ESG campaign against Solvay

OUR CHALLENGES

Customers

- 360° EcoVadis screening identified controversies, fines or penalties relating to environmental and social issues in the last five years
- Reducing Scope 3 emissions linked to raw materials and processing, use, and end of life of sold products

Employees

- Involving employees in Solvay One Planet initiatives, e.g. Stop Office Waste program
- Po2 project implementation
- Talent recruitment

Investors

- Climate action confirmed as priority topic
- Facing challenging environment in key markets
- Impact of inflation
- Dividend increase of **€0.20** to **€4.05** per share
- Project to separate Solvay into two independent listed companies (Po2)

We continued to accelerate on the priorities of our Solvay One Planet sustainability roadmap in 2022. This included strengthening bonds with our stakeholders – our customers, employees, investors, suppliers, local communities and the planet (governments and NGOs). We listened to their needs and built on their feedback, raising the bar to address our collective impact on climate change, natural resources and quality of life. This included working with customers and suppliers to reduce our carbon footprint and developing collaborations to create more sustainable and circular solutions.

	Suppliers	Local Communities	Planet (NGOs & Government)
HOW WE BOUNDED IN 2022	→ Supplier Key Account Management → Supplier commitment to Supplier Code of Business Integrity → Corporate Social Responsibility questionnaire → Third party assessments through EcoVadis and TfS → Supplier Days: a series of events to engage suppliers	→ Engagement at site level through the Star Factory program and Solvay One Planet initiatives (biodiversity, Stop Office Waste program): developing and managing relationships with local stakeholders → Annual Citizen Day at Group level → Partnership with Wildlife Habitat Council	→ Constructive dialogue with public authorities on issues of legitimate interest to Solvay → Participation in global and regional trade associations (WBCSD, ICCA, BusinessEurope, CEFIC) and scientific organizations (IUCN, SETAC) → Partnership with the Solar Impulse Foundation
HIGH MATERIALITY TOPICS	→ Supply chain and procurement → Sourcing of materials and efficiency	→ Air quality → Water and wastewater → Waste → Corporate citizenship → Critical incident risk management → Hazardous materials → Biodiversity	→ Greenhouse gas emissions → Energy → Biodiversity → Management of the legal, ethics and regulatory framework
STAKEHOLDERS' EXPECTATIONS	→ Increased collaboration on goal setting, strategic thinking and sustainability	→ Contribution to local material topics → Sensitivity to local environmental and social issues	→ Acceleration of actions to reduce greenhouse gas emissions and address climate change → Confirmation of United Nations Sustainable Development Goals (SDGs) as reference for sustainability priorities at planetary scale → Introduction of metrics describing sustainable value creation, as per the World Economic Forum's International Business Council (IBC) work on "Toward Common Metrics and Consistent Reporting of Sustainable Value Creation"
OUR RESPONSES	→ **2,250** suppliers assessed via EcoVadis TfS Audit Program → Supplier Engagement Program: **60** collaborative projects collected, **>20** underway focused on sustainability topics → Partnering with industry leaders to develop the next generation of product carbon footprint (PCF) assessments and accelerate transparency in the value chain with customers and suppliers, e.g. initiatives from WBCSD PACT and TfS → Partnership with the Ellen MacArthur Foundation	→ Citizen Day 2022 on DEI: **>40%** workforce and **>100 sites** globally participated, with **€50,000** donated to local NGOs → Solvay Solidarity Fund supported **>50** projects related to urgent needs (e.g,. flooding) in **14** countries and donated **€1.5M** to initiatives in Ukraine → Protecter & Gamble joined our Sustainable Guar Initiative → Signed a Memorandum of Understanding with local authorities in Rosignano, to improve the footprint and integration of our site in the surrounding area	→ Confirmation of SDGs where Solvay can have most impact across the value chain: — **SDGs 7, 13, 14 & 15 on Climate;** — **SDG 12 on Resources;** — **SDGs 3, 6, 8 & 17 on Better Life** → **10** ambitious goals defined through Solvay One Planet sustainablility roadmap → Announced plans for carbon neutrality by 2050 → Unveiled Scope 3 target of **-24%**
OUR CHALLENGES	→ Mitigate CSR risks in our supply chain through due diligence and traceability → Reduce Scope 3 greenhouse gas emissions linked to raw material extraction and processing	→ Sensitive handling of social media, which can make a local issue global → Controversies related to effluents or emissions → Increased sensitivity to potential exposure to substances of concern	→ Solvay One Planet targets → Carbon neutrality before 2050: GHG emissions in Scope 1, 2 and 3 → Reporting of corporate metrics in line with UN SDGs (WEF initiative)

Ratings

Solvay is committed to achieving strong ratings in both financial and sustainability indexes. Positive ratings help us create a long-term relationship with our stakeholders that is based on trust. Agency feedback also has a real impact on our priorities, as it helps us to better understand our stakeholders' key concerns.

In previous years we have focused our action plans on addressing the common strengths and weaknesses identified by the ratings agencies. This allowed us to achieve results in the top quartile, and sometimes even the top ten. However, questionnaires are evolving and agencies are now sometimes assessing the same dimensions differently. This means, for example, that while some ratings agencies identify "green sales" as a strength for Solvay, based on the use of our Sustainable Portfolio Management methodology, others identify it as a weakness, because of our limited use of biosourced raw materials.

Despite these challenges, we continue to take comments from ratings agencies very seriously. This includes addressing operational eco-efficiency and the need to reduce emissions more quickly through our Solvay One Planet commitments, which focus on reducing emissions and effluents that could impact biodiversity. We have also developed an ESG risk management approach for our supply chain, to address human rights and environmental impacts across our value chain.

Solvay's sustainability reporting recognized by the WBCSD

Our 2021 Annual Integrated Report was listed in the top ten of the tenth edition of Reporting Matters, the World Business Council for Sustainable Development's (WBCSD) annual review of its member companies' sustainability and integrated reports.

"In its Annual Integrated Report, Solvay presents a strong value-creation model focused on inputs, raw materials, production of ingredients, processing and formulation, and end markets, clearly mapped across different business segments. The report also includes detailed mapping of issue boundaries against material topics, clearly outlining where material issues impact along the value chain and the degree to which they are important and relevant from a stakeholder and financial perspective."

REPORTING MATTERS,
WORLD BUSINESS COUNCIL FOR SUTAINABLE DEVELOPMENT

Our main indexes[1]

MSCI[2]
In 2022, Solvay received a rating of A (on a scale of AAA-CCC) in the MSCI ESG Ratings assessment. Solvay is in the top 15% in chemicals.

EcoVadis supplier sustainability ratings
Solvay is in the top 2% of chemical companies rated by EcoVadis.

CDP[3]
Solvay is rated A- by the CDP in the 2022 Climate Change questionnaire (from F to A) and is among the top 8% assessed for supplier engagement on climate change.

SUSTAINALYTICS
Solvay is rated "Medium ESG Risk" by Sustainalytics.

Moody's ESG Solutions
Solvay ranks #6 in the chemical industry, with a score of 65/100.

ISS-ESG
Solvay is rated as a Prime Company with a score of B- by the ISS-ESG, ranking among the leaders in chemicals.

BEL® ESG index
Solvay is one of the 20 companies composing the new BEL® ESG

1. Last update in March 2023. **2.** MSCI ESG Research provides MSCI ESG Ratings on global public and a few private companies on a scale of AAA (leader) to CCC (laggard), according to exposure to industry-specific ESG risks and the ability to manage these risks relative to peers. **3.** An international organization, CDP analyzes how companies integrate climate change into their strategies.

Performance

PERFORMANCE

Performance

1. OVERVIEW OF THE CONSOLIDATED RESULTS

1.1. Financial figures

1.1.1. Key financial figures

In € million	Notes	IFRS FY 2022	IFRS FY 2021	IFRS % yoy	Underlying FY 2022	Underlying FY 2021	Underlying % yoy
Net sales	B1	13,426	10,105	+32.9%	13,426	10,105	+32.9%
Net operating costs, excluding depreciation & amortization	B2	-10,282	-8,066	-27.5%	-10,198	-7,748	-31.6%
EBITDA	B3	3,144	2,038	+54.2%	3,229	2,356	+37.0%
EBITDA margin		-	-	-	24.0%	23.3%	+0.7pp
Depreciation, amortization & impairments	B4	-923	-848	-8.8%	-802	-756	-6.1%
EBIT		2,221	1,190	+86.6%	2,426	1,600	+51.6%
Net financial charges	B5	-70	-96	+26.7%	-202	-235	+13.7%
Income tax expenses	B6	-217	-110	n.m	-453	-287	-57.9%
Tax rate	B6	-	-	-	21.8%	23.5%	-1.7pp
Profit from discontinued operations	B7	-	5	n.m.	2	2	-25.7%
Profit/(loss) for the period		1,934	989	n.m.	1,772	1,081	+64.0%
(Profit)/loss attributable to non-controlling interests		-29	-41	-30.68%	-29	-41	+29.1%
Profit/(loss) attributable to Solvay shareholders		1,905	948	n.m.	1,743	1,040	+67.6%
Basic earnings per share (in €)	B19	18.37	9.15	n.m.	16.80	10.05	+67.3%
of which from continuing operations	B19	18.36	9.11	n.m.	16.79	10.02	+67.5%
Dividend (1)	B20	4.05	3.85	+5.2%	4.05	3.85	+5.2%
Capex in continuing operations	B8	-	-	-	1,022	736	+38.9%
Cash conversion	B8	-	-	-	68.3%	68.8%	-0.4pp
FCF to Solvay shareholders from continuing operations	B9	-	-	-	1,094	843	+29.8%
FCF to Solvay shareholders	B9	-	-	-	1,094	830	+31.8%
FCF conversion ratio		-	-	-	34.4%	37.6%	-3.2pp
Net working capital	B10	1,969	1,372	+59.7%	1,969	1,372	+59.7%
Net working capital/sales (2)	B10	-	-	-	12..5%	12.7%	-0.2pp
Net financial debt (3)	B11	1,791	2,149	-16.7%	3,591	3,949	-9.1%
Underlying leverage ratio	B11	-	-	-	1.1	1.7	-33.7%
CFROI	B12	-	-	-	8.1%	6.9%	+1.2pp
ROCE	B13	-	-	-	16.0%	11.4%	+4.7pp
Research & innovation	B14	-	-	-	349	298	+17.1%
Research & innovation intensity	B14	-	-	-	2.6%	2.9%	-0.3pp

(1) Recommended dividend for 2022
(2) Net working capital/sales ratio is the average of the quarterly net working capital/sales ratios
(3) Underlying net debt includes the perpetual hybrids bonds, accounted for as equity under IFRS

1.1.2. Historical key financial data

		As published				
In € million		2018	2019	2020	2021	2022
Income statement data						
Sales	a	11,299	11,227	9,714	11,434	16,071
Net sales	b	10,257	10,244	8,965	10,105	13,426
Underlying EBITDA	c	2,230	2,322	1,945	2,356	3,229
Underlying EBITDA margin	d	21.7	22.7%	21.7%	23.3%	24.0%
IFRS EBIT	e	986	316	-665	1,190	2,221
Underlying profit for the period	f	1,131	1,113	650	1,081	1,772
IFRS profit for the period	g	897	157	-929	989	1,934
Underlying profit attributable to Solvay share	h	1,092	1,075	618	1,040	1,743
IFRS profit attributable to Solvay share	i	858	118	-962	948	1,905
Cash flow data						
Capex	j	833	967	643	736	1,022
- of which from continuing operations	k	711	826	611	736	1,022
Cash conversion	l = (c+k)/c	68.1%	64.4%	68.6%	68.8%	68.3%
FCF	m	989	1,072	1,206	1,043	1,255
FCF to Solvay shareholders	n	725	801	951	830	1,094
Balance sheet data						
Net working capital	o	1,550	1,560	1,108	1,372	1,969
Net working capital/sales	p = μ(o/a)(1)	15.3%	16.0%	14.7%	12.7%	12.5%
Underlying net debt(2)	q = r+s	5,105	5,386	4,198	3,949	3,591
Perpetual hybrid bonds	r	2,500	1,800	1,800	1,800	1,800
IFRS net debt	s	2,605	3,586	2,398	2,149	1,791
IFRS equity	t	10,624	9,625	7,304	8,851	10,664
Equity attributable to non-controlling interests	u	117	110	106	112	61
Perpetual hybrid bonds in equity	v	2,486	1,789	1,787	1,787	1,786
Equity attributable to Solvay share	w = t-u-v	8,021	7,725	5,411	6,953	8,817
Underlying leverage ratio(3)	x = -q/c	2.01	2.00	2.16	1.68	1.11
Other key data						
CFROI	z	6.9%	6.5%	5.5%	6.9%	8.1%
Research & innovation	A	352	336	291	298	349
Research & innovation intensity	B = -A/b	3.4%	3.3%	3.2%	2.9%	2.6%

(1) Average of the quarters
(2) Underlying net debt includes the perpetual hybrid bonds, accounted for as equity under IFRS
(3) For the years 2018-2019, as net debt at the end of the period did not yet reflect the net proceeds to be received on the divestment of discontinued operations, whereas the underlying EBITDA excluded the contribution of discontinued operations, the underlying EBITDA was adjusted to calculate the leverage ratio. Polyamide's underlying EBITDA was added.

The table above presents the historical figures of the Group as published at the reference date. These data have not been affected by possible subsequent restatements due to perimeter changes, IFRS/IAS standards evolution, changes in definition of APM, etc.

Over the reference periods, the following main changes have occurred:

2018:

Divestment of Polyamide business still classified as discontinued operations and assets and liabilities held for sale since September 2017.

2019:

Implementation of IFRS 16;

Divestment of Polyamide business still classified as discontinued operations and assets and liabilities held for sale since September 2017.

2020:

Disposal of the Polyamide business completed on January 31, 2020.

At the end of December 2020, the assets and liabilities related to some businesses have been reclassified as "held for sale" (assets for a total amount of €229 million and liabilities for a total amount of €110 million):
- the Peroxides sodium chlorate business line and related assets in Povoa (Portugal);
- the various fluorine chemicals assets in Onsan, South Korea, part of Special Chem;
- the commodity amphoterics surfactants activities in Novecare;
- the Peroxides sodium percarbonate business line and related assets in Bad Hönningen (Germany);
- the Barium Strontium business and the joint venture with Chemical Products Corporation (CPC); and
- the Process Materials business (part of Composites).

2021:

During 2021, the assets and liabilities related to the following businesses previously classified as "held for sale" were divested:
- the Peroxides sodium chlorate business line and related assets in Povoa (Portugal),
- the various fluorine chemicals assets in Onsan, South Korea, part of Special Chem,
- the Peroxides sodium percarbonate business line and related assets in Bad Hönningen (Germany),
- the Barium Strontium business and the joint venture with Chemical Products Corporation (CPC),
- the Process Materials business (part of Composite Materials),
- the Novecare amphoterics surfactants activities, and
- the Novecare surfactants and anti-oxidants business in Rasal (India).

These divestments lead to a decrease in sales of €220 million in 2021 compared to 2020. There was no material capital gain/loss on these divestments.

On July 1, Solvay announced the closing of the acquisition, from Bayer, of a seed coating business, with facilities in Méréville, France, and tolling operations in the U.S. and Brazil. This is a natural extension to Solvay's own AgRHO® family of sustainable seed boosting solutions (part of Novecare) and supports the drive toward more bio-based, sustainable technologies.

2022:

On May 4, Solvay announced the acquisition of the 20% minority stake of AGC in the Soda Ash JV operated in Green River, WY, USA, building on its leadership position in trona-based soda ash production. There were no material events after the reporting period. At a cash purchase price of $120 million, this transaction will be significantly value accretive to Solvay, with a post tax cash return on capital in excess of 15%. The transaction is expected to be completed on May 4, 2022.

1.2. Extra-financial figures

Since 2019, Solvay has embarked on a sustainability journey that is captured in the Solvay One Planet roadmap, which is an integral element of its G.R.O.W. strategy and company Purpose. Structured around the three major categories of climate, resources and better life, Solvay One Planet is a roadmap towards a sustainable future that provides shared value for all. Solvay made significant progress on this journey in 2022, accelerating efforts to meet stakeholders' growing expectations. The table below provides an update on Solvay's progress.

Climate	2022	2021	Progress vs 2018	Comment	2030 target
Align greenhouse gas emissions (scopes 1&2) with Paris Agreement (Mt)	10.3 -6.4% (-4% structural)	11.0	-19% (-15% structural)	Progress at 2x Paris Agreement	Reduce by 30%
Phase out coal solid fuels [(a)] (Petajoules)	28	27	-15%	4 plants exiting coal	Exit 5 plants
Biodiversity (year on year)	-5%	-13%	-28%	Global Biodiversity score improved	Reduce negative pressure by 30%

Resources	2022	2021	Progress vs 2018	Comment	2030 target
Sustainable solutions % of Group sales	55%	50% [(b)]	+5%	Acceleration driven by growth in Materials and Solutions	Achieve 65%
Circular economy % of Group sales	9%	8% [(c)]	n.a	Progress rapidly approaching 2030 target	More than double (10%)
Non-recoverable industrial waste (Kt)	56	58	-36%	Exceeded 2030 target	Reduce by 30%
Freshwater Intake (Mm³)	330	315 [(d)]	-	change in methodology	Reduce by 25%

Better life	2022	2021	Progress vs 2018	Comment	2030 target
Safety (Reportable Injury and Illness rate - RIIR) (e)	0.34	0.43	-	Reinforcing safety measures at all sites	Aim for zero
Diversity (% of women in middle/senior management) (f)	26.5%	25.0%	2.8pp	Increasing trend toward parity goals	Achieve 50%
Equity	Publication of gender pay gap in April 2022 and corrective measures in place for 951 people				
Inclusion	High participation in the inaugural Global Employee Share Program				

(a) Solid fuels: coal and petcoke used in energy production. Coke and anthracite used in the soda ash production process are not included.
(b) Effective 2022, the internal CO_2 price was increased from €75 to €100 per metric ton CO_2 eq. As a consequence, the level for 2021 has been restated to 50% (from 53%).
(c) 2021 figure has been restated including the new circularity KPI used in 2022. It comprises products either: based on recycled or renewable materials, produced with renewable energy, with increasing longevity in the use phase or enabling recycling at the end of life.
(d)The apparent increase of freshwater withdrawal in 2022 is mainly due to a stricter application of internal reporting rules for freshwater pumped by Solvay but sold to third parties. From the 330 million cubic meters for 2022, 30 (9%) is sold to third parties. The total freshwater withdrawal in 2022 is slightly lower than in 2021 (-1.7 million cubic meters or -0.5%) at constant scope and methodology.
(e) The definition of the indicator changed in 2020: RIIR replaced MTAR - RIIR: (Reportable Injury & Illness rate): number of reportable injury or illness per 200,000 work hours. Scope: Employees and contractors.
(f) Management categories are defined on the basis of the Hay Job Evaluation Methodology. Middle and senior management levels refer to the entire active internal workforce having Hay points above 530.

Climate

In October 2021, Solvay announced its plans to reach carbon neutrality on scope 1 and 2 emissions before 2040 for all businesses except Soda Ash & Derivatives and before 2050 for Soda Ash & Derivatives. Consequently, the 2030 target for greenhouse gas emissions was upgraded to reduce by -30%, as compared to the 2018 baseline. In 2022, Solvay delivered a -19% GHG emissions reduction in four years, of which -15% structural, meaning almost 2x the Paris Agreement.

As part of its transition to cleaner energy sources, Solvay has also identified 23 additional new emission reduction projects which brings the total number of approved projects worldwide to 59. It will represent -3.5 million tonnes of CO_2 annually (equivalent to taking 1.9 million cars off the road).

In response to the gas crisis, Solvay temporarily adjusted its energy sourcing strategy. This is reflected in the coal phase-out performance. The phase out of coal for energy production has been planned for three soda ash plants in Europe: Rheinberg, Germany; Dombasle, France and Devnya, Bulgaria. With the additional phase-out project in the Green River site, US, the Group will cut its global emissions by 9.5% by 2025.

Renewable electricity projects are also advancing. In the US, six businesses and 34 plants are fully supplied by green power, twice as many as in 2021. In China, 100% of operations are now supplied with renewable electricity. In Europe, progress continues with significant projects confirmed to switch plants in Voikka (Finland), Saint Fons and Tavaux (France) to green electricity.

Solvay has decreased its global pressure on biodiversity by -28% versus 2018. The overall trend is aligned with 2030 targets, with part of this progress related to refinements in the methodology and new local projects implemented. Strong efforts have been implemented to design biodiversity roadmaps in order to reduce damage on nature and start regenerating Biodiversity. A list of top 32 sensitive sites has been established, guidelines are being defined with the WildLife Habitat Council, and first roadmaps being created.

Resources

In 2022, the proportion of sales from sustainable solutions reached 55%, a 5% annual increase. It reflects the organic growth in the automotive and battery market with Specialty Polymers and Silica, in the agro market with Novecare, in air and water treatments with Peroxides and Soda Ash & Derivatives.

The group made significant progress in circularity with a 9.3% of its sales of circular products. This result is getting closer to the 2030 target, with part of this progress related to methodology improvement. Solvay is already a market leader in some bio-polymers like guar, bio-sourced solvents and natural vanillin. Solvay is also investing in a powerful Rare Earths hub in La Rochelle, France to play a proactive role in the recycling of magnets. The collaboration between the Materials business and the French startup Carbios on the enzymatic recycling of polymers is another example. Finally, the new Solvay growth platform on Renewable Materials and Biotechnology will facilitate the development of safer chemicals, foster more environmentally-friendly solutions and enhance circularity.

Innovation to develop more sustainable solutions is a continuous process for Solvay teams partnering with customers to develop tailor-mode solutions. In 2022 Solvay opened a new Application development center in Alpharetta, Georgia, in the US. The Group is also investing in the upgrade of the 160 year-old soda ash manufacturing process to reduce the CO_2 emissions by 50%, while reducing resource consumption and eliminating limestone residues. A pilot is being implemented at the Dombasle, France site.

In 2022, the apparent increase of freshwater withdrawal in 2022 is mainly due to a stricter application of internal reporting rules for freshwater pumped by Solvay but sold to third parties. Solvay launched various water management initiatives to address water scarcity like the creation of a dashboard that monitors around 90% of the Group's daily freshwater intake. Solvay also conducted a review of water risks. Seven sites have designed roadmaps to improve their resilience, with the potential to achieve 30 million cubic meters in water intake reduction.

In 2022, Solvay exceeded its 2030 target with a -36% reduction of its non-recoverable industrial waste. Valorization, recycling and use in waste-to-energy programs are the key levers to reach the zero waste to landfill target. For example, the calcium fluoride (CaF2)-rich sludge produced at the Panoli site (India) is now reused as an additive in a cement plant instead of going to landfill. Another example is in the Augusta US site, where the volume of the waste polymer stream has decreased by 76% compared to 2021. Finally, the Collonges site (France) is valorizing the discarded silica by providing to customers a new range of products for other uses.

Better Life

In 2022, the number of injuries has decreased to 0.34 (versus 0.43 in 2021), despite higher production levels. Despite all efforts, a dramatic accident occurred. The Group triggered a strong action plan to raise the bar to reach the zero accident target.

Regarding Diversity, Equity and Inclusion (DEI), major milestones have been achieved this year. The Group took concrete actions to improve pay equity, created the "homogeneity index", achieved parity at the senior management level (SLC) and included the DEI roadmap within the 15% One Planet part of the Short Term Incentive.

Solvay also has nine Employee Resource Groups (ERG), which are grassroots groups led and run by employees that encourage employees to recognize and celebrate diversity, which is a critical component to guide the DEI journey. The different ERGs have suggested a DEI pledge that has been signed by the entire Senior Leadership Team.

In 2022, more than 100 sites, reaching more than 40% of Solvay's global workforce, devoted time to improving their awareness of Diversity Equity and Inclusion (DEI) as part of Solvay's One Dignity initiative. Their participation was converted into a €50,000 donation, which will be spent with local charities promoting DEI in the 14 countries that had the most participation.

The Group provided support for its employees with €9.5 million to be distributed among the people most affected by inflation. Solvay launched its first employee share plan in 2022, achieving an impressive participation rate of 27.7%, which is ahead of the benchmark for similar initiatives. And finally, Solvay increased its Global Performance Sharing (GPS) Plan budget to €15 million, for the "non-executive" employees.

In 2022, the Group renewed its Solvay Global Forum and Global Framework agreements with IndustriAll Global Union, the global union for the chemicals industry.

More information in the extra-financial report.

2. PREPARATION BACKGROUND

2.1. Comparability of results & reconciliation of underlying Income Statement indicators

In addition to IFRS accounts, Solvay also presents alternative performance indicators ("underlying") to provide a more consistent and comparable indication of the Group's underlying financial performance and financial position, as well as cash flows. These indicators provide a balanced view of the Group's operations and are considered useful to investors, analysts and credit rating agencies as these measures provide relevant information on the Group's past or future performance, financial position or cash flows. These indicators are generally used in the sector it operates in and therefore serve as a useful aid for investors to compare the Group's performance with its peers. The underlying performance indicators adjust IFRS figures for the non-cash Purchase Price Allocation (PPA) accounting impacts related to acquisitions, for the coupons of perpetual hybrid bonds, classified as equity under IFRS but treated as debt in the underlying statements, for impairments and for other elements that would distort the analysis of the Group's underlying performance.

2.2. Alternative performance metric (APM)

Solvay measures its financial performance using alternative performance metrics, which can be found below. Solvay believes that these measurements are useful for analyzing and explaining changes and trends in its historical results of operations, as they allow performance to be compared on a consistent basis. Definitions of the different metrics presented here are included in the glossary at the end of this financial report.

2.3. Description of the operational segments

Solvay is organized in the following operating segments:

- Materials offer a unique portfolio of high-performance polymers and composite technologies used primarily in sustainable mobility applications. Its solutions enable weight reduction and enhance performance while improving CO_2 and energy efficiency. Major markets served include next-generation mobility in automotive and aerospace, healthcare and electronics.
- Chemicals host chemical intermediate businesses focused on mature and resilient markets. Solvay is a world leader in soda ash and peroxides and major markets served include building and construction, consumer goods and food. Its Silica, Coatis and RusVinyl businesses are also high quality assets with strong positions in their markets.
- Solutions offer a unique formulation & application expertise through customized specialty formulations for surface chemistry & liquid behavior, maximizing yield and efficiency of the processes they are used in while minimizing the eco-impact. Novecare, Technology Solutions, Aroma, Special Chem and Oil & Gas focus on specific areas such as resources (improving the extraction yield of metals, minerals and oil), industrial applications (such as coatings) or consumer goods and healthcare (including vanillin and guar for home and personal care).
- Corporate & Business Services includes corporate and other business services, such as Group research & innovation or energy services, whose mission is to optimize energy consumption and reduce CO2 emissions.

3. UNDERLYING GROUP FIGURES

Note B1: Net sales

Net sales of €13,426 million in 2022 were up +32.9% (+25.6% organically) versus 2021 driven largely by price, and further supported with volume growth.

Net sales - *in € million*	
FY 2021	10,105
Scope	-70
Forex conversion	+651
Volume & Mix	+137
Price	+2,604
FY 2022	13,426

SALES BY END-MARKET

2022 *sales by end-markets (in %)*	Materials	Chemicals	Solutions	Solvay
Automotive and aerospace	51%	16%	9%	24%
Electronics	14%	0%	6%	6%
Resources and environment	6%	11%	21%	13%
Agro, feed and food	3%	19%	19%	14%
Consumer goods, healthcare and HPC	12%	21%	14%	16%
Building	5%	12%	9%	9%
Industrial applications and chemical industry	8%	21%	22%	18%

Note B2: Underlying raw materials & energy costs

The overall raw materials expense of the Group amounted to circa €4.6 billion in 2022 (vs. €3.2 billion in 2021). The raw materials expense can be split into several categories: crude oil derivatives for 35%, minerals derivatives for 20% (e.g. glass fiber, sodium silica, calcium silicate, phosphorus, sodium hydroxide…), natural gas derivatives circa 11%, biochemicals for 8% (e.g. glycerol, guar, fatty alcohol, ethyl alcohol…) and others for 26% (composites...).

Net energy costs represented about €1,639 million (vs .€789 million in 2021). The distribution per region is the following: in Europe (74%) followed by the Americas (17%), and Asia and the rest of the world (9%). The main energy sources expense are natural gas for 41% (35% in 2021, and 25% in 2020), coke, anthracite, petcoke and coal for 23% (21% in 2021 and 27% in 2020), electricity for 24% (31% in 2021 and 33% in 2020), steam, hydrogen and biomass for 8% (12% in 2021 and 14% in 2020), and no fuel oil (1% in 2021 and 2022).

More information on the energy efficiency in the Extra-financial section of this Annual Report 4.2. Energy.

Note B3: Underlying EBITDA

Underlying EBITDA evolution

Underlying EBITDA - *in € million*	
FY 2021	2,356
Scope	-39
Forex conversion	+192
Materials	+348
Chemicals	+109
Solutions	+189
Corporate & business service	+73
FY 2022	3,229

Underlying EBITDA - *in € million*	
FY 2021	2,356
Scope	-39
Forex conversion	+192
Volume & mix	+219
Net pricing	-1,001
Fixed costs	-399
Other	-102
FY 2022	3,229

Structural cost savings reached €79 million for the full year 2022, with €20 million realized in the fourth quarter. For the full year; approximately 60% are related to restructuring initiatives, 30% are from productivity and efficiency improvements and 10% of the savings are from indirect spending.

Underlying EBITDA of €3,229 million was up +37.0% (+28.7% organically) in 2022 versus 2021 driven by increased prices and also supported by modest volume increases. The EBITDA margin for full year 2022 was 24.0% driven primarily by increased pricing which more than offset cost inflation. Underlying EBITDA in the fourth quarter of €736 million increased +28.6% (+18.7% organically) versus the fourth quarter 2021 also due to price actions.

Note B4: Underlying depreciation & amortization

Amortization and depreciation & impairment charges were €802 million in 2022, compared to €756 million in 2021.

Note B5: Underlying net financial charges

In € million		FY 2022	FY 2021
Net cost of borrowings		-107	-107
Interest on loans & short term deposits		17	9
Other gains & losses on net indebtedness		3	2
Net cost of borrowings	a	-86	-96
Coupons on perpetual hybrid bonds	b	-82	-82
Interests and realized foreign exchange gains (losses) on the RusVinyl joint venture	c	-15	-16
Cost of discounting provisions	d	-19	-47
Result from equity instruments measured at fair value	e	-	6
Net financial charges	f = a+b+c+d+e	-202	-235

The variance in the underlying net financial charges is mainly explained by:

- Higher interest income on loans and deposits (higher volumes and an increase in interest rates)
- Decreased discounting costs as a result of the applicable discount rates, mainly for post-employment provisions

Note B6: Underlying income taxes

In € million		FY 2022	FY 2021
Profit/(loss) for the period before taxes	a	2,224	1,366
Earnings from associates & joint ventures	b	161	159
Interests and realized foreign exchange gains (losses) on the RusVinyl joint venture	c	-15	-16
Income taxes	d	-453	-287
Underlying tax rate	e = -d/(a-b-c)	22%	23%

The 1.7 percentage point decrease is mainly due to a more favorable mix of taxable profit by country.

Note B7: Underlying profit from discontinued operations

Free cash flow from discontinued operations in 2021 amounted to €-12 million, mainly related to the Polyamides (divested in 2020). In 2022, there were no discontinued operations.

Note B8: Capex

(in € million)		FY 2022	FY 2021
Acquisition (-) of tangible assets	a	-815	-561
Acquisition (-) of intangible assets	b	-94	-75
Payment of lease liabilities	c	-113	-99
Capex	d = a+b+c	-1,022	-736
Capex in discontinued operations	e		
Capex in continuing operations	f = d-e	-1,022	-736
Materials		-400	-251
Chemicals		-284	-212
Solutions		-242	-172
Corporate & Business Services		-96	-101
Underlying EBITDA	g	3,229	2,356
Materials		1,290	879
Chemicals		1,188	1,009
Solutions		944	701
Corporate & Business Services		-194	-232
Cash conversion	h = (f+g)/g	68.3%	68.8%
Materials		69.0%	71.4%
Chemicals		76.1%	79.0%
Solutions		74.4%	75.5%

Capex in continuing operations was €1,022 million in 2022, an increase of 39% compared to €736 million in 2021.

Note B9: Free Cash Flow

(in € million)		FY 2022	FY 2021
Cash flow from operating activities	a	2,006	1,499
of which voluntary pension contributions	b	-155	-236
of which cash flow related to portfolio management	c	-67	-7
Cash flow from investing activities	d	-831	-470
of which capital expenditures required by share sale agreement	e	-	-
Acquisition (-) of subsidiaries	f	-	-22
Acquisition (-) of investments - Other	g	-14	-22
Loans to associates and non-consolidated companies	h	-23	4
Sale (+) of subsidiaries and investments	i	94	169
Recognition of factored receivables	j	-26	-
Increase/decrease of borrowings related to environmental remediation	k	-	-
Payment of lease liabilities	L	-113	-99
FCF	m = a-b-c+d-e-f-g-h-i-j+k+l	1,255	1,043
FCF from discontinued operations	n	-	-12
FCF from continuing operations	o	1,255	1,056
Net interests paid	p	-62	-95
Coupons paid on perpetual hybrid bonds	q	-82	-75
Dividends paid to non-controlling interests	r	-17	-43
FCF to Solvay shareholders	s = m+p+q+r	1,094	830
FCF to Solvay shareholders from discontinued operations	t	-	-12
FCF to Solvay shareholders from continuing operations	u = s-t	1,094	843
FCF to Solvay shareholders from continuing operations (LTM)	v	1,094	843
Dividends paid to non-controlling interests from continuing operations (LTM)	w	-17	-43
Underlying EBITDA (LTM)	x	3,229	2,356
FCF conversion ratio	y = (v-w)/x	34.4%	37.6%

Free cash flow to shareholders from continuing operations reached €1,094 million. Results reflect higher volumes, margin expansion, and ongoing working capital discipline.

Note B10: Net working capital

(in € million)		December 31, 2022	December 31, 2021
Inventories	a	2,109	1,745
Trade receivables	b	2,026	1,805
Other current receivables	c	1,629	2,005
Trade payables	d	-2,296	-2,131
Other current liabilities	e	-1,499	-2,051
Net working capital	f= a+b+c+d+e	1,969	1,372
Sales	g	3,907	3,277
Annualized quarterly total sales	h = 4*g	15,626	13,108
Net working capital/sales	I=f/h	12.6%	10.5%
Year-to-date average	j= μ(q1,q2,q3,q4)	12.5%	12.7%

Net working capital over sales improved to 12.5% in 2022, due to the strong focus on working capital management and higher sales.

Note B11: Underlying net debt

(in € million)		December 31, 2022	December 31, 2021
Non-current financial debt	a	-2,450	-2,576
Current financial debt	b	-510	-773
IFRS gross debt	c=a+b	-2,959	-3,349
Underlying gross debt	d=c+h	-4,759	-5,149
Other financial instruments (current + non-current)	e	236	259
Cash & cash equivalents	f	932	941
Total cash and cash equivalents	g=e+f	1,168	1,199
IFRS net debt	I=c+g	-1,791	-2,149
Perpetual hybrid bonds	h	-1,800	-1,800
Underlying net debt	j=i+h	-3,591	-3,949
Underlying EBITDA (LTM)	k	3,229	2,356
Adjustment for discontinued operations	l	-	-
Adjusted underlying EBITDA for leverage calculation	m=k+l	3,229	2,356
Underlying leverage ratio	n=-j/m	1.1	1.7

Underlying net financial debt decreased by €358 million in 2022 to €3,591 million, driven by the free cash flow generation in 2022.

Note B12: Provisions

Provisions in 2022 decreased by €503 million to €2,097 million. Higher discount rates and an additional €155 million voluntary contribution to our pension assets in Germany were the main drivers of the decrease.

Provisions at the end of 2021 (in € million)	-2,600
Payments	328
Net new liabilities	-336
Unwinding of provisions	-105
Asset return	-631
Additional voluntary pensions contributions	155
Remeasurements	1,092
Changes in scope and other	1
Provisions at the end of 2022	-2,097

Note B13: CFROI

		FY 2022			FY 2021		
(in € million)		As published	Adjust-ment	As calculated	As published	Adjustment	As calculated
Underlying EBIT	a	2,426	-	2,426	1,600	-	1,600
Underlying EBITDA	b	3,229	-	3,229	2,356	-	2,356
Underlying Eearnings from associates & joint ventures	c	161	-	161	159	-	159
Dividends received from asso-ciates & joint ventures [1]	d	19	-	19	129	-	129
Recurring capex [2]	e = -2.3%*m	-	-	-448	-	-	-411
Recurring income taxes [3]	f = -28%*(a-c)	-	-	-634	-	-	-389
Recurring "CFROI" cash flow data	g = b-c+d+e+f	-	-	2,005	-	-	1,526
Materials	-	-	-	854	-	-	570
Chemicals	-	-	-	694	-	-	683
Solutions	-	-	-	607	-	-	454
Corporate & Business Services	-	-	-	-150	-	-	-181
Property, plant and equipment	h	5,311	-	-	4,943	-	-
Intangible assets	i	2,048	-	-	2,103	-	-
Right-of-use assets	j	474	-	-	466	-	-
Goodwill	k	3,472	-	-	3,379	-	-
Replacement value of goodwill & fixed assets [4]	l = h+i+j+k	11,306	10,547	21,854	10,891	9,131	20,022
of which fixed assets	m	7,834	11,634	19,468	7,512	10,363	17,875
iInvestments in associates & joint ventures [5]	n	809	43	852	637	-71	565
Net working capital [5]	o	1,969	36	2,006	1,372	50	1,422
"CFROI" invested capital	p = l+n+o	-	-	24,711	-	-	22,009
Materials		-	-	7,363	-	-	6,363
Chemicals		-	-	7,351	-	-	6,527
Solutions		-	-	6,993	-	-	6,289
Corporate & Business Services		-	-	3,064	-	-	2,997
CFROI	q = g/p	-	-	8.1%	-	-	6.9%
Materials		-	-	11.6%	-	-	9.0%
Chemicals		-	-	9.4%	-	-	10.5%
Solutions		-	-	8.7%	-	-	7.2%

[1] Excluding discontinued operations
[2] Currently estimated at 2.3% of replacement value of fixed assets
[3]Currently estimated at 28% of underlying EBIT (27% in 2021)
[4] The adjustment reflects the difference between the estimated replacement value of goodwill and fixed assets, and the accounting value. The changes over time come from foreign exchange variations, new investments and portfolio moves. It also reflects the quarterly average over the year.
[5] The adjustment reflects the quarterly average over the year.

Note B14: ROCE

(in € million)		2022 As calculated	2021 As calculated
EBIT	a	2,426	1,600
Non-cash accounting impact from amortization & depreciation of purchase price allocation (PPA) from acquisitions	b	-149	-150
Numerator	c = a+b	2,277	1,450
WC industrial	d	2,066	1,585
WC Other	e	-60	-138
Property, plant and equipment	f	5,161	4,800
Intangible assets	g	2,146	2,115
Right-of-use assets	h	482	435
Investments in associates & joint ventures	i	852	565
Other investments	j	42	42
Goodwill	k	3,507	3,341
Denominator	l = d+e+f+g+h+i+j+k	14,194	12,745
ROCE	m = c/l	16.0%	11.4%

ROCE has been defined as one of the key performance metrics to evaluate the success of the G.R.O.W. strategy. ROCE for 2022 reached a record level at 16.0% versus 11.4% in 2021 and 6.9% in 2020.

Note B15: Research & innovation

(in € million)		FY 2022	FY 2021
IFRS research & development costs	a	-357	-325
Grants netted in Research & development costs	b	33	27
Depreciation, amortization & impairments included in Research & development costs	c	-98	-100
Capex in Research & innovation	d	-57	-46
Research & innovation	e = a-b-c+d	-349	-298
Materials		-186	-138
Chemicals		-29	-28
Solutions		-115	-103
Corporate & Business Services		-19	-30
Net sales	f	13,426	10,105
Materials		4,075	2,903
Chemicals		4,496	3,357
Solutions		4,846	3,838
Corporate & Business Services		9	7
Research & innovation intensity	g = -e/f	2.6%	2.9%
Materials		4.6%	4.7%
Chemicals		0.6%	0.8%
Solutions		2.4%	2.7%

R&I effort further increased slightly during 2022, compared to 2021.

4. UNDERLYING FIGURES PER SEGMENT

SEGMENT OVERVIEW

(in € million)

	FY 2022	FY 2021	% yoy	% organic
Net sales	13,426	10,105	+32.9%	+25.6%
Materials	4,075	2,903	+40.4%	+32.6%
Specialty Polymers	3,121	2,173	+43.6%	+36.6%
Composite Materials	954	730	+30.7%	+21.0%
Chemicals	4,496	3,357	+33.9%	+26.5%
Soda Ash & Derivatives	2,221	1,509	+47.2%	+40.7%
Peroxides	773	636	+21.6%	+16.8%
Coatis	870	745	+16.8%	+5.1%
Silica	631	467	+35.4%	+30.0%
Solutions	4,846	3,838	+26.3%	+19.6%
Novecare [1]	1,905	1,546	+23.2%	+15.5%
Special Chem	1,040	840	+23.8%	+22.9%
Technology Solutions [1]	740	560	+32.2%	+23.4%
Aroma Performance	575	473	+21.4%	+14.7%
Oil & Gas [1]	586	418	+40.3%	+28.9%
Corporate & Business Services	9	7	+31.4%	+41.4%
EBITDA	3,229	2,356	+37.0%	+28.7%
Materials	1,290	879	+46.8%	+36.9%
Chemicals	1,188	1,009	+17.7%	+10.1%
Solutions	944	701	+34.7%	+25.0%
Corporate & Business Services	-194	-232	+16.6%	-
EBITDA margin	24.0%	23.3%	+0.7pp	-
Materials	31.7%	30.3%	+1.4pp	-
Chemicals	26.4%	30.1%	-3.6pp	-
Solutions	19.5%	18.3%	+1.2pp	-
Capex in continuing operations	1,022	736	+38.8%	-
Materials	400	251	+59.4%	-
Chemicals	284	212	+34.0%	-
Solutions	242	172	+40.7%	-
Corporate & Business Services	96	101	-5.1%	-
Cash conversion	68.3%	68.8%	-0.4pp	-
Materials	69.0%	71.4%	-2.4pp	-
Chemicals	76.1%	79.0%	-2.9pp	-
Solutions	74.4%	75.5%	-1.1pp	-
CFROI	8.1%	6.9%	+1.2pp	-
Materials	11.6%	9.0%	+2.6pp	-
Chemicals	9.4%	10.5%	-1.0pp	-
Solutions	8.7%	7.2%	+1.5pp	-

Research & innovation	349	298	+17.1%	-
Materials	186	138	+35.0%	-
Chemicals	29	28	+4.7%	-
Solutions	115	103	+12.1%	-
Corporate & Business Services	19	30	-36.6%	-
Research & innovation intensity	2.6%	2.9%	-0.3pp	-
Materials	4.6%	4.7%	-0.2pp	-
Chemicals	0.6%	0.8%	-0.2pp	-
Solutions	2.4%	2.7%	-0.3pp	-

(1) Sales of Novecare and Technology Solutions in prior periods have been restated to reflect the creation of an Oil & Gas GBU as from July 1, 2021.

Note B16: Materials segment

(in € million)	FY 2022	FY 2021	% yoy	% organic
Net sales	4,075	2,903	+40.4%	+32.6%
Specialty Polymers	3,121	2,173	+43.6%	-
Composite Materials	954	730	+30.7%	-
EBITDA	1,290	879	+46.8%	+36.9%
EBITDA margin	31.7%	30.3%	+1.4pp	-
EBIT	1,009	637	+58.3%	-
Capex in continuing operations	400	251	+59.4%	-
Cash conversion	69.0%	71.4%	-2.4pp	-
CFROI	11.6%	9.0%	+2.6pp	-
Research & innovation	186	138	+35.0%	-
Research & innovation intensity	4.6%	4.7%	-0.2pp	-

NET SALES BRIDGE

Underlying - *in € million*	
FY 2021	2,903
Scope	-1
Forex conversion	+171
Volume & Mix	+278
Price	+724
FY 2022	4,075

Sales in the full year 2022 were up +40.4% (+32.6% organically) to €4,075 million driven by record sales levels in Specialty Polymers across all markets, further supported by the continuing recovery in commercial aerospace. Full year EBITDA was up +46.8% (+36.9% organically), thanks to the higher volumes and pricing which drove 140 basis points margin expansion to 31.7% for the year.

Note B17: Chemicals

(in € million)	FY 2022	FY 2021	% yoy	% organic
Net sales	4,496	3,357	+33.9%	+26.5%
Soda Ash & Derivatives	2,221	1,509	+47.2%	-
Peroxides	773	636	+21.6%	-
Coatis	870	745	+16.8%	-
Silica	631	467	+35.4%	-
EBITDA	1,188	1,009	+17.7%	+10.1%
EBITDA margin	26.4%	30.1%	-3.6pp	-
EBIT	943	782	+20.6%	-
Capex in continuing operations	284	212	34.0%	-
Cash conversion	76.1%	79.0%	-2.9pp	-
CFROI	9.4%	10.5%	-1.0pp	-
Research & innovation	29	28	+4.7%	-
Research & innovation intensity	0.6%	0.8%	-0.2pp	-

NET SALES BRIDGE

Net sales FY - *in € million*	
FY 2021	3,357
Scope	-22
Forex conversion	+220
Volume & Mix	-93
Price	+1,035
FY 2022	4,496

Full year 2022 sales in the segment were up +33.9% (+26.5% organically) to €4,496 million due to pricing measures and sustained demand for Soda Ash & Derivatives, Peroxides and Silica that were able to more than compensate for softening demand in Coatis. EBITDA in 2022 was up +17.7% (+10.1% organically), thanks primarily to pricing. The drop in demand and pricing pressure in Coatis and Rusvinyl caused EBITDA margins to decrease to 26.4% for full-year 2022.

Note B18: Solutions

(in € million)	FY 2022	FY 2021	% yoy	% organic
Net sales	4,846	3,838	+26.3%	+19.6%
Novecare (1)	1,905	1,546	+23.2%	-
Special Chem	1,040	840	+23.8%	-
Technology Solutions (1)	740	560	+32.2%	-
Aroma Performance	575	473	+21.4%	-
Oil & Gas (1)	586	418	+40.3%	-
EBITDA	944	701	+34.7%	+25.0%
EBITDA margin	19.5%	18.3%	+1.2pp	-
EBIT	761	511	+48.8%	-
Capex in continuing operations	242	172	+40.7%	-
Cash conversion	74.4%	75.5%	-1.1pp	-
CFROI	8.7%	7.2%	+1.5pp	-
Research & innovation	115	103	+12.1%	-
Research & innovation intensity	2.4%	2.7%	-0.3pp	-

(1) Sales of Novecare and Technology Solutions in prior periods have been restated to reflect the creation of an Oil & Gas GBU as from July 1, 2021.

The Oil & Gas GBU was created on July 1, 2021, regrouping activities that were previously included in Novecare and Technology Solutions. The following table presents restated figures for these GBUs since the beginning of 2021.

Net sales *(in € million)*	Q1 2021	Q2 2021	Q3 2021	Q4 2021	Q1 2022	Q2 2022	Q3 2022	Q4 2022
Novecare (excl. Oil & Gas)	354	375	384	433	453	506	511	436
Special Chemicals	211	210	209	210	243	285	261	255
Technology Solutions (excl. Oil & Gas)	133	139	145	143	151	207	189	190
Aroma Performance	110	110	119	135	142	167	146	121
Oil & Gas	83	91	107	137	147	143	151	145
Solutions	891	925	964	1,058	1,135	1,309	1,257	1,146

NET SALES BRIDGE

Net sales FY – *in € million*	
FY 2021	3,838
Scope	-47
Forex conversion	+260
Volume & Mix	-51
Price	+845
FY 2022	4,846

Full year 2022 sales were up +26.3% (+19.6% organically) to €4,846 million due mainly to pricing across business lines. Full year EBITDA was up +34.7% (+25.0% organically), leading to 19.5% EBITDA margin for the year, up 120 basis points from 2021.

Note B19: Corporate & Business services

(in € million)	FY 2022	FY 2021	% yoy	% organic
Net sales	9	7	+31.4%	41.4%
EBITDA	-194	-232	+16.6%	-
EBIT	-287	-331	+13.3%	-
Capex in continuing operations	96	101	-5.1%	-
Research & Innovation	19	30	-36.6%	-

BRIDGE

in € million	
FY 2021	7
Scope	-
Forex conversion	-1
Volume & Mix	3
Price	-
FY 2022	9

Corporate and Business services reported a loss of -€27 million to the Group EBITDA in Q4 2022. The +€74 million improvement year over year is mainly due to the continued benefits of stabilization of our energy business which recorded a -€34 million one-time loss recorded in Q4 2021 in relation to energy supply to third parties.

5. RECONCILIATION OF UNDERLYING AND IFRS MEASURES

In addition to IFRS accounts, Solvay also presents underlying Income Statement performance indicators to provide a more consistent and comparable indication of Solvay's economic performance. These figures adjust IFRS figures for the non-cash Purchase Price Allocation (PPA) accounting impacts related to acquisitions, for the coupons of perpetual hybrid bonds classified as equity under IFRS but treated as debt in the underlying statements, and for other elements to generate a measure that avoids distortion and facilitates the appreciation of performance and comparability of results over time.

EBITDA on an IFRS basis totaled €3,144 million, versus €3,229 million on an underlying basis. The difference of €84 million is explained by the following adjustments to IFRS results, which are done to improve the comparability of underlying results:

- -€322 million in "other operating gains and losses", for the gains related to the management of the CO_2 hedges, not accounted for as Cash Flow Hedge, deferred until the maturity of the economic hedge.
- -€10 million in "Earnings from associates & joint ventures" for Solvay's share in the financial charges of the RusVinyl joint venture and the foreign exchange results on the €-denominated debt of the joint venture, due to the strengthening of the RUB against the EUR over the period.
- €133 million to adjust for the "Result from portfolio management and major restructuring" (excluding depreciation, amortization and impairment elements), includes separation costs incurred for the project aimed at the separation of the Group into two independent, publicly listed companies.
- €283 million to adjust for the "Result from legacy remediation and major litigations". Moreover the variation of environmental provisions were impacted from the revised assumptions of higher inflation rates.

EBIT on an IFRS basis totaled €2,221 million, versus €2,426 million on an underlying basis. The difference of €205 million is explained by the above-mentioned €84 million adjustments at the EBITDA level and €121 million of "*Depreciation, amortization & impairments*". The latter consist of:

- €149 million to adjust for the non-cash impact of purchase price allocation (PPA), consisting of amortization charges on intangible assets, which are adjusted in "*Research & development costs*" for €3 million, and in "*Other operating gains & losses*" for €146 million.
- -€28 million to adjust for the net impact of impairments reversal reported in "*Result from portfolio management and major restructuring*" resulting primarily from the improved performance of some Special Chem assets.

Net financial charges on an IFRS basis were €-71 million versus €-202 million on an underlying basis. The €-132 million adjustment made to IFRS net financial charges mainly consists of:

- -€82 million reclassification of coupons on perpetual hybrid bonds, which are treated as dividends under IFRS, and as financial charges in underlying results.
- -€15 million reclassification of financial charges and realized foreign exchange result on the €-denominated debt of RusVinyl as net financial charges.
- -€59 million for the net impact of increasing discount rates on the valuation of environmental liabilities in the period.
- €13 million for losses on financial instruments at fair value through P&L

Income taxes on an IFRS basis were -€217 million, versus -€453 million on an underlying basis. The -€237 million adjustment relates to the adjustments of the earnings before taxes described above and to the reversal of the impairment of deferred taxes on the goodwill, tangible and intangible assets for Oil & Gas in the United States, booked in 2020, based on a reassessment of their recoverability (+€105 million).

Profit / (loss) attributable to Solvay shareholders was €1,905 million on an IFRS basis and €1,743 million on an underlying .basis. The delta of -€162 million reflects the above-mentioned adjustments to EBIT, net financial charges and income taxes. There was no impact from non-controlling interests.

6. NOTES TO THE FIGURES PER SHARE

HISTORICAL KEY SHARE DATA

		2017	2018	2019	2020	2021	2022
Number of shares (in 1000 shares)							
Issued shares at end of year	a	105,876	105,876	105,876	105,876	105,876	105,876
Treasury shares at end of year	b	2,358	2,723	2,466	2,718	2,237	2,107
Shares held by Solvac	c	32,511	32,511	32,511	32,622	32,622	32,622
Outstanding shares at the end of the year	d = a-b	103,519	103,154	103,411	103,158	103,640	103,769
Average outstanding shares (basic calculation)	e	103,352	103,277	103,177	103,140	103,527	103,744
Average outstanding shares (diluted calculation)	f	104,084	103,735	103,403	103,170	103,788	104,143
Data per share (in €)							
Equity attributable to Solvay share	g = .../d [2]	71.98	77.76	74.70	52.45	67.09	84.97
Underlying profit for the period (basic)	h = .../e [2]	9.08	10.57	10.41	5.99	10.05	16.80
IFRS profit for the period (basic)	i = .../e [2]	10.27	8.31	1.15	-9.32	9.15	18.37
IFRS profit for the period (diluted)	j = .../f [2]	10.19	8.27	1.15	-9.32	9.13	18.30
Gross dividend [3]	k	3.60	3.75	3.75	3.75	3.85	4.05
Net dividend [3]	l = k*(1-…%) [4]	2.52	2.62	2.62	2.62	2.70	2.84
Share price data (in €) [5]							
Highest	m	132.00	120.65	111.45	105.25	118.65	111.65
Lowest	n	106.30	85.44	82.26	52.82	90.78	76.42
Average	o = v/u	118.69	110.07	95.53	78.95	105.30	91.18
At the end of the year	p	115.90	87.32	103.30	96.88	102.20	94.46
Underlying price/earnings	q = p/h	12.8	8.3	9.9	16.2	10.2	5.6
IFRS price/earnings	r = p/i	11.3	10.5	90.0	-10.4	11.2	5.1
Gross dividend yield	s = k/p	3.1%	4.3%	3.6%	3.9%	3.8%	4.3%
Net dividend yield	t = l/p	2.2%	3.0%	2.5%	2.7%	2.6%	3.0%
Stock market data [5]							
Annual volume (in 1000 shares)	u	62,642	70,715	65,292	71,670	42,811	53,252
Annual volume (in € million)	v	7,435	7,784	6,238	5,659	4,508	4,830
Market capitalisation, end of year (in € million)	w = p*d	11,997.8	9,007.4	10,682.3	9,994.0	10,592	9,812
Velocity	x = u/a	59.2%	66.8%	61.7%	67.7%	40.4%	50.3%
Velocity adjusted for free float	y = u/(a-b-c)	88.2%	100.1%	92.1%	101.4%	60.2%	74.8%

(1) These data are not presented on pro forma basis, i.e: excluding impacts of IFRS16 Leases for 2018.
(2) The numerator can be found under the same label in the historic key financial data table in section 1 of the Business review.
(3) Recommended 2022 dividend, pending General Shareholders meeting on May 9, 2023.
(4) Belgian withholding tax applicable in year of dividend payment, i.e. the following year: 27% in 2016, 30% from 2017 onward.
(5) The stock market data are based on all trades registered by Euronext.

Note B20: Earnings per share

		FY2022	FY2021
Profit attributable to Solvay share (in € m)			
Underlying profit for the period	a	1,743	1,040
Underlying profit from continuing operations	b	1,741	1,038
IFRS profit for the period	c	1,905	948
IFRS profit/(loss) from continuing operations	d	1,905	943
Number of shares (in 1000 shares)			
Issued shares at end of year	e	105,876	105,876
Treasury shares at end of year	f	2,107	2,236
Outstanding shares at the end of the year	g = e-f	103,769	103,640
Average outstanding shares (basic calculation)	h	103,744	103,527
Average outstanding shares (diluted calculation)	i	104,143	103,788
Data per share (in €)			
Underlying profit for the period (basic)	j = a/h	16.80	10.05
Underlying profit from continuing operations (basic)	k = b/h	16.79	10.02
IFRS profit for the period (basic)	l = c/h	18.37	9.15
IFRS profit from continuing operations (basic)	m = d/h	18.36	9.11
IFRS profit/loss for the period (diluted)	p = c/i	18.30	9.13
IFRS profit from continuing operations (diluted)	q = d/i	18.29	9.09

Note B21: Dividend

The Board of Directors decided to recommend to the General Shareholders' Meeting of May 9, 2023 the payment of a total gross dividend of €4.05 per share. The dividend for the fiscal year 2022 is in line with the Group's dividend policy of maintaining a stable to increasing dividend whenever possible and, as far as possible, never reducing it.

Given the interim dividend of €1.54 gross per share, with 30% withholding tax, paid on January 18, 2023, the balance of the dividend in respect of 2022, equals €2.51 gross per share, which will be paid on May 17, 2023, provided prior agreement by General Shareholders Meeting.

7. OUTLOOK

In the context of the current macro environment, we expect volumes to be softer in certain key markets. As a result full-year underlying EBITDA is currently estimated between -3% and -9% versus 2022. Free Cash Flow is estimated at around €750 million reflecting the current cycle of growth investments that is underway.

GOVERNANCE STATEMENTS

Corporate governance statement

Corporate Governance Statement

Highlights of the year

Board of Directors

In 2022, Solvay's Board of Directors continued to provide effective oversight of the Executive Leadership Team (ELT), constructive input and support on a range of relevant matters covering strategic, sustainability and operational priorities. The Board met with the ELT nine times during the period under review. The Board supported the ELT in the delivery of strong results and in ensuring that Solvay remains on track to meet strategic and transformational objectives. This strategic performance was achieved in a complex geopolitical context. The Board ensures that sustainable value is created for all shareholders.

Following thorough evaluation of a range of strategic options to unlock and accelerate value creation, the Board decided to review plans to separate Solvay into two independent publicly listed companies, currently known as EssentialCo and SpecialtyCo. The separation will gather similar business models into separate companies, differentiate capital structures as well as strategic objectives to enhance strategic focus and accelerate value-accretive sustainable growth. It will build on the strong foundations established in recent years, and benefit of all stakeholders, including shareholders, customers and employees. Solvac SA, Solvay's reference shareholder, has publicly communicated its support for the separation project. For further details, please refer to the introduction section of this Annual Integrated Report.

In addition to core strategic and financial objectives, business performance reviews at Board level take also into account progress on Solvay's One Planet sustainability roadmap, and all key business decisions integrate relevant non-financial Environmental, Social and Governance (ESG) considerations. As part of their Continuous Training Program, the Board visited Solvay's Spinetta Marengo site, in Italy, which gave them an opportunity to test and experience many aspects of the Group's transformation at a key industrial site. This included seeing how talents are grown and developed, and how cost improvements and safety in operations are driven, as well as gaining an insight into continuous process innovation, growth projects, and sustainability challenges and opportunities at the site.

Main decisions taken by the Board during the period under review include, but are not limited to:

- Review of plans to separate Solvay into two independent publicly listed companies (Power of Two, Po2), marking the next phase of Solvay's transformation.
- Extension of the carbon neutrality targets, with a commitment to decrease Solvay's indirect Scope 3 emissions by 24%. This development was supported by the ESG Committee that was created in 2021.
- Announcement of the phase-out roadmap for fluorosurfactants in Italy, following a similar move in the US in 2021.
- Investment in the electric vehicle (EV) batteries (in France, China and the US), semiconductor and natural ingredients industries, and in expanding soda ash capacity.
- Approval of supplementary financial remuneration for more junior employees to help combat unprecedented increases in the cost of living, with around €9.5 million in the form of one-time bonuses and a 50% increase in the Global Performance Sharing Plan budget, which now totals €15 million.
- Election of two new, independent Board members at the 2022 Shareholders Meeting, increasing the Board's independence and diversity.
- A new Remuneration Policy, submitted to the vote of the 2022 Shareholders Meeting, which reflects strategic priorities and global best practices.
- Strong support from the Board for the CEO and management team to accelerate decisions to invest in promoting the sustainability of our product portfolio, our facilities and the well-being of our employees, and in particular in our soda ash operations in Rosignano, Italy.

SOLVAY BOARD OF DIRECTORS AT YEAR END 2022

15 directors

14 non executive Board Members

7 nationalities

46% of women

94.4% attendance rate

Separate Chair and CEO

6 new Board members appointed over the past 5 years

66% independent

9 meetings

Executive Leadership Team (ELT)

2022 was a unique year with the announcement that Solvay is reviewing plans to separate the Company into two independent publicly listed companies. The ELT has mobilized a dedicated task force, led by a highly-experienced and dedicated team, with the intention to deliver on the separation during the second half of 2023, subject to general market conditions and to meeting a number of customary conditions, including shareholder approval at an extraordinary general meeting. This approach was chosen to ensure that business and functional leadership remain focused on operational delivery and are not distracted by matters best handled by the separation task force.

The macroeconomic and geopolitical context in 2022 was extremely complex. Covid-19 continued to impact operations in some jurisdictions, while exceptionally high inflationary pressures impacted costs. Logistic and supply chain dislocations and challenges affected certain markets, and the ramifications of the war in Europe could easily have threatened the supply of energy and raw materials, thereby undermining business continuity. Consequently, the ELT promoted a sharp organizational focus to preserve operational resilience, equally intensify customer interactions and preserve pricing power to protect margins. The ELT frequently interacted with the extended business and functional leadership teams collectively. The ELT met twelve times in person in 2022. The ELT members shared information which helped to align priorities allowing Solvay to deliver excellent performance.

We also continued to focus on cash generation in 2022. This helped support important investments, laying the foundations for superior and sustainable growth. Extensive progress was made in relation to our Solvay One Planet targets, especially with our new Scope 3 commitments, an innovative breakthrough in the soda ash production process that will now proceed to pilot phase and the phasing out of fluorosurfactants. In addition, progress has been made in advancing our Group's diversity, equity and inclusion mindset. This includes a number of concrete initiatives, such as the adoption of a plan to close gender pay gaps.

SOLVAY EXECUTIVE LEADERSHIP TEAM AT YEAR 2022

6 members

5 nationalities

1 woman

12 meetings in addition to short weekly operational performance meetings

100% attendance rate

1. INTRODUCTION

Solvay SA – headquartered in Belgium and listed on Euronext Brussels and Euronext Paris – is committed to upholding the highest level of Belgian governance practices and disclosures. We consistently seek to strengthen our corporate governance practices and disclosures, emphasizing transparency and promoting a culture of sustainable long-term value creation, in line with our Purpose.

Solvay's Board is responsible for maintaining the Group's long-term strategic thinking and for overseeing, challenging and supporting the ELT's implementation of Solvay's strategy.

In accordance with Belgian law, Solvay adheres to the principles and provisions of the 2020 Belgian Corporate Governance Code (the "Belgian Governance Code"), which is based on a "comply or explain" principle. The English, Dutch and French versions of the Belgian Governance Code can be found on the website of the Belgian Corporate Governance Committee.

Solvay's Board has adopted a Corporate Governance Charter (the "Charter"). The Charter was last amended on December 11, 2019 and is available on Solvay's corporate website. It describes the main aspects of Solvay's approach to corporate governance, including the governance structure and the internal rules of the Board, the ELT and committees set up by the Board.

In addition, Solvay publishes a Corporate Governance Statement in the Annual Integrated Report, which includes the information required by the Belgian Code of Companies and Associations (hereafter the "Code of Companies and Associations" or "BCCA") and the Belgian Governance Code. The Corporate Governance Statement includes additional factual information regarding Solvay's corporate governance practices and relevant modifications to this, together with details on the remuneration of directors and executives and on relevant events that took place during the preceding year. This section of the Annual Integrated Report constitutes Solvay's Corporate Governance Statement for the year 2022.

2. CAPITAL, SHARES AND SHAREHOLDERS

2.1. Capital

Solvay's share capital amounts to €1,588,146,240 and comprises 105,876,416 issued shares. No changes were made to Solvay's capital in 2022.

2.2. Solvay shares

Solvay (SOLB.BE) is listed on Euronext Brussels, which is our primary listing. Solvay has a secondary listing on Euronext Paris. Since September 9, 2021, Solvay shares have also been traded over the counter (OTC) as an unsponsored American Depository Receipt (ADR).

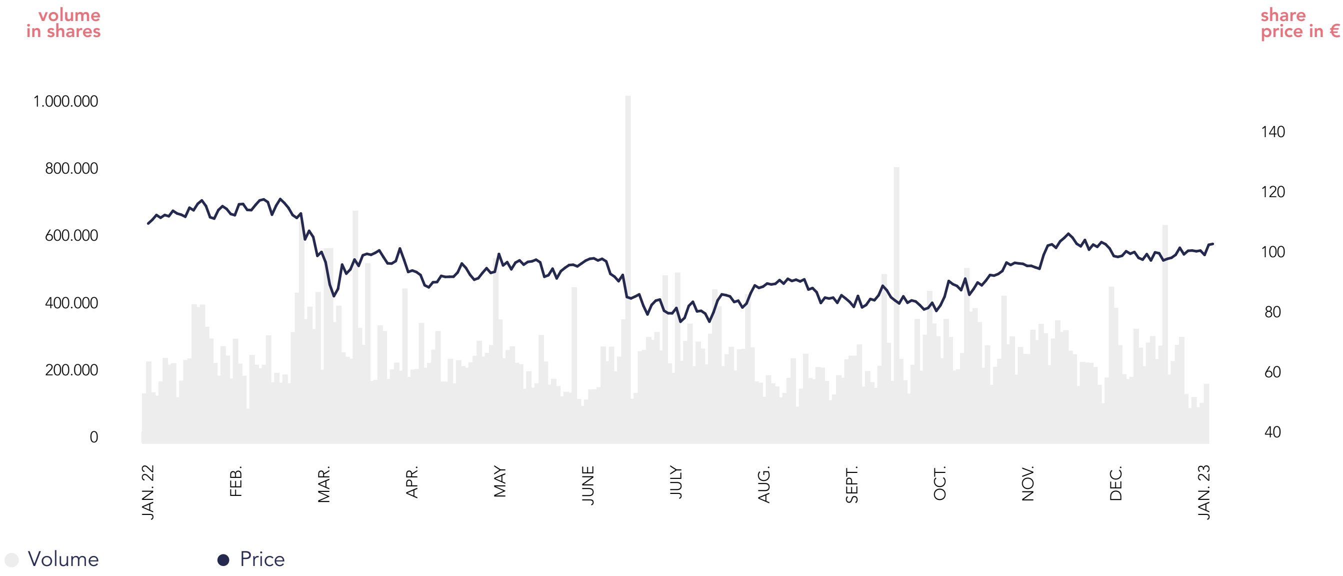
Solvay is a member of the BEL20, the main Belgian index. On September 14, 2018, Solvay became part of the CAC Next20 index and is considered to be the largest (specialty) chemicals company on Euronext Paris. Solvay shares are part of other major indexes including the BEL Chemicals, STOXX family (DJ STOXX, DJ Euro STOXX, STOXX Europe 600 chemicals), MSCI index, Euronext 100, Dow Jones Sustainability TM World Index and FTSE4Good Index.

During 2022, the average share price at end of day close was €91.18 while the 52-week range was €76.42 to €111.65 (closing price) per share. Solvay's closing share price on December 30, 2022 was €94.46, which represents an increase of 7.5% compared to the end of 2021.

Average daily trading volume as reported by Euronext was 207,206 in 2022, compared to 165,376 shares in 2021, representing €18.5 million exchanged per day. Solvay's closing share price on December 30, 2022 was €94.46, which represents a decrease of 7.6% compared to the end of 2021. In addition to Euronext, there are other alternative trading platforms and dark pools where investors are able to buy and sell Solvay shares.

We also carried out additional analysis to compare Solvay's liquidity with indices and peers. Taking into account what the company considers as "accessible liquidity", which includes Euronext and some easily accessible platforms and dark pools, the daily liquidity of Solvay can be expressed as 61 basis points (bps) of our free float. In comparison, the shares of BEL 20 issuers trades, on average, at 54bps of its daily free float, and the median of Solvay peers, including BASF, DSM, AkzoNobel, Croda, Covestro, Umicore, Arkema, EMS, Johnson Matthey, Evonik, Clariant, Lanxess, Victrex, Ashland and Hexcel, is 73bps.

SOLVAY SHARE PRICES AND TRADING VOLUMES FROM JANUARY 3, 2022 TO DECEMBER 30, 2022.



2.3. Shareholders

2.3.1. Shareholder structure

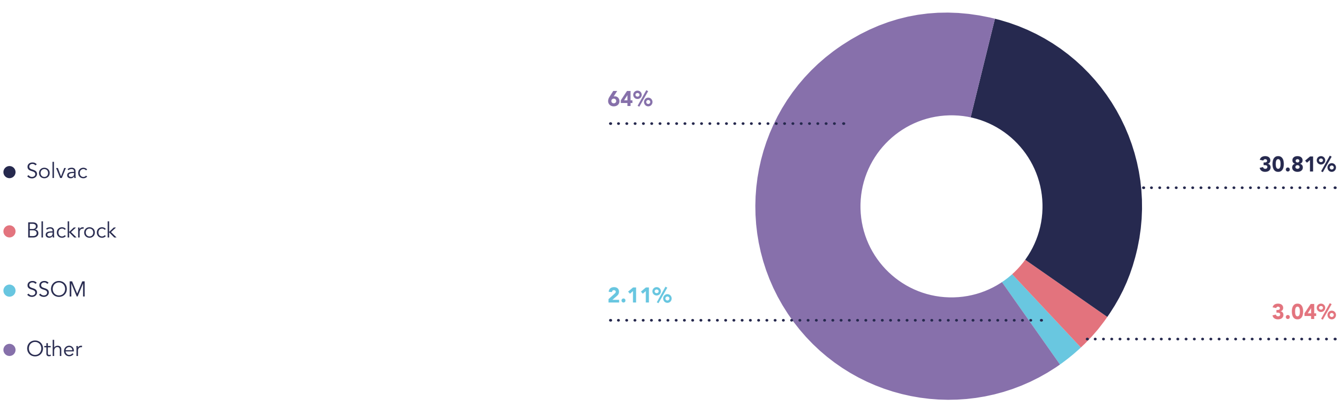
As of December 31, 2022, Solvay's capital was represented by 105,876,416 ordinary shares. As there are no different classes of shares, all Solvay shares carry the same rights. Each share comes with the right to one vote, following the "one share, one vote" principle.

Solvay ordinary shares can be held as either:

- Registered shares: shares represented by an entry within Solvay's share registry, managed by Solvay's Shareholders Service.
- Dematerialized shares: shares represented by a book entry in the name of the shareholder with a recognized account keeper or a clearing institution.

The chart below represents Solvay's shareholder structure, including the notifications made by shareholders as of December 31, 2022. The transparency notifications are required by Belgian law and Solvay's bylaws when an investor crosses the thresholds of 3%, 5%, 7.5% or any multiple of 5% of Solvay voting rights. Unless otherwise indicated, section 2.3.1 of this Annual Integrated Report refers to theoretical voting rights, taking into account all the shares to which voting rights are attached, even if the exercise of these rights is suspended.

SHAREHOLDER STRUCTURE



- Solvac, Solvay's largest shareholder, gave notice that it held 32,621,583 Solvay shares on March 29, 2021, representing 30.81% of the total number of shares issued by Solvay (source: Solvac Annual Report).
- Blackrock Inc., an institutional investor, gave notice that as of January 27, 2022, it held 3,216,531 Solvay shares, representing 3.04% of the voting rights, and 370,633 equivalent financial instruments, representing 0.35% of the voting rights. This amounts to a combined interest in Solvay of 3.39%.
- Solvay Stock Option Management (SSOM) SRL, a wholly-owned, indirect subsidiary of Solvay, held 2,236,739 Solvay shares representing a total of 2,11% of the total number of shares issued by Solvay.
- The remaining shares, comprising approximately 64%, are held by institutional and retail shareholders.

Solvac

Solvay's largest shareholder is Solvac SA ("Solvac"). Solvac SA is a public limited liability company established under Belgian law, founded in 1983. Its annual reports indicate that its primary asset consists of shares in Solvay.

Solvac's shares are traded on Euronext Brussels. It has approximately 14,000 shareholders. Among these, approximately 2,400 individuals are related to the founding families of Solvay and Solvac, which, combined, are reported to hold approximately 77.32% of Solvac shares.

Solvac's Board expressed its strategic investment objective in Solvay in its 2021 Corporate Governance Statement:

"Solvac supports the development of Solvay's strategy focused on its transformation towards world leadership in advanced materials and specialty chemicals. Solvac supports the Solvay One Planet initiative and its ambitious commitments. Solvac underlines the importance for it to see Solvay maintain its policy of stability and, if possible, increasing dividends, as well as prudent financial discipline leading to an investment grade qualification of its short and long term debt."

As of March 15, 2022, Solvac's Board expressed its support to the Solvay's project to explore its separation into two independent publicly listed companies.

A relationship agreement with Solvac has not been considered necessary, given Solvac's stated investment objective and track record of engagement with Solvay since its initial investment in 1983. Solvay's articles of association do not provide for any special director nomination rights for Solvac.

Solvay Stock Option Management

Solvay Stock Option Management SRL (SSOM) is a wholly-owned indirect subsidiary of Solvay. As of December 31, 2022, SSOM held 2,107,752 Solvay shares and 631,124 call options. Those shares and options are held by SSOM on its own account, as part of its strategy to cover the obligations assumed by SSOM regarding stock options granted by Solvay to Group senior executives.

The voting rights attached to the shares held by Solvay Stock Option Management are, as a matter of law, suspended.

Employee Share Purchase Plan

Solvay announced the launch of the company's first employee stock ownership plan in December 2021. By purchasing shares in Solvay, participants received a free share on joining the scheme and a matched share for every two Solvay shares purchased. Free and matching shares are subject to a two years holding period.

The stock ownership plan, which is subject to a maximum envelope of 250,000 shares in the 2022 plan, is available to all Solvay employees in the 22 countries in which local regulations permit us to offer it.

The aim of the program is to mobilize thousands of employees to act as entrepreneurs and owners, broadening their perspectives and encouraging them to embrace all opportunities to drive the Group's transformation and to create superior, responsible and sustainable value.

The one-year Employee Share Purchase Program started in November 2022. After two months, 19, 442 shares have been purchased under this plan by our employees. More shares will be purchased in the next 10 months.

2.4. Relations with investors and analysts

Solvay maintains an open, ongoing and constructive dialogue with the investment community. We always seek to provide pertinent and accurate information to ensure understanding of Solvay business and strategy, helping the financial community to make their own informed assessments and judgments. Detailed information on our business activities, strategy and financial performance is available through various regulatory and other publications, such as the Annual Integrated Report, financial reports and press releases, as well as other media, such as webcasts, which are available on our website.

The Investor Relations team maintains a close relationship with investors throughout the year. The CEO and CFO also prioritize interactions with the investment community. Solvay's teams have been agile and flexible in maintaining these interactions, supplementing the use of digital technologies with a return to face-to-face meetings.

It is important to note that Solvay adheres to the guidelines issued by the FSMA (Belgian Financial Services and Markets Authority) and complies with the disclosure obligations defined by Belgian law and contained in the Market Abuse Regulation (EU) 596/2014 (MAR).

On March 15, 2022, Solvay announced that we were reviewing plans to separate the Company into two independent publicly listed companies. The two companies, which are currently referred to as EssentialCo and SpecialtyCo, are expected to be leaders in their industries, each with a clearly defined strategic focus, and well-positioned to enhance value for shareholders, customers and team members alike. This strategic intention drove significant interest and questions during our interactions with the financial community.

Solvay's management team are proactively addressing the desire of the investors and shareholders to deepen their understanding of the key activities the Company pursues. After the positive feedback on our ESG webinar in December 2021, which focused on the progress Solvay has made to reduce our environmental impact, the company committed to hosting a series of educational webinars to cover key Group activities. These help investors better understand the strategic positioning of the main parts of Solvay's portfolio. In February 2022, the series continued with a focus on the Materials segment serving the Automotive industry, which is driven primarily by the trends of lightweighting and electrification.

Following the announcement of our plans to separate Solvay into two companies, we accelerated this educational webinar series with sessions on Solvay's consumer-facing businesses. This included sessions on our Novecare and Aroma Performance businesses in June 2022, and a webinar about our Peroxides business in October 2022. Two webinars also took place in late February 2023, focused on aerospace and defense activities, and on our Soda Ash business. These webinars, combined with the planned Capital Market Days presenting the strategy of the two new entities, should help investors assess the quality of each entity and its future potential.

Recordings of these webinars are available on the investors section of our website.

2.4.1. Interactions with shareholders, Solvac and Solvay founding families

Every shareholder has access to clear, comprehensive, transparent information, tailored to his or her individual needs, through a dedicated section on the Solvay website. Solvay also engages with retail banks, regularly interacting with their analysts and participating in events dedicated to private investors.

In 2022, Solvay holds regular meetings with our major reference shareholder, Solvac. The CEO and CFO gave four presentations to Solvac's Board of Directors in 2022, covering the Solvay Group's half- and full-year results, the project to separate Solvay into two companies and a general overview of the Peroxides business.

In addition, Solvay's management participated in two events organized by shareholders from Solvay's founding families to update them on strategy and results. A group of 30 shareholders from Solvay's founding families went to visit the biomass boiler at Solvay's Rheinberg site in Germany.

2.4.2. Interactions with sell-side analysts

Solvay is covered by 21 sell-side analysts who regularly publish research on the Company. The up-to-date list of analysts can be found on Solvay's website.

Apart from regular individual meetings, emails and phone conversations, Solvay organizes quarterly conference calls and webinar series between the senior management and the financial community, following the publication of the Group's results. Although specifically geared toward analysts, these conference calls are accessible live to all investors, and remain available in the form of a video and transcript on the Solvay website.

Where opportunities permit, such as when Solvay management undertakes investor roadshows or participates in investor conferences, face-to-face meetings with analysts are also periodically arranged in major financial cities, including Brussels, London, Paris, New York and Boston.

2.4.3. Interactions with institutional investors

Solvay mainly interacts with institutional investors following the announcement of quarterly, half- and full-year results. In 2022, Solvay participated in 48 events, 32 of which involved senior management. This included seven digital roadshows and 37 conferences in countries across Europe, North America and Asia.

Solvay's CEO and the CFO are present in many of the meetings with the financial community. They discuss different topics, including quarterly earnings results, market conditions, the prospects for the current year and the medium-term strategy. Due to the volatility caused by the energy crisis in 2022, particular attention was given to pricing power and cost savings, cash and cash conversion, investments in growth areas and in our sites, deleveraging of our net debt, maintaining a strong credit rating and sustaining a strong dividend.

2.4.4. Interactions with stewardship teams at shareholders and ESG research providers, including proxy advisors

At least once a year, the CEO, the CFO, the Group General Counsel and Corporate Secretary, the Chief People Officer, the Chief Sustainability and Government Affairs Officer, and the Head of Investor Relations meet with the stewardship teams of institutional investors and ESG Research providers, including proxy advisors. The purpose of this engagement exercise is to provide an update on Solvay's key ESG targets, as well as our performance. In 2022, topics included:

- the strengthening of Solvay's climate commitments through our new Scope 3 objective;
- the actions and investments made to reinforce responsible site management;
- innovation in the soda ash production process;
- the phasing out of fluorosurfactants globally;
- the launch of our first global employee share purchase plan.

Solvay also treats these engagements as an opportunity to understand changes in the methodologies and policies used by the stewardship teams, as well as to actively solicit their feedback on how Solvay can improve ESG practices and disclosures.

During 2022, Solvay engaged with a dozen stewardship teams made up of top shareholders. These meetings were attended by various members of the Executive Leadership Team, including Solvay's CEO.

3. BOARD OF DIRECTORS AND BOARD COMMITTEES

The Charter defines the role and mission, functioning, size, composition, training and evaluation of the Board. The internal rules of the Board are attached to the Charter and are available on Solvay's corporate website.

3.1. The Board of Directors

3.1.1. Structure and composition

The composition and functioning of the Board is continuously reviewed to ensure that the right profiles are represented, assisted by the skills and experience considered necessary to drive Solvay's business and sustainability strategy. With a focus on bringing new perspectives, while also strengthening its independence, Solvay has continued to refresh the Board through the addition of six new members over the past five years.

As of December 31, 2022, the Board was composed of 15 directors and had the following attributes:

- The role of chair and CEO are separated.
- Fourteen of the 15 directors on the Board are non-executive, representing diverse competencies, as highlighted in the table below.
- Ten of the 15 directors are considered to be independent non-executive directors, according to the criteria defined by the Belgian Governance Code, and have been recognized as such by the respective Ordinary Shareholders Meetings during which they were elected.
- Six of the 15 directors were appointed in the past five years.
- The Board's 15 members have a four-year mandate, except for H. Coppens d'Eeckenbrugge (three years) and R. Thorne (one year).
- Directors represent seven different nationalities.
- Seven of the 15 directors, including the CEO, are women.
- The overall meeting attendance by directors in 2022 was 94.4%.

At the Ordinary Shareholder Meeting of May 10, 2022, Mr. Philippe Tournay's term ended in 2022 and was not renewed. Mr. Pierre Gurdjian and Ms. Laurence Debroux were appointed as new Directors of the Board for a four-year team, until the end of the Ordinary Shareholders Meeting to be held in May 2026.

At the end of the Ordinary Shareholders Meeting of May 9, 2023:

- The mandate of Ms. Rosemary Thorne will expire. Her mandate will be proposed for renewal for a limited period of an additional one year, to ensure continuity until the completion of Solvay's potential separation into two independent publicly listed companies.
- The mandates of Mr. Charles Casimir-Lambert and Ms. Marjan Oudeman will expire. The mandate of Ms. Marjan Oudeman will be proposed for renewal for another four-year term, until the end of the Ordinary Shareholders Meeting to be held in May 2027. Mr. Charles Casimir-Lambert has decided not to request the renewal of his mandate. No replacement is foreseen; as a consequence, the number of the Board members will be fourteen.

✪ Year of first appointment ☑ Presence at Board meetings in 2022

NICOLAS BOËL

Belgian / **Born in:** 1962
Non-independent Director
✪ 1998 ☑ 9/9

Solvay SA mandates:
Chairman of the Board of Directors; Chairman of the Finance Committee; Chairman of the Remuneration Committee; Member of the Nominations Committee
Directorship expiry date: 2025

Diplomas:
MA in Economics from the Université Catholique de Louvain, Belgium.

Master of Business Administration from the College of William and Mary, Virginia, USA

Publicly-listed directorships:
Board Member of Sofina SA.

ILHAM KADRI

French-Moroccan / **Born in:** 1969
Non-independent Director
✪ 2019 ☑ 9/9

Solvay SA mandates:
Chairwoman of the Executive Committee; Member of the Finance Committee and Member of the ESG Committee
Directorship expiry date: 2025

Diplomas:
PhD in Macromolecular Physics-Chemistry from Louis Pasteur University, Strasbourg, France.

Degree in Chemical Engineering from l'Ecole des Hauts Polymères, Strasbourg, France

Publicly-listed directorships:
Board Member of A.O. Smith Corporation and L'Oreal SA.

CHARLES CASIMIR-LAMBERT

Belgian / **Born in:** 1967
Non-independent Director
✪ 2007 ☑ 8/9

Solvay SA mandates:
Member of the Finance Committee
Directorship expiry date: 2023

Diplomas:
MBA from Columbia Business School, New York, USA)/London Business School (London, UK).

Master's degree (lic.oec.HSG) in Economics, Management and Finance from (Universität St. Gallen, Switzerland)

Publicly-listed directorships:
None

HERVÉ COPPENS D'EECKENBRUGGE

Belgian / **Born in:** 1957
Non-independent Director
✪ 2009 ☑ 9/9

Solvay SA mandates:
Member of the Finance Committee
Member of the Audit Committee until May 2022
Directorship expiry date: 2024

Diplomas:
MA in Law from the Université Catholique de Louvain,(Belgium).
Diploma in Economics and Business from ICHEC (Belgium)

Publicly-listed directorships:
None

FRANÇOISE DE VIRON

Belgian / **Born in:** 1955
Independent Director
2013 ☑ 9/9

Solvay SA mandates:
Member of the Remuneration, Nominations, ESG Committees
Directorship expiry date: 2025

Diplomas:
PhD in Science (Physics) from the UCLouvain, Belgium
Master in Sociology from the UCLouvain, Belgium
Driving Sustainability from the Board Program, IMD, Switzerland

Other roles:
Professor emeritus at the Faculty of Psychology and Education Sciences and Louvain School of Management (Université Catholique de Louvain, Belgium). Past President of AISBL EUCEN – the European Universities Continuing Education Network.

Publicly-listed directorships:
None

GILLES MICHEL

French / **Born in:** 1956
Independent Director
2014 ☑ 8/9

Solvay SA mandates:
Member of the Finance Committee; of the Remuneration Committeee and Chairman of the Nominations Committee since March 2018
Directorship expiry date: 2026

Diplomas:
École Polytechnique (France)
École Nationale de la Statistique et de l'Administration économique (ENSAE), (France)
Institut d'Études Politiques (IEP), France

Publicly-listed directorships:
Board Member of IBL Ltd. and Valeo SA

ROSEMARY THORNE

British / **Born in:** 1952
Independent Director
2014 ☑ 9/9

Solvay SA mandates:
Chair of the Audit Committee (Chairwoman since May 2018)
Directorship expiry date: 2023

Diplomas:
Honors Degree in Mathematics and Economics from the University of Warwick, (UK)
Fellow of the Chartered Institute of Management Accountants FCMA and CGMA
Fellow of the Association of Corporate Treasurers FCT

Other roles:
Board Member and Chair of Audit Committee of Merrill Lynch International (UK), a wholly owned subsidiary of Bank of America.

Publicly-listed directorships:
None

MARJAN OUDEMAN

Dutch / **Born in:** 1958
Independent Director
2015 ☑8/9

Solvay SA mandates:
Member of the Audit Committee since May 12, 2015
Directorship expiry date: 2023

Diplomas:
Law Degree from Rijksuniversiteit Groningen, the Netherlands. Master's Degree in Business Administration from the University of Rochester New York, USA and Erasmus Universiteit Rotterdam (the Netherlands)

Other roles:
Board Member SHV Holdings and KLM NV

Publicly-listed directorships:
Board Member of UPM-Kymmene Oyi

AGNÈS LEMARCHAND

French / **Born in:** 1954
Independent Director
2017 ☑ 6/9

Solvay SA mandates:
Member of the Remuneration and Nominations Committees
Directorship expiry date: 2025

Diplomas:
Ecole Nationale Supérieure de Chimie de Paris, France.
Chemical Engineering Degree from MIT, Boston, USA.
MBA from INSEAD, France

Publicly-listed directorships:
Board Member of Compagnie de Saint-Gobain SA and bioMerieux SA

PHILIPPE TOURNAY

Belgian / **Born in:** 1959
Independent Director
2018 ☑ 4/5

Solvay SA mandates:
Member of the Audit Committee
Directorship expiry date: 2022

Diplomas:
MA in Economics LSM-UCL, Université Catholique de Louvain, Belgium)
International Director Program (IPD) 2020, INSEAD, France

Other roles:
Vice Chairman of Fondation Tournay Solvay

Publicly-listed directorships:
None

MATTI LIEVONEN

Finnish / **Born in:** 1958
Independent Director
2018 ☑ 9/9

Solvay SA mandates:
Chairman of the ESG Committee; Member of the Audit and Finance Committees
Directorship expiry date: 2026

Diplomas:
BSc (Eng.), Savonia University of Applied Science, Finland. EMBA, Aalto University, Finland.
DSc (Tec.) h.c Aalto University, Finland.

Other roles:
Former CEO of Oiltanking GmbH and Neste, member of the Supervisory Board of Wintershall DEA

Publicly-listed directorships
None

AUDE THIBAUT DE MAISIÈRES

Belgian / **Born in:** 1975
Independent Director
2020 ☑ 9/9

Solvay SA mandates:
Member of the Remuneration, Nominations, and ESG Committees
Directorship expiry date: 2024

Diplomas:
MBA from Columbia Business School, New York, USA.
MSc from the London School of Economics, London, UK.
MA from the University of La Sorbonne, Paris, France.

Other roles:
Member of the Investment Committee, The Innovation Fund; Director, Paradigm Capital Value Fund SICAV: Director, Sonic Womb Productions, London, UK.

Publicly-listed directorships:
None

EDOUARD JANSSEN

Belgian / **Born in:** 1978
Non independent Director
✪ 2021 ☑ 9/9

Solvay SA mandates:
Member of the Board and member of the Audit Committee since May 2022
Directorship expiry date: 2025

Diplomas:
Master of Science in Finance and Management (Magna cum laude and Prix de Barsy), Solvay Brussels School, Belgium.

MBA, INSEAD, (July 2009, France and Singapore) and INSEAD IDP-C (2022).

Other roles:
Insead Hoffmann Institute for Business & Society, Gist Impact; Trusted Family (co-founder & chair); Ambercycle; Infinite Uptime, Solvay Brussels School of Economics and Management (vice-chair)

Publicly-listed directorships:
Financière de Tubize

WOLFGANG COLBERG

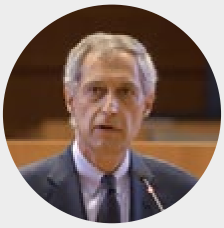
German / **Born in:** 1959
Independent Director
✪ 2021 ☑ 9/9

Solvay SA mandates:
Member of the Audit and Finance Committees
Directorship expiry date: 2025

Diplomas:
PhD in Political Science (Business Administration and Business Informatics) from the University of Kiel, Germany

Other roles:
Chairman of AMSilk GmbH (DE); Chairman of Efficient Energy GmbH (DE); Board member of Dussur (SA); Chairman of ChemicalInvest Holding BV (NL); Industrial Partner of Deutsche Invest Capital Partners (DE)

Publicly-listed directorships:
Board Member of Thyssenkrupp AG, Pernod Ricard SA, and Burelle SA



PIERRE GURDJIAN

Belgian / **Born in:** 1961
Independent Director
✪ 2022 ☑ 3/4

Solvay SA mandates:
Member of the Remuneration and Nominations Committees
Directorship expiry date: 2026

Diplomas:
Degree in Commercial Engineering from the Free University of Brussels (VUB), Belgium.

MBA from Harvard Business School, USA.

Other roles:
President of the Board of Directors of the Université libre de Bruxelles (ULB); Board Member of Lhoist; Board Member of Queen Elisabeth Music Chapel Belgium;
Co-founder of Belgium's 40 under 40 societal leadership development platform

Publicly-listed directorships:
Board Member of UCB SA

LAURENCE DEBROUX

French / **Born in:** 1969
Independent Director
✪ 2022 ☑ 4/4

Solvay SA mandates:
Member of the Audit Committee
Directorship expiry date: 2026

Diplomas:
Master degree from HEC Paris, France (1992)

Other roles:
Board Member of Kite Insights (The Climate School) and HEC Paris.

Publicly-listed directorships:
Board Member of Novo Nordisk A/S and Exor N.V.

3.1.2. Director skills and qualification matrix

Collectively, the members of the Board bring the wide set of skills and experience required to develop and oversee the Group's long-term strategy. This experience has been aggregated in the Director Skills and Qualification Matrix. The Board's skills and experience ranges from international industries and markets — for many of them at executive level — to functional domains, like human resources.

This Matrix also helps the Nominations Committee, together with the Board, to identify the skills and experience needed to help drive Solvay's business and sustainability strategy when considering new Board members.

Each director's skills and experience is presented in the Director Skills and Qualification Matrix below.

	Chemical industry	Finance	Corporate Management	Industrial	Research & Development	Digital/ IT	Human Resources	International experience
Nicolas Boël		X	X	X			X	X
Ilham Kadri	X	X	X	X	X	X	X	X
Charles Casimir-Lambert	X	X	X				X	X
Hervé Coppens d'Eeckenbrugge	X	X	X				X	
Françoise de Viron	X		X		X	X	X	
Rosemary Thorne		X	X					X
Gilles Michel	X	X	X	X				
Marjan Oudeman	X	X	X	X			X	X
Agnès Lemarchand	X	X	X	X				
Matti Lievonen	X	X	X	X		X		X
Aude Thibaut de Maisières	X	X			X	X		X
Edouard Janssen	X	X	X			X		X
Wolfgang Colberg	X	X	X	X		X	X	X
Pierre Gurdjian							X	
Laurence Debroux		X	X					X

The table does not include a Sustainable Development column as the ESG matters are incorporated in Corporate Management, Industrial and Human Resources. All the Board members are actively engaged on the topic of sustainability, through dedicated Board meetings. The ESG Committee members have strong ESG credentials. See more information in 3.1.16.

3.1.3. Diversity at Board level

The composition of the Board satisfies the legal requirements applicable in Belgium relating to gender diversity. Furthermore, Solvay not only aims to ensure the gender diversity of its directors, but also diversity in age, nationalities, experience, education and skillsets. Details of the qualifications and experience of the Board members can be found in sections 3.1.1 and 3.1.2. Solvay's commitment to diversity at Board level is further evidenced by the criteria for appointment of directors listed in section 5.3.2 of the Charter, which is available on Solvay's corporate website.

3.1.4. Functioning of the Board of Directors

In 2022, the Board held nine meetings. Each director's attendance is shown in the table in section 3.1.1. Structure and composition. All Board members attended more than 75% of the Board and Committee meetings they were eligible to attend, with the exception of Agnès Lemarchand. She has been a Board member since 2017 and has had a strong attendance record in previous years, but has missed three Board meetings during the period under review for personal reasons. However, Agnès Lemarchand provided her written opinion in advance on matters to be discussed at the Board meetings she missed, and was also updated with the meeting minutes after each meeting.

Board discussions, reviews and decisions focused on, but were not limited to:

- the annual review of Group strategy;
- strategic projects, such as acquisitions, divestments and capital expenditure, capital allocation, financial reporting, the review of Solvay's sustainability initiatives, risk management, intra-group restructuring, Board composition, and the reports and resolution proposals for the Shareholders Meeting.

The Board decided to review plans, announced in March 2022, to separate Solvay into two independent publicly listed companies, marking the next phase of Solvay's transformation. Upon completion, the separation would establish two strong industry leaders that would benefit from the strategic and financial flexibility to focus on their distinctive business models, market and stakeholder priorities.

The Board also remains focused on ESG topics, and the acceleration of our sustainability efforts is supported by the standalone ESG Committee. During the period under review, Solvay's carbon neutrality ambition was reinforced through commitments to decrease indirect emissions — Scope 3 — by 24% by 2030, and voluntarily phase out the use of fluorosurfactants globally by 2026. The latter will involve manufacturing nearly 100% of Solvay's fluoropolymers without the use of fluorosurfactants, at the Spinetta Marengo site in Italy. Solvay also announced plans to significantly reduce the release of limestone residues directly into the sea from the facility in Rosignano, Italy, as well as a long-term objective to invest in a new soda ash production process intended to be adopted globally. This new process should enable Solvay to further cut CO_2 emissions and reduce any discharge of limestone residues to zero by 2050. On the social side, among various other initiatives, the Board supported the launch of a global employee share purchase plan, whereby any Solvay employee can invest in Solvay's future.

The Group's financial situation and business continuity was closely monitored, especially given the high inflationary context, disruptions caused in the logistics and supply chain, and the energy crisis resulting from the war in Europe. As an example, the Board strongly supported the ELT's decision to suspend operations and new investments. Solvay also suspended dividend payments from Rusvinyl, an independent 50:50 joint venture in Russia.

During 2022, article 7:96 of the Code of Companies and Associations, relating to conflict of interests, was applied by the Board of Directors on several occasions.

On January 25, the procedure was applied with the independent collaboration agreement of the CEO, as follows:

"Ilham Kadri was in a situation of conflict of interest, as set out in article 7:96 of the BCCA, in view of the fact that the contract setting out her remuneration was to be discussed. Therefore, she was not present in the room when this item was debated and did not participate in the vote. The Secretary General was also absent during the discussion. The Chairman explained that Solvay and Dr. Kadri have entered into a new independent collaboration agreement regarding her functions of CEO and member and President of the Comité Exécutif/ELT.

A lot of contextual elements have changed during her first years as a CEO and it seemed appropriate and necessary to reflect these changes into a new agreement three years after the first appointment of Dr. Kadri. Therefore this new agreement aims to reinforce and reassert the trust of the Board of Directors towards Dr. Kadri. Ultimately this will allow Dr. Kadri and Solvay to further strengthen a mutual and trustworthy relationship.

In particular, this new convention is addressing the terms and conditions in the context of a departure of Dr. Kadri from Solvay and, in addition, the protection of Solvay with reinforced non-compete undertakings in case the collaboration would come to an end.

The amendments to the fixed and variable remuneration of Dr. Kadri aim to align the agreement to the amendments previously decided for the members of the ELT in the context of the new Executive Compensation 2022.

Regarding the new provisions relating to severance pay, the following should be noted:
- *An increase of the severance fee to 18 months of remuneration in case Solvay terminates the agreement, which gives a strong trust signal towards Dr. Kadri regarding the continuation of the cooperation in the context of the numerous challenges faced by Solvay. The severance pay is computed on the basis of the sum of the fixed and variable remuneration, as well as other benefits (including pension and assistance budget).*
- *The introduction of a 12 months non-compete indemnity corresponding to six months of remuneration, computed in the same way as the severance fee due in case of termination by Solvay, is now also reinforced in case of termination by Solvay (and not only in case of termination by Dr. Kadri).*
- *The amount of the non-compete fee is considered reasonable given the duration of the non-compete and non-solicit period of 12 months.*

After review of the advice of the Remuneration Committee, the directors present unanimously approved the revised CEO convention (including for the avoidance of doubt, the clauses relating to severance fee).

In accordance with article 7:92 of the BCCA, the provisions on severance fees are entered into under condition precedent of their approval by the next Shareholders Meeting. The Company shall also inform the Works Council."

On February 22, the procedure was applied in relation to decisions regarding the CEO's remuneration:

"Prior to any discussion or decision by the Board on this agenda item, Ilham Kadri declared that she had a direct financial interest in the implementation of the Board's decisions regarding her ex-2021 bonus and 2022 remuneration.

In accordance with Article 7:96 of the Companies and Associations Code, Ilham Kadri withdrew so as not to be present during the Board's deliberations on this decision and not to take part in the vote.

The Board established that Article 7:96 of the Companies and Associations Code was applicable to this decision.

The Board had an exchange on the evaluation of the CEO's performance in 2021, and on the score attributed to each of the individual and collective objectives, which were unanimously approved.

In line with the recommendation of the Remuneration Committee, the Board sets the CEO's STI 2021 (payable in 2022) at 150% of her Base Salary, i.e. €1,875,000. In addition, the Board approved an exceptional grant of €400,000 payable in LTIs to reward the record results of 2021 and the significant progress in the transformation of the Company.

The Board congratulates Mrs. I. Kadri on the results achieved in 2021.

The Board then has an exchange on the basis of market references and sets the CEO's 2022 remuneration:

- *Base Salary: €1,300,000.*
- *Bonus: 120% of base salary*
- *LTI: amount of LTI 2021: approval of an amount of €1,875,000 to be distributed in Solvay shares when the new remuneration policy will have been approved by the Shareholders' Meeting.*

The Board notes that the CEO's 2022 objectives are finalized and submitted for approval. The STI financial objectives will be discussed and approved at a later meeting."

On July 27, the procedure was applied in connection with the CEO targets:

"*Dr. Ilham Kadri is directly concerned by the STI targets since it relates to her remuneration. In accordance with Art. 7:96 of the Code of Companies and Associations, Dr. Ilham Kadri has therefore declared a conflict of interest within the meaning of that provision.*

As a result, the Board discussed the following in the absence of Dr. Ilham Kadri.

The Board unanimously confirmed the following targets for the STI 2022 which had been presented during the March 5 meeting as well as the revised 2022 STI sustainability share.

On September 28, the procedure was applied in connection with a special incentive linked to the completion of the project separating Solvay into two listed companies:

"*Hervé Tiberghien reported on the discussions of the last Remuneration Committee on the basis of the pre-read documentation.*

He explained that the discussion includes the implementation of the Power of 2 retention and incentive plans, including the individual allocations for ELT members.

Dr. Ilham Kadri, being one of the proposed beneficiaries of the retention and incentive plans, declared having a conflict of interest within the meaning of Art. 7:96 of the Code of Companies and Associations, and decided not to be present for such discussion topic. The auditor has been informed of such conflict of interest.

The key features as presented and discussed at the Remuneration Committee of September, 14 2022 were summarized:

- *The first element, the retention plan is a cash retention bonus with the key aim of retaining key people to (1) drive the Power of 2 project at a time of great personal uncertainty; (2) ensure focus can be maintained and avoid distraction; (3) ensuring business continuity. This element was reviewed in the remuneration committee of March, 8 2022, and the Board of March, 14 2022.*
- *The second element, the incentive element, is a share option plan with a value creation performance condition and aims to: (1) incentivize and drive the value creation of the two new companies; (2) recognize exceptional performance; (3) align executive experience with that of shareholders in the establishment of the two new companies.*

The payout of the retention bonus and the possibility to exercise the stock options are subject to several requirements, including performance requirements, as well the specific confirmation of the key features of the retention and incentive plans by the 2023 Ordinary Shareholders Meeting. Such key features will be described in the remuneration report.

Having discussed the matter, the Board unanimously confirmed the retention and incentive plans and approved the proposed allocations, in accordance with the table set out in the pre-read documentation.

Hervé Tiberghien reported on the discussions of the last Nomination Committee on the basis of the pre-read documentation.

Given that one of the mandate renewal proposals made by the nomination committee concerns Dr. Ilham Kadri, she was absent from the discussions, in accordance with article 7:96 of the Code of Companies and Associations.

The mandate of Dr. Ilham Kadri as Chair of the ELT and CEO will expire on January 1, 2023. The Committee recommended to the Board to renew the mandate of Dr. Ilham Kadri as ELT Chair and CEO of the company for a period of two years, ending on January 1, 2025. (...). Having discussed the matter, the Board unanimously decided to renew the mandate of Dr. Ilham Kadri as ELT Chair and CEO for a period of two years, ending on January 1, 2025."

3.1.5. Evaluation

A Board performance evaluation, facilitated by an external party, is undertaken every two to three years, to gather opinions on how the current Board is functioning and identify areas for improvement. A new evaluation was launched by Guberna (Belgian Association for Governance) in Q4 2022. The evaluation focused primarily on the composition, succession planning, preparation and functioning of the Board and its committees, and the interactions between the Board and the ELT. Sustainability, and Diversity, Equity and Inclusion (DEI) topics were also included in the assessment.

The action plan resulting from the previous evaluation provided the foundation for the Board's work during the period under review. For example, the level, depth and frequency of engagement between the Board and ELT significantly increased both formally and informally. Furthermore, the creation of a standalone Board ESG Committee assisted in accelerating Solvay's sustainability commitments.

The formal evaluation exercise, which was conducted in February 2023 with the support of an external party, indicates that the Board of Directors of Solvay has a high added value in its functioning and in the implementation of its roles. Suggestions as to further developments, including on diversity of competencies and experiences, are formulated in the evaluation report.

3.1.6. Induction and continuous Board training

An Induction Program is in place for new directors and is also open to every director who wishes to participate. The program includes a review of the Group's strategy and activities, and the main challenges in terms of growth and competition, a site visit, and a review of finance, research and innovation, human resources management, legal context, corporate governance and compliance topics.

Site visits are part of the Board's Continuous Training Program. They consist of meetings with management and local teams, business presentations and field tours. In September 2022, the full Board visited the Spinetta Marengo site in Italy, where the core business is fluoropolymers, used in electric mobility, aeronautics, resource efficiency, healthcare expansion, automotive and digitalization. The Board also visited the Bollate site in Italy, and various laboratories, including the Battery Lab and H2 Lab. They were able to measure the significant footprint of Solvay's research and development activities in the world of materials. ESG topics were also discussed during these site visits.

The Board is also actively engaged on the topic of sustainability. Every year, a specific session is organized, dedicated to receiving updates on various themes from sustainability teams, so as to better understand the Group's strengths and weaknesses, and to determine the impact of emerging trends on the Group's business and performance. This year's training session covered the evolution of sustainability practices and future requirements, risk management and Solvay's improvement potential.

3.2. Board committees

The Board has the following permanent committees: Audit Committee, Finance Committee, Remuneration Committee, Nominations Committee and ESG Committee. The principles governing the composition, role and missions of the committees, as well as their internal rules, are set out in the Charter.

The composition of the key committees is regularly reviewed, including whether they meet the expectations of the market and our diverse shareholder base. As we continue to refresh the Board, we also consider adding independent members to our committees. As of today, all key committees (Audit, Nominations and Remuneration) are composed solely of non-executive directors, a majority of which are independent. More importantly, these committees comprise members that have the experience and skills necessary to ensure they deliver on their mandate.

All mandates will expire in May 2024. There are no changes planned until the project to separate the company is complete.

	Independent Director	Audit Committee	Finance Committee	Remuneration Committee	Nomination Committee	ESG Committee
Mr. Nicolas Boël			Chairman Attendance: 7/7	Chairman Attendance: 5/5	Member Attendance: 3/3	
Ms. Ilham Kadri			Member Attendance: 7/7			Member Attendance: 3/3
Mr. Charles-Casimir Lambert			Member Attendance: 7/7			
Mr. Hervé Coppens d'Eeckenbrugge		Member Attendance: 3/3	Member Attendance: 7/7			
Ms. Françoise de Viron	x			Member Attendance: 5/5	Member Attendance: 3/3	Member Attendance: 3/3
Ms. Rosemary Thorne	x	Chairwoman Attendance: 6/6				
Mr. Gilles Michel	x		Member Attendance: 7/7	Member Attendance: 5/5	Chairman[1] Attendance: 3/3	
Ms. Marjan Oudeman	x	Member Attendance: 6/6				
Ms. Agnès Lemarchand	x			Member Attendance: 4/5	Member Attendance: 3/3	
Mr. Matti Lievonen	x	Member Attendance: 6/6	Member Attendance: 7/7			Chairman Attendance: 3/3
Mr. Philippe Tournay	x	Member Attendance: 3/3				
Ms. Aude Thibaut de Maisières	x			Member Attendance: 2/2	Member Attendance: 2/2	Member Attendance: 2/2
Mr. Edouard Janssen		Member attendance: 3/3				
Mr. Wofgang Colberg	x	Member [2] Attendance: 6/6	Member [2 Attendance: 7/7			
Mr. Pierre Gurdjian	x			Member Attendance: 2/2	Member Attendance: 2/2	
Ms. Laurence Debroux	x	Member Attendance: 3/3				

Mr. Pierre Gurdjian was appointed as a member of the Nomination and Remuneration Committees after the 2022 Shareholders Meeting.
Ms. Laurence Debroux was appointed as a member of the Audit Committee after the 2022 Shareholders Meeting
Mr. Edouard Janssen was appointed as member of the Audit Committee and replaced Mr. Hervé Coppens d'Eeckenbrugge

3.2.1. The Audit Committee

Composition:

- Six members. All members are non-executive directors, a majority of whom are independent.
- All the members fulfill the competency criterion by virtue of the training and the experience they gained in previous functions (see section 3.1.1. regarding the composition of the Board of Directors).
- The secretary is a member of the Group's internal legal department.

Meetings:

- Six meetings took place in 2022, including four before the Board meetings scheduled to consider the publication of periodic results (quarterly, semiannual and annual).
- Meeting attendance was 100%.

Activities:

- Review and consider reports from the CFO, the Head of the Group Internal Audit, and the auditor in charge of the external audit, Ernst & Young (represented by Ms. Marie Kaisin), who replaces Deloitte (represented by Mr. Michel Denayer and Ms. Corine Magnin) in the course of 2022.
- During the period under review, the Audit Committee reviewed the independence and effectiveness of the external auditor, Deloitte and Ernst & Young.
- Examine the quarterly report by the Group General Counsel on significant ongoing legal disputes and reports, including tax and intellectual property disputes.
- Meet with the auditor in charge of the external audit whenever such a meeting is deemed useful.
- Monitor and assess risk exposure as well as the effectiveness of internal controls and mitigation plans.
- Meet once a year with the Chairwoman of the ELT. All other Board members are also invited on this occasion, to discuss the major risks facing the Group.

3.2.2. The Finance Committee

Composition:

- Seven non-executive directors and the CEO.
- Mr. Karim Hajjar (CFO) is invited to attend Finance Committee meetings.
- The secretary is the Group Corporate Secretary.

Meetings:

- The Finance Committee met seven times in 2022.
- Meeting attendance was 93.4%.

Activities:

- Give an opinion on financial matters. This includes the amount of the interim and final dividends, the levels, conditions and currencies of indebtedness, monitoring of the credit strength of the Group's balance sheet, hedging foreign exchange and risks, the hedging policy for our long-term incentive plans, the content of financial communication and the financing of major investments.
- Finalize preparation of press releases announcing the Group's results.
- Give opinions on Board policies on the above matters, when called upon.

3.2.3. The Remuneration Committee

Composition:

- Six members. All members are non-executive directors, a majority of whom are independent.
- The Remuneration Committee has the expertise necessary to perform its mission.
- The Chairwoman of the ELT is invited to meetings, except in the case of matters that concern her personally.
- The secretary is the Group Corporate Secretary.

Meetings:

- Meetings are prepared by the Group's Chief People Officer, who attends the meetings.
- The Remuneration Committee met five times in 2022.
- Meeting attendance was 92.6%.

Activities:

The Remuneration Committee fulfills the duties imposed on it by Article 7:100 of the Code of Companies and Associations. It advises the Board of Directors on:

- The preparation of the Company's remuneration policy and remuneration report.
- Remuneration levels for members of the Board and the ELT.
- Remuneration levels across the wider workforce.
- Remuneration, both the short- and long-term incentives as well as the performance assessment, for the Chairwoman of the ELT.
- The allocation of long-term incentives (performance share units and stock options) to the Company's senior management.
- While fulfilling its tasks, the Remuneration Committee reviews the feedback received from shareholders on the Company's remuneration practices and disclosures. It prepares the annual remuneration report for the Corporate Governance Statement.

3.2.4. The Nomination Committee

Composition:

- Six members. All members are non-executive directors, a majority of whom are independent.
- The Chairwoman of the Executive Leadership Team is invited to meetings, except in the case of matters that concern her personally.
- The secretary is the Group Corporate Secretary.

Meetings:

- Three meetings were held in 2022.
- Meeting attendance was 94.4%.

Activities:

The Nomination Committee leads the composition review, succession plans, and the nomination process for any proposed appointment or renewal of appointments to the Board (chair, committee chair and committee memberships), to ELT positions (chair and members), and to general management positions. When reviewing the composition of the Board, the committee takes into account independence and diversity requirements. It also considers the feedback received from shareholders regarding the composition of the Board and its key committees.

Taking into account the results of the externally facilitated Board evaluation process, the Nomination Committee reviewed the composition of the Board to ensure that the relevant skills and experience are represented to help oversee Solvay's long-term strategy while ensuring continuity and stability. Continuity and stability, especially in key leadership positions, was a particular focus for Solvay's Board in 2022, following the announcement of the transformation project to create two independent publicly listed companies.

3.2.5. The Environmental, Social and Governance (ESG) Committee

The ESG Committee was created in 2021 and is continually evaluated. The members of this committee have acquired the necessary skills and expertise through their past experience in areas such as transforming and leading companies toward greater sustainability, human and social aspects, and philanthropy and sponsorship. They are assisted by internal and external experts when necessary.

Composition:

- The ESG Committee comprises five members, including the CEO and non-executive directors.
- The majority are independent directors.
- The secretary is the Group Corporate Secretary.

Meetings:

- The ESG Committee meets three times per year, with one of these meetings including the full Board of Directors.
- Meeting attendance was 100% in 2022.

Activities:

The objective of the ESG Committee is:

- to consider the material ESG issues relevant to the Group's business activities;
- to provide guidance and recommendations to the Board on these issues, including for the implementation and potential review of the Solvay One Planet sustainability roadmap and the Group's non-financial reporting; and
- to be in line with the new Corporate Sustainability Reporting Directive (CSRD), when applicable.

The ESG Committee oversees an annual review of the Group's ESG policies, progress and effectiveness, taking into account:

- relevant risk and opportunity mapping;
- the new sustainability developments, and their impact on the Group;
- the Group's current sustainability performance, and main strengths and challenges; and
- future priorities, opportunities and challenges related to this.

The results of the committee's annual review are presented to the entire Board and include the following:

- Environmental topics, including climate-related risk mitigation, legacy environmental risks and regulatory developments, especially in the chemical sector.
- Social topics, including the health, welfare and careers of Solvay's employees, contractors, suppliers and the broader communities in which we operate.
- Governance topics, including oversight of the integration of our ESG commitments into Solvay's business activities and related internal and external reporting, and the effectiveness of engagement with stakeholders, such as investors, research providers (including proxy advisors), experts and communities, on ESG-related matters. When appropriate, the ESG Committee also collaborates with other committees with oversight responsibility for executive remuneration, talent management, compliance and other shared topics.

4. EXECUTIVE LEADERSHIP TEAM (ELT)

The role, responsibilities, composition, procedures and evaluation of the Executive Leadership Team are described in detail in the Charter, which is available on Solvay's corporate website.

To accelerate our G.R.O.W. transformation, the ELT decided to create an Operational Leadership Team comprised of heads of businesses. They also decided to combine certain businesses and implement additional simplification measures, grouping 17 distinct functions into seven. These changes reinforce the accountability of the senior leadership team and will simplify and speed up decision making.

✪ Year of first appointment ☑ Presence at ELT meetings in 2022

ILHAM KADRI

French-Moroccan / **Born in:** 1969
✪ 2019 ☑ 12/12
Term of office ends: 2025

Diplomas and main Solvay activities:

PhD in Macromolecular Physics-Chemistry from Louis Pasteur University, Strasbourg, France.

Degree in Chemical Engineering from l'Ecole des Hauts Polymères, Strasbourg, France.

Chairwoman of the Executive Leadership Team and CEO

KARIM HAJJAR

British / **Born in:** 1963
✪ 2013 ☑ 12/12
Term of office ends: 2025

Diplomas and main Solvay activities:

BSC (Hons) Economics, from The City University, London, UK.

Chartered Accountancy (ICAEW) qualification

Executive Leadership Team member and CFO

AUGUSTO DI DONFRANCESCO

Italian / **Born in:** 1959
✪ 2018 ☑ 12/12
Term of office ends: 2024

Diplomas and main Solvay activities:
Master's degree in Chemical Engineering from Pisa University, Italy.

Senior Executive program from London Business School, London, UK.

Member of the Plastics Europe Steering Board.

Executive Leadership Team member and Chief Transformation and Operations Officer

HERVÉ TIBERGHIEN

French / **Born in:** 1964
✪ 2019 ☑ 12/12
Term of office ends: 2025

Diplomas and main Solvay activities:
Master in Human Resources from HEC St Louis, Brussels, Belgium

Executive Leadership Team member and Chief People Officer

DOMINIQUE GOLSONG*

German / **Born in:** 1955
✪ 2021 ☑ 12/12
Term of office ends: 2025

Diplomas and main Solvay activities:
LL.M in Law at Columbia Law School, USA.

JD of Law at Université de Lausanne, Switzerland
INSEAD YMP
Michigan University FMII
London Business School ADP

Executive Leadership Team member and Group General Counsel & Corporate Secretary

** D. Golsong exercises his function via a SRL*

MARC CHOLLET

French / **Born in:** 1964
✪ 2021 ☑ 12/12
Term of office ends: 2025

Diplomas and main Solvay activities:
Engineer in Agronomy from the National Institute of Agronomy Paris-Grignon. Specialization in Business Economics & Marketing Management.

Executive Leadership Team member and Chief Strategy Officer

During 2022, no changes occurred in the composition of the ELT. The ELT carries out monthly deep-dives consisting of in-depth reviews on people, strategy, finance, sustainability, innovation and other specific topics, depending on current events.

5. REMUNERATION REPORT

5.1. Year in overview

An unprecedented performance with new records in Sales, EBITDA and ROCE

In 2022, we delivered record financial results, despite the Ukraine-related energy crisis, the Zero-Covid policy in China and high levels of inflation. It was also a year that marked a strategic milestone for Solvay, with the announcement of our Power of 2 project, which will see the company split into two new entities, known as EssentialCo and SpecialtyCo.

Our record financial performance resulted from solid volume growth, strong pricing power, disciplined cost and cash management, and continuous deleveraging of our balance sheet. Leadership and management teams were fully mobilized to overcome challenging geo-political and economic conditions, with a collective resolve and focus on meeting demanding objectives.

Our focus was not only on achieving strong results in 2022. Strong cash generation enabled us to increase and accelerate investment to expand our capabilities in high-growing markets, further upgrade the quality of our portfolio and take additional steps to reduce the Group's carbon footprint. Our aim is to ensure that the two new companies we create will be able to use these investments to deliver superior and responsible growth.

We continued to reinvent the company in 2022, demonstrating resilience, and a spirit of innovation and strength in a very challenging context, by accelerating the deployment of digital technologies to maximize production, working diligently to meet customer needs and driving price increases to maintain margins.

For the second consecutive year, we achieved record organic EBITDA of €3,2 Bn, a 28.7% increase compared to 2021. This great achievement was marked by a combination of growth in the majority of markets, improved pricing power in the latter part of the year, and continued discipline and focus on cost reductions. This is the first time in the company's history that we reached €3 Bn. We generated a record annual free cash flow generation of €1,094 million reflecting higher profits, margin expansion and working capital discipline, and this is despite a +39% increase in capital investments to €1,022 million for the year.

Our cash discipline throughout the year resulted in Free Cash Flow (FCF) of €1,1 Bn, 15th quarter of positive free cash flow and a class-leading 34% free cash flow conversion.

Our focus on returns also resulted in a record ROCE of 16%, a new record level, versus 11.4% end of 2021 and 8.1% end of 2019.

These results required clear and bold leadership in an uncertain environment and clearly demonstrate the hard work of Solvay's teams and the real transformation that has occurred over the past three years. These accomplishments would have not been possible without the commitment and determination of Solvay's employees. The results also serve as a great motivator as we move forward with the Power of 2 project.

More details on Solvay's 2022 results and their impact on remuneration are disclosed in the Performance section.

Achieving sustainable shared value for all

Solvay's vision is to create sustainable shared value for all, by positively impacting our employees and the communities we serve. In 2022, Solvay's full leadership team signed the Solvay Inclusivity Pledge, recognizing that inclusive leaders are essential to creating an environment where everyone feels heard, valued and empowered to be the best version of themselves.

The first gender pay gap assessment was conducted and published in 2021. We have now set out concrete actions to move forward with our pay equity journey, ensuring that we do this in a gender-neutral way. We created a "homogeneity index", a new quarterly measure of the diversity of our entities which assesses three dimensions: gender, age and nationality. We also included our diversity, equity and inclusion (DEI) roadmap within the Solvay One Planet part of the Short Term Incentive.

We continued our significant commitment, which we began last year, to send 450 women through the A Effect, an external development program designed for women, and we made DEI the topic of the fourth edition of our annual Citizen Day event.

We also continue to pursue all programs to support and empower employees, such as our Solvay Cares benefits program, which includes a global parental leave policy of 16 weeks for all new parents, and our employee well-being support program. In 2022, the Group also provided mental health support through training provided by qualified experts.

More details on DEI can be found in section 6.3 Diversity and Inclusion in this report of the extra-financial section.

To help our employees cope with high inflation, the Executive Leadership Team set aside €8 million in July 2022 to distribute as an exceptional bonus to employees whose income is proportionally most affected by rising inflation. Our strong performance allowed us to increase this to €9.5 million in September 2022, and we also increased the Global Performance Sharing (GPS) envelope for blue collar, "non-executive" employees by 36%. In addition, the Solvay Solidarity Fund, which was created in 2020, continues to provide aid for our employees and communities in need.

In 2022, for the first time in Solvay's history, the Group offered employees the opportunity to become company shareholders. By purchasing shares in Solvay, employees received a free share on joining the scheme and a matched share for every two Solvay shares purchased. The Employee Share Purchase Plan is part of Solvay's employee engagement program. It achieved a participation rate of close to 28%, well above the best in class of 25%. As the company's owners, Solvay's employees will learn to better appreciate the Group's performance and experience the risks and rewards of share ownership.

Shareholder engagement and Board responsiveness

At the last Ordinary General Shareholders Meeting on May 10, 2022, Solvay's new Executive Remuneration Policy was put to a shareholder vote and received support from 95.77% of participating shareholders. This made it the one of the best-supported remuneration policies among BEL 20 Index members in 2022.

The remuneration program presented for shareholder vote reflected significant changes made to Solvay's remuneration practices and disclosures. These were made in response to feedback collected from shareholders in 2021 and included the following:
- reduced weighting assigned to individual performance criteria for the annual bonus;
- strengthened focus on our Solvay One Planet performance metrics, by increasing their weighting in incentive plans;
- increased weighting of performance-based equity to 70% of the total target equity incentive target;
- a relative Total Shareholder Return (TSR) measure, introduced into the long-term incentive program;
- streamlined maximum award opportunities under the long-term equity incentives, so that they are based on a multiple of salary, rather than a Euro amount, for all ELT members; and
- stock ownership guidelines for non-executive directors and ELT members.

In line with Solvay's Purpose of bonding people, ideas and elements to reinvent progress, Solvay's Remuneration Committee is continuously striving to improve and strengthen its governance structures to create value for all Solvay's stakeholders.

At the same Ordinary General Shareholders Meeting, Solvay's Remuneration Report received 89.1% support from participating shareholders. Notwithstanding the fact that this represented a year-on-year increase in the level of shareholder support, and irrespective of the fact that it exceeded levels achieved in the majority of other BEL 20 Index companies, the Remuneration Committee, and the Board as a whole, took additional steps to understand shareholders' and proxy advisors' perspectives so that they could make further improvements.

Following an engagement exercise with a dozen of investors – representing about 8.5% of shares – and proxy advisors, and the Remuneration Committee's own research, Solvay determined that reservations about the Remuneration Report largely related to the severance payment made to an outgoing ELT member, which had exceeded certain shareholders' internal limits. Solvay notes that the statutory termination compensation paid to the outgoing ELT member, who had worked with Solvay for close to 35 years, was in accordance with his entitlements under the 1978 Belgian Employment Contract Act and the Remuneration Committee had no flexibility whatsoever to adjust the calculated payment. In fact, to have done anything different would have exposed Solvay to action for not complying with legal obligations.

Shareholders and other stakeholders also recommended continued strengthening of disclosures surrounding Solvay's remuneration practices, including the performance measures selected under the short- and long-term incentive plans. The disclosures within this year's Remuneration Report have therefore been extended to accommodate this.

Solvay's Remuneration Committee, and the Board as a whole, will continue to solicit shareholders' and proxy advisors' feedback to ensure that Solvay's approach to remuneration remains aligned with the interests of all stakeholders and evolves as market expectations change.

5.2. Remuneration of the Board of Directors

Solvay SA directors are remunerated, in line with Solvay's Remuneration Policy, with fixed emoluments, the common basis for which is set at the Ordinary Shareholders Meeting. Any addition to this is decided by the Board. The process is based on Article 26 of our articles of association, which states that:
- "Directors shall receive fixed emoluments payable; the Shareholders' Meeting shall determine the amount and terms of payment";
- "That decision shall stand until another decision is taken";
- "The Board of Directors shall be authorized to grant Directors with special duties, different from their Director's mandate, fixed emoluments in addition to those provided for in the above paragraph";
- "Each of the Directors responsible for day-to-day management and ELT Member, are also entitled to variable remuneration determined by the Board of Directors on the basis of their individual results and of the consolidated results of the Solvay Group".

Board fees are determined after considering the roles and responsibilities of each director, and the practices of companies of a similar size and international complexity. An assessment of market practice is conducted on a regular basis and the fees are disclosed in the remuneration report each year.

5.2.1. Board of Directors individual remuneration

The Ordinary Shareholders Meetings of June 2005 and May 2012, which introduced member and attendance fees respectively, approved directors' pay to be set as follows, starting from the financial year 2005:

Board fees by type	Gross amount
Annual gross fixed remuneration	€35,000
Board meeting attendance fee	€4,000
Audit Committee Chairman attendance fee	€6,000
Audit Committee Member attendance fee	€4,000
Compensation, Nominations, ESG and Financial Committee Chairman attendance fee	€4,000
Compensation, Nominations, ESG and Financial Committee Member attendance fee	€2,500

- Directors sitting on both the Compensation Committee and the Nominations Committee do not receive double remuneration if the meetings happen on the same date.
- There are no attendance fees for the Chairman of the Board, the Chairman of the Executive Committee and the executive directors taking part in these committees.
- For the Chairman of the Board, the Board used its authorization under Article 24 of our articles of association to grant an additional yearly fixed remuneration compensation of €250,000 gross, unchanged since 2012.
- Non-executive directors do not receive any additional remuneration. More specifically, non-executive directors are not entitled to annual bonuses, stock options or performance share units, or to any supplemental pension scheme.
- Solvay reimburses directors' travel and expenses for meetings related to their Board and Board Committee functions.

The Board fees have not been increased since 2005.

The Group provides administrative support, in the form of an office, use of the General Secretariat and a car, to the Chairman of the Board only. The other non-executive directors receive logistical support from the General Secretariat when needed. Solvay also provides customary insurance policies covering the Board of Directors' activities when they are carrying out their duties.

The new Remuneration Policy approved by shareholders at the 2022 AGM introduced Share Ownership Guidelines for Board members, requiring non-executive directors to hold a number of Solvay shares equivalent to 100% of their gross annual fixed board fees. See section 5.2.2. Share ownership guidelines for the Board.

Solvay acknowledges that the 2020 Belgian Code of Corporate Governance (the "Code") recommends that a portion of the remuneration paid to Board Members be in shares (Principle 7.6), and is aware that Solvay's Remuneration Policy does not provide for this. The Remuneration Committee considers that the current Remuneration Policy remains relevant and that recent changes regarding the requirement to hold shares hold equivalent merit and achieve a similar outcome.

The Remuneration Committee regularly reviews Solvay's remuneration practices, disclosures and market practices to determine whether the Remuneration Policy currently in practice remains appropriate. Any changes to the Remuneration Policy regarding the Board's remuneration will be submitted to shareholders and only be implemented following shareholder consent.

5.2.2. Share ownership guidelines for the Board

Solvay does not directly award shares to non-executive directors as a form of remuneration. However, to comply with the spirit of principle 7.6 of the 2020 Corporate Governance Code, non-executive directors are required to hold a number of Solvay shares equivalent to 100% of their gross annual fixed board fees. These shares should be held until at least one year after the non-executive director leaves the Board of Directors and, in any case, for at least three years after the shares were acquired. The dividends attached to these shares are paid at the same time as for the other shareholders.

5.2.3. Amount of remuneration and other benefits granted directly or indirectly to the members of the Board by the Company or by an affiliated company

GROSS REMUNERATION AND OTHER BENEFITS GRANTED TO DIRECTORS

in €

	2022							2021	2021
	Total gross amount including fixed fees	**Board fixed remunera-tion**	**Board meeting attendance fee**	**For the role in Finance Committee**	**For the role in Audit Committee**	**For the role in Remuneration and Nomination Committee**	**For the role in ESG Committee**	**Total gross amount including fixed fees**	**Board of Directors and committee attendance fees**
N. Boël									
Fixed emoluments + attendance fees	71,000	35,000	36000					75,000	36,000
"Article 26" supplement	250,000							250,000	
Ilham Kadri	71,000	35,000	36,000					75,000	36,000
C. Casimir-Lambert	79,500	35,000	32,000	12,500				92,500	44,500
H. Coppens d'Eeckenbrugge	100,500	35,000	36,000	17,500	12,000			116,500	65,500
F. de Viron	91,000	35,000	36,000			12,500	7,500	86,000	56,000
R. Thorne	107,000	35,000	36,000		36,000			111,000	72,000
G. Michel	101,500	35,000	32,000	17,500		17,000		108,000	66,500
M. Oudeman	98,500	35,000	32,000		24,000		7,500	104,000	63,500
A. Lemarchand	66,500	35,000	24,000			7,500		57,500	31,500
P. Tournay	40,462	12,462	16,000		12,000			99,000	28,000
M. Lievonen	122,000	35,000	36,000	15,000	24,000		12,000	124,500	87,000
A. Thibaut de Maisières	91,000	35,000	36,000			12,500	7,500	87,500	56,000
W. Colberg	112,500	35,000	36,000	17,500	24,000			60,500	60,500
E. Janssen	83,000	35,000	36,000		12,000			42,500	42,500
L. Debroux (1)	50,538	22,538	16,000		12,000			-	-
P. Gurdjian (2)	39,538	22,538	12,000			5,000		-	-
Total	1,575,538	512,538	488,000	80,000	156,000	54,500	34,500	1,489,500	745,500

(1) *L. Debroux since May 2022*
(2) *P. Gurdjian since May 2022*

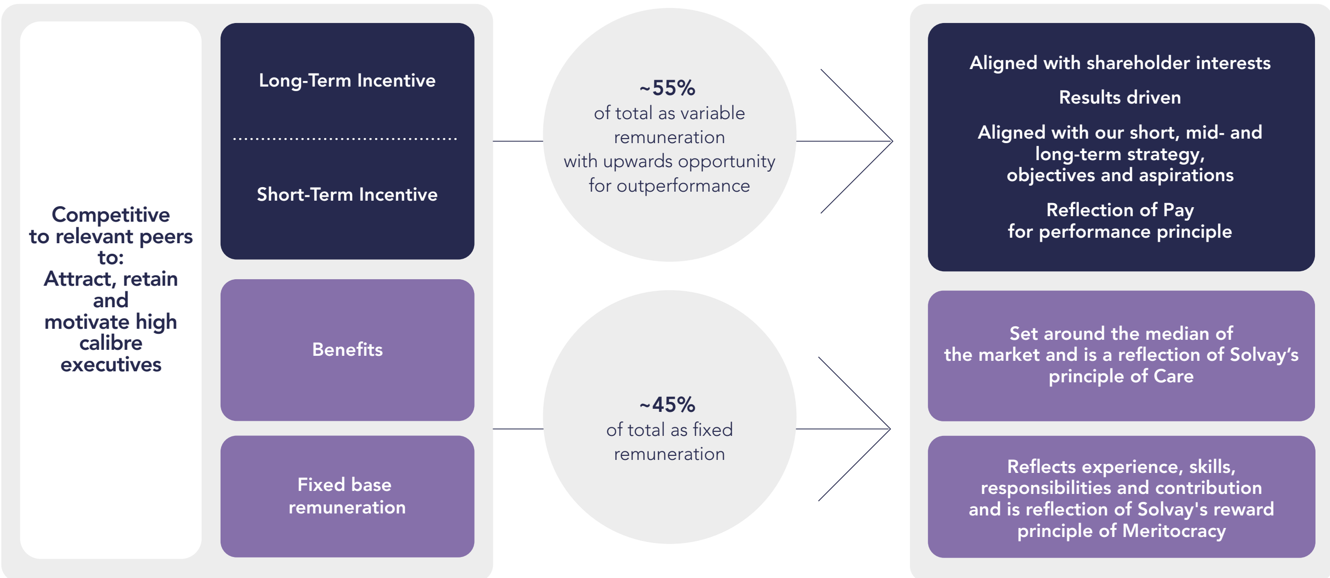
5.3. Remuneration of the Executive Leadership Team (ELT)

5.3.1. Solvay's remuneration philosophy and policy

Solvay's Remuneration Policy aims to ensure that Solvay's Executive Leadership Team is rewarded for their experience, responsibilities and individual performance. The strengthened framework of the Remuneration Policy focuses on meritocracy and performance, maximizing returns in a responsible and sustainable way, and the ability of the Group to attract, motivate and retain the best executive talent in alignment with market trends and the best long-term interests of shareholders. These important principles are also reflected in the remuneration policies and programs offered to Solvay employees globally.

The remuneration structure is designed in line with the following principles, which apply both to ELT Members and other senior executives:
- Total remuneration is set at a level that is competitive in the relevant market and sector, in order to attract, retain and motivate the high-caliber talent needed to deliver the Group's strategy and drive business performance.
- Short- and long-term variable remuneration is tied to the achievement of strategic objectives, including driving sustainable performance, and recognizes excellent results once delivered.
- Remuneration decisions are compliant and equitable, keeping in mind pay levels within the wider workforce, and balance cost and value appropriately.

The following table summarizes the core elements and key principles of Solvay's Remuneration Policy:



5.3.2. Use of Market Data

In alignment with the Remuneration Policy, remuneration of ELT Members is benchmarked against that of a peer group, which Solvay has endeavored to ensure has remained broadly consistent over the years, and remains the same as for the previous reporting period. Solvay's peer group is built around a selection of relevant European chemical and industrial companies whose international operations footprint and model, as well as annual revenues and headcount positions Solvay broadly at the median of the peer group. The Remuneration Committee aims to position Solvay at the market median for all key elements of the package.

The peer group includes the following companies:

Air Liquide	BAE Systems	BASF	Bayer
Covestro	DSM	Evonik	Johnson Matthey
Lanxess	Michelin	Rolls Royce	Saint-Gobain
Umicore	Vallourec	Valeo SA	

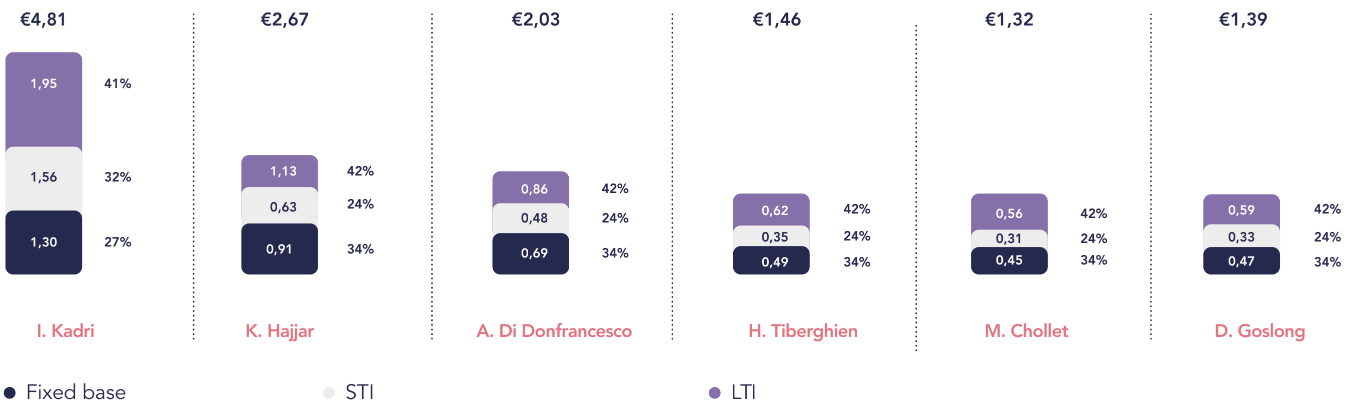
5.3.3. Pay mix and remuneration opportunities for the ELT members as on December 31, 2022

In line with the guidelines of the executive remuneration disclosure, the pay mix of ELT members at the end of the reporting period is outlined below, and displays their Total Direct Remuneration "at target".

Overview

For a full year with both short-term and long-term incentives with targets in millions of euros.

PAY MIX AND REMUNERATION OPPORTUNITY OF THE ELT MEMBERS
(full year with incentives at targets) in million of euros



Detailed table

	Fixed remuneration (on a comparable full year basis)	Value measure-ment	Variable Remuneration As on December 31th, 2022				Total direct remuneration
			STI target	LTI target issued as Performance Share Units	LTI target issues as Restricted Share Units	Total LTI value	
Ilham Kadri CEO and Chairman of the ELT	€1,300,000	Amount	€1,560,000	€1,365,000	€585,000	€1,950,000	€4,810,000
		% of Salary	120%	105%	45%	150%	Fixed 30% / Variable 70%
Karim Hajjar CFO and ELT Member	€908,270	Amount	€635,789	€794,736	€340,601	€1,135,338	€2,679,397
		% of Salary	70%	88%	38%	125%	Fixed 35% / Variable 65%
Augusto Di Donfrancesco ELT Member	€690,000	Amount	€483,000	€603,750	€258,750	€862,500	€2,035,500
		% of Salary	70%	88%	38%	125%	Fixed 35% / Variable 65%
Hervé Tiberghien ELT Member	€497,919	Amount	€348,543	€435,679	€186,720	€622,399	€1,468,861
		% of Salary	70%	88%	38%	125%	Fixed 35% / Variable 65%
Marc Chollet ELT Member	€450,000	Amount	€315,000	€393,750	€168,750	€562,500	€1,327,500
		% of Salary	70%	88%	38%	125%	Fixed 35% / Variable 65%
Dominique Golsong ELT Member	€472,238	Amount	€330,567	€413,208	€177,089	€590,298	€1,393,102
		% of Salary	70%	88%	38%	125%	Fixed 35% / Variable 65%

Note: As with other Belgium-based employees, successive indexation has been applied to ELT members under a local Belgian contract in 2022

5.3.4. Base remuneration and Benefits

Fixed base remuneration

Fixed base remuneration reflects an individual's experience, skills, duties, responsibilities, contribution and role within the Group. It is reviewed annually and may be adjusted, taking into consideration a number of factors, including:

- comparable salaries in appropriate comparator groups;
- changes within the scope of the role;
- changes in the Group's size and profile; and
- inflation following legal requirements in different countries.

Base remuneration, which does not include the value of any benefits offered to ELT Members, is used to calculate targets for variable remuneration.

Details of the base remuneration of the CEO and ELT Members are disclosed in sections 5.3.2. and 5.3.4. of this Annual Integrated Report.

Pension and other benefits

In pursuit of Solvay's mission, Solvay One Planet and Solvay One Dignity objectives, and in alignment with the Solvay Cares aspirations, benefits are seen as a critical part of Solvay's remuneration package, and overall employee and executive value proposition. Benefits are not dependent on an individual's performance.

In accordance with Belgian legal requirements, the CEO has a separate contractual agreement, given her self-employed status in Belgium. This includes pension, death-in-service and disability provisions. Other ELT Members that perform their duties on the basis of a work contract are entitled to pension, death-in-service and disability benefits according to the provisions of the plans applicable in their home countries. ELT Members who do not have a work contract receive remuneration payment of management fees only.

Other benefits, such as medical plans, and company cars or car allowances, are also provided, according to local policies. Solvay aims to ensure that the nature and level of these other benefits are in line with median market practice and what is provided to other executives in the Group.

5.3.5. Short- and long-term variable play

5.3.5.1. Short Term Incentive (STI) plan

Setting STI objectives

Objectives are set by the Board annually for the Group and the CEO. The process takes place at the Board meeting in February of each year. The aim of this objective-setting process is to set targets that are challenging, but realistic. As such, the Board takes into account the "bottom-up" views and ambitions of the business, but ultimately sets the objectives based on Solvay's longer-term ambitions for growth, the long-term sustainability of the business and the competitiveness of the external market.

Solvay's approach to short-term incentive-linked objectives is to set growth-orientated, stretch goals at the "target" award level, driving a growth-oriented, pay-for-performance mindset, with top results generating awards commensurate with the performance level, between the "target" and "maximum".

2022 Short Term Incentive plan

As approved at the 2022 Ordinary General Shareholders' Meeting, the Short Term Incentive plan provides a cash opportunity that is based solely on the achievement of pre-determined annual financial, non-financial and individual objectives.

Target amount	Payout calculated on the basis of achievement of STI 3 elements	Payout range *(achievement of each element)*
Set a % of fixed remuneration	65% Financial results + 15% One Planet progress + 20% Individual performance	0% to 200%

The target opportunity provided by the STI plan for the CEO is 120% of fixed base remuneration, and up to 70% of fixed base remuneration for other ELT members. The minimum payout is 0% and the maximum is 200% of target STI.

The 2022 STI plan uses three broad performance categories with the following weightings for all ELT Members:

- **Financial Objectives** (65% of the STI): Underlying EBITDA organic growth and free cash flow conversion.
- **Solvay One Planet Objectives** (15% of the STI): Underpinned by Solvay's G.R.O.W. strategy, Solvay One Planet is structured around the three major categories of climate, resources and better life, and serves as our roadmap toward a sustainable future. Specific KPIs are selected under each major category to measure our performance in ways that are material, quantifiable and relevant to driving long-term value for all stakeholders. More information on Solvay One Planet can be found on our corporate website.
- **Individual Objectives** (20% of the STI): Individual performance is measured against predetermined non-financial, quantitative and qualitative objectives. These are defined by the Board for the CEO and then cascaded down to other ELT Members by the CEO. The CEO assesses the achievement of individual objectives by the ELT Members, and this assessment is then reviewed and validated by the Board. The individual performance of the CEO is assessed by the Remuneration Committee, and this is then reviewed and validated by the Board. In line with good governance practices, the CEO is absent from the Remuneration Committee and Board during all discussions relating to CEO pay. Details of the individual performance of the CEO, including the targets set and their achievement, are explained below.

Individual objectives and performance of the CEO for STI calculation

In the new Remuneration Policy, the Remuneration Committee decided to increase the proportion of the STI allocated to meeting Solvay One Planet and financial objectives set out in Solvay's G.R.O.W. strategy. The weighting assigned to individual performance within the STI plan was therefore reduced from 40% to 20% for the CEO. All ELT Members now have a maximum of 20% of their STI plan subject to individual performance objectives.

The Board and Remuneration Committee determine these objectives at the beginning of the financial year and track their achievement as part of a review of the CEO's performance during the year.

SUMMARY OF CEO GOALS FOR 2022

Objectives	Repartition	KPI	Impact
Financial	65%	EBITDA (70%)	45.5%
		Free Cash Flow (30%)	19.5%
ESG	15%	One Planet	15%
Individual non-financial	20%	Solvay 2030	5%
		GROW 2.0	5%
		Pursue Solvay's transformation (culture and structure)	5%
		Define the Human Capital for Essential and Speciality Cos	5%

In line with best market practice, and due to the commercial sensitivity of disclosing short-term targets, Solvay discloses targets and the performance against these targets on a retrospective basis only. The next section provides a breakdown of how the CEO performed against the targets set under the STI plan for the 2022 financial year. As best practice, Solvay will continue to disclose in a separate document, ahead of the Ordinary General Shareholders Meeting, the performance measures and associated weighting of each measure selected under the STI plan to determine the CEO's bonus for the upcoming financial year.

Bonuses are subject to malus and clawback provisions, as approved in Solvay's latest Remuneration Policy.

DETAILS OF INDIVIDUAL PERFORMANCE IN RELATION TO EXTRA-FINANCIAL OBJECTIVES

For the performance year 2022, the Board of Directors has set and assessed the following key objectives for the CEO:

Category	Objective	Key initiatives delivered as part of the objective	Achievement
Strategy	**Solvay 2030 vision:** Execute Power of Two 5%	**Target:** · Preparing both companies for the review of the separation project into two new companies. Definition of a management office (PMO), a clear roadmap for day 1, working in a constructive and collaborative manner with a strong focus on people engagement **Extra achievements:** · Built a powerful and compelling equity story to create two strong separate Companies · Excellent key stakeholder engagement - in internal and external - to achieve decision support · Highly complex split, managed at pace to achieve ambitious timelines · zero-based redesign with effective new Organisation Design, cost management and communication · M&A: created and negotiated portfolio opportunities with high multiples while closing significant deals	10%
	GROW 2.0 Continue refining and delivering the G.R.O.W strategy 5%	**Target:** · Deployment of Value Creation Plans for the segments in alignment with G.R.O.W. strategy **Extra achievements:** · €300mn investment to extend leadership position in global lithium-ion battery market · First licensing agreement for Solvay for Hydrogen Peroxides (H2O2) in China for 500 kilotons of caprolactam facility · Beat previous records for: Underlying EBITDA, cost reduction (85% of objective achieved within 15 months); ROCE; balance sheet improvement and leverage ratio. · Deployment of Pricing and Contract Management · Acceleration of R&I capability building with open innovation and a focus on circularity · Rollout of Star Factory program* and two flagship pilots in place and global launch with ~100 site leader · Acceleration of technological growth platforms, with the launch of the fourth Platform focused on Renewable Materials and Biotechnology · Launched Scope 3 roadmap while delivering ~2x Paris Agreement on Scope 1 and Scope 2 since 2019	10%
Organization	**Pursue Solvay's** transformation culture and structure 5%	**Target:** · Further deploy the drive for excellence while leading with our Purpose · Further leverage assessment and pursue organization upskilling (30% executive-level hired) **Extra achievement:** · Raising the bar continuously, with uncompromising ethics and values - Redesign of our Code of Business Integrity · Drove culture of meritocracy, performance (pricing and sales excellence), DEI (wages equity), Employee Share Purchase Plan launch with high engagement (~28% engagement versus 25% median of mature companies) · Reinvestment in our people: Talent book, Sales Academy, Leadership Academy, ESPP, inflation Bonuses · Advancing our Commitment to Diversity, Equity and Inclusion** · Enhancing Solvay's reputation with employees and broader society through Solvay One Planet, Solvay Cares, Solvay One Dignity, Solvay Solidarity Fund, Employee Share program and other initiatives · Chair World Business Council for Sustainable Development (WBCSD) · ERT Board, government engagement · 12 podcasts: "The power of the AND is the future" available on the Solvay website and Podcast Apps	10%
	Define the human capital strategy for the two new entities 5%	**Target:** · Preparing two independent high-performing organizations with dedicated leadership, competencies and mandates **Extra achievement:** · Best in class launch of the the two NewCos - Essential and Special · Benchmark practice in the Organisation Design of the two new Companies · Engaging with all leaders (head of businesses and head of functions): 73% engagement in September 2022 Pulse Survey, 2 pp higher year over year · Definition of a roadmap to create two companies with a culture fit for purpose	10%
Total 20% of STI		Final individual performance score	40%

** Star Factory is about transforming the capabilities and operational efficiency of our plants to ensure they are best-in-class in all areas*
***More information is available in the extra-financial section*

The overall performance of the CEO, during a transformational year full of major milestones, was recognized as exceptional, beating previous records for: Underlying EBITDA, cost reduction (85% of objective achieved within 15 months); ROCE; balance sheet improvement and leverage ratio, whilst driving an ambitious sustainability agenda. The individual element of the payout (20% weighting at target of the of the overall STI) was therefore certified at 200% of target.

STI payout amounts, taking into account the Group and individual performance of each ELT member for the results achieved in 2022, are disclosed in section 5.3.4. Amount of remuneration paid and other benefits granted directly or indirectly to the CEO and other ELT Members.

Group performance 2022

The Group's 2022 performance results are:

	Min.	Target	Max.	Actual performance	Result for STI payout calculation
Underlying EBITDA organic growth	0%	5%	10%	29%	200%
Free cash flow conversion	28%	30%	35%	34.4%	189%
Solvay One Planet	At 2019 level of achievement	Improvement compared to 2019	Significant improvement compared to 2019	✓ (between Target and Max.)	137%

● Actual performance

Dimension of One Planet		Min.	Target	Max.	Actual	Result
Climate	GreenHouse Gas (GHG) emissions (current scope Mt)	11.3Mt	11Mt	10.7Mt	10.4Mt	200%
Resources	% of sustainable solutions in sales(constant rules)	50.3%	51.6%	53.2%	54.8%	200%
	Water Water de-risking plans	No site with mitigation plan	5 top critical sites (water risk) with mitigation plan to exit the Risk Zone	15 sites with mitigation plan	7	120%
	Industrial wastes without valorization (kt)	+9kt versus 2021 result	+0kt versus 2021 result	-5kt versus 2021 result	56.45Kt	120%
	Increase the share of revenue in Circular Business	8%	9%	10%	9.30%	130%
Better Life	Reportable Injuries & Illness per 200,000 work hours (70%) Safety Dialogue (15%) Near Misses Reports (15%)	0.43 LT 0/yr - Sites 0/mth 3000 Near Misses	0.4 LT 4/yr - Sites 1/mth 4000 Near Misses	0.36 LT 8/yr - Sites 2/mth 5000 Near Misses	Fatality - 0 (0.34) 4,4 - 1,1 6649 - 4042	47%
	Diversity number of initiatives	Proportional to 7 Initiatives implemented	7 Initiatives implemented	9 Initiatives+External outstanding recognitions	8,5	140%
	included % of women manager				26.5%	
Total One Planet Score						137%

● Actual

- Financial performance in 2022 was strong, with record profits, cash and returns. Solvay outperformed the forecasts of financial markets and, more importantly, reached new records in terms of sales, EBITDA and returns. Solvay's strong TSR performance is another external measurement of success that establishes a clear focus for the ELT and has a direct link with the value being delivered to shareholders. More information can be found in the Performance Review section of this Annual Integrated Report.
- Solvay One Planet achievements for 2022 showed strong improvement and focus on the three elements: Climate, Resources and Better Life. In the context of volume growth, real reductions in Climate and Resources impact are particularly noteworthy. Specific achievements include: the launch of Scope 3 roadmap while delivering ~2x Paris Agreement on Scope 1 and Scope 2 since 2019; 59 Climate related projects active globally aimed at reducing CO_2 by ~ 2.8 million tons; scope 3 GreenHouse Gas (GHG) emissions were added to the One Planet objectives with a target to reduce by 24% by 2030; Launched a new project with Iberdrola to supply Green Electricity in France; approved, launched and accelerated Coal Exit which will lead to more than -50% reduction in Coal consumption by 2025 versus 2018 baseline. We also made strong progress on the DEI agenda, whilst regrettably a fatality in 2022 rightly is reflected in the Better Life result been significantly reduced.
- Extra-financial performance: Operational Environment, Social and Governance (ESG) metrics based on the Solvay One Planet roadmap are included in the short term incentives (currently 15%) of the CEO, the ELT members and all Solvay employees. Further details and disclosures on this subject can be found in the Extra-financial statements in this Annual Integrated Report.

5.3.5.2. Long Term Incentive (LTI)

Long-term incentive grants for the ELT Members were offered according to the new Remuneration Policy approved in 2022:
- 70% of the annual grant value offered in the form of performance-based restricted share units (PSU); and
- 30% of the award offered in the form of Restricted Share Units (RSU).

In this new policy and as from 2022, an external measurement of success was introduced to compare performance of the Group to the TSR performance of Stoxx 600 index companies, establishing a clear focus for the ELT and a direct link with the value being delivered to shareholders.

In May 2022, the Board granted a total of 37,647 PSUs and 16,136 RSUs to ELT members. Approximately 370 executives and high-potential employees also participated in the Share Option Plan.

Long Term Incentive award opportunity

The CEO has an LTI grant target of 150% of fixed base remuneration. The Board can apply discretion between 0% and 150% of the grant value. For all other ELT Members, the grant target value is up to 125% of the fixed based remuneration. Discretion of up to a maximum of 150% of the grant value can be applied.

The actual annual grant value, within the limits of the Remuneration Policy as explained above, is determined and approved by the Board.

Performance Share Units and Restricted Share Units

To align with market practice and simplify the Remuneration Policy, as from 2022 the annual grant value is determined as a percentage of fixed base remuneration, rather than as a fixed Euro amount for all ELT Members. Under the previous Remuneration Policy only the CEO received an award based on a multiple of base remuneration.

The Remuneration Committee also increased the proportion of performance-based remuneration within the LTI program so that it is better aligned with global best practice. More specifically, the new Remuneration Policy increased the weight of the Performance Share Plan (PSP) from 50% to 70% of the annual grant value. The remaining 30% of the annual grant will be delivered in the form of RSUs under the Restricted Shares Plan (RSP), replacing stock options and serving as both a retention tool and a way of encouraging share ownership among executives to better align their interests with shareholders.

The PSUs and RSUs are granted in the form of conditional shares with vesting tied to the following:
- the Group's performance between 2022-2024, based on the performance metrics detailed for the PSUs;
- on time-based restrictions for the RSUs.

Both plans are subject to a three-year vesting period.

The PSUs vest three years from the date of grant, subject to the achievement of the pre-set performance objectives. The opportunity varies from a minimum of zero, if the minimum target is not met, to a maximum payout of 150%, if the maximum target is achieved. In addition, for the vesting of the PSU, a relative performance measure was introduced as from 2022 to compare the performance of the Group to the TSR performance of Stoxx 600 index companies, establishing a clear focus within the ELT to create shareholder value. Where the PSU result is above zero, the TSR measure can decrease the PSU outcome by 25% of the PSU result when the TSR is in the lower quartile of the Stoxx 600 index, and increase the PSU result by 25% when the TSR is in the top quartile of the Stoxx 600 index.

The remaining portion of the LTI grant is in RSUs, where executives receive shares that vest after three years, provided that they remain in employment. RSUs were introduced with the new Remuneration Policy, as the Board considered it to be a more effective retention tool for executives.

Every year, the Board determines the budget available for distribution and the total volume of PSUs available is subsequently allocated to the eligible population.

PSU features:
- 70% of the annual grant is delivered via the Performance Share Plan;
- the Plan is designed to incentivize and reward the ELT for delivering Solvay's long-term business objectives, and align them with the interests of shareholders;
- the vesting of awards is based on meeting pre-set performance targets;
- the performance period is three years;
- an employment condition applies;
- outcomes range from zero, if the minimum targets are not met, to a maximum of 150% of target, if all plan objectives are achieved;
- TSR measures can increase or decrease the final PSU award for Executive Leadership Team members by 25%;
- the plan has malus and clawback provisions as per the remuneration policy;
- dividends accrue only with respect to vested awards and are paid at the end of the performance period.

RSU features:
- 30% of the annual grant is delivered in the form of RSUs;
- used as a retention tool, to attract and retain the best executives;
- always vest with no performance hurdle, after the three-year vesting period, provided employment conditions are met;
- the award is only linked to the time worked during the three-year period and vests in full;
- the plan has malus and clawback provisions as per the remuneration policy;
- dividends accrue only with respect to vested awards and are paid when the shares vest.

The Board assesses the achievement of the targets set, based on the audited results of the Group. They may use discretion to re-evaluate the targets in exceptional situations. Where such discretion is applied by the Remuneration Committee, the rationale for the use of such discretion will be disclosed. Additionally, discretion, if used, is subject to the award limit stated under the Remuneration Policy. The Remuneration Committee has not applied such discretion in the recent past to adjust any LTI awards, including during the Covid-19 pandemic.

2019-2021 LTI Performance Share Unit plan performance results

The results of the PSU grant of 2019 were calculated and paid in June 2022, based on a three-year performance period ending on December 31, 2021. The 2021 financial year was heavily impacted by the Covid-19 pandemic, leaving a lasting impact on all of Solvay's PSU plans that include performance of the Group in 2020. To date, the Board has not revised the PSU plan performance targets or their thresholds in the context of the Covid-19 pandemic, demonstrating their prudent approach to using the discretionary power granted to them in the Remuneration Policy.

Performance against the objectives set in 2019 is summarized below.

Group Performance Measured over three-year period	Weight	Threshold (80% payout)	Target	Maximum (120% payout)	Actual result	Achievement compared to target	Performance % usedin PSU calculation
Sum of underlying EBITDA growth %	40%	<15%	20%	>25%	<15%	0%	0%
CFROI base point variation	40%	<25 bp	75bp	>125 bp	<25 bp	0%	0%
Greenhouse gas emission reduction (Mt CO_2)	20%	>0 (increase of emissions)	-0.5 Mt CO_2	> -0.75 Mt CO_2	> -0.75 Mt CO_2	120%	24%
Total	100%						24% out of 100% (max opportunity 120%)

The share price differential (grant share price versus share price at vesting) and the total dividends, taking into account the number of vested units calculated over three years (€11.35 per unit), resulted in a payout of 24% of the PSU value granted in 2019.

Payouts made in 2022 to the ELT Members relating to the 2019-2021 PSU plan are disclosed in the section below: 5.3.5. Amount of remuneration paid and other benefits granted directly or indirectly to the CEO and other ELT Members.

Stock options (SOP)

The historical Stock Option Plan has been replaced by the PSU and RSU plans detailed above. However in-flight plans remain and the rules thereof are reiterated below.

Under Belgian law, unlike most other jurisdictions, taxes on stock options are due at the time of grant. Solvay, like other Belgian companies, had therefore set no additional performance criteria for determining the vesting of stock options. The options have a vesting period of three full calendar years – meaning that options will vest on the first day of the fourth year after the grant year – followed by a four-year exercise period.

The SOP gives each beneficiary the right to buy Solvay shares at a strike price corresponding to the fair market value of the shares upon grant. Every year, the Board determines the volume of stock options available for distribution, based on an assessment of the economic fair value at grant, using the Black Scholes valuation formula. The total volume of options available is subsequently allocated to the eligible population.

SOP features:

- options are granted at the money (or fair market) value;
- they become exercisable for the first time three full calendar years after they are granted;
- they have a maximum term of eight years;
- they are not transferable inter vivos;
- the plan includes a bad leaver clause.

2022 equity award for Solvay Leadership Team (SLT) members to ensure and recognize the success of our PO2 project

In 2022, the Group announced our aim to create two distinct, independent, publicly listed industry leaders. This is known as the Power of 2 project.

The successful implementation of this project depends on the performance of Solvay's ELT and key senior executives. For this reason, the Board, following the proposal of the Remuneration Committee, allocated a stock option grant to Solvay Leadership Team members, including the CEO, other executive officers, Global Business Unit (GBU) presidents and heads of key functions.

This option grant was made:
- to promote executive commitment to Solvay in relation to the contemplated transformation of the Solvay Group into two independent companies and to incentivize long-term value creation delivered through the transformation of the Group;
- to incentivize Solvay's leadership team to build two independent companies that over-perform in their categories;
- to ensure that in setting up and staffing both new companies, negative trade-offs to the detriment of one company and benefit to the other company are avoided, by ensuring that executives have a stake in the mid-term performance of both.

In light of the PO2 project, the Board, and more specifically the Remuneration Committee, evaluated the suitability of the Remuneration Policy approved in 2022 in ensuring that executives remain incentivized and motivated to continue delivering value to all stakeholders in this transition phase. The Board found the Remuneration Policy to be robust, but had to apply discretion to grant the equity award.

The Board considered it important to send all stakeholders and the executive team a strong message: that Solvay is both ready for the next chapter of growth and value creation for all stakeholders, and capable of navigating the complex PO2 project, the success of which depends on maximum dedication from all executives. A number of incentive approaches were considered by the Remuneration Committee. The equity award was the option that aligned best with shareholders' interests, due to its focus on value creation and share price, and its ability to serve as a retention tool, given that executives were required to pay taxes for these options upfront from their own private funds.

A total of 386,867 options were granted in October 2022 to 17 members of the SLT. All award recipients accepted their option grants in full. The key attributes of the equity award are as follows:
- Stock options are subject to performance conditions – implementation of separation and value creation – and will be forfeited in full if the separation does not occur by 2025.
- The share price has to increase above €100 for at least 15 days in total, for the options to become exercisable and deliver value. If this criteria is not met, the award lapses.
- The options may be exercised by beneficiaries between January 1, 2026 and December 31, 2027 inclusive, providing presence and performance criteria are met.
- Taxes are paid at the time of the grant in Belgium and cannot be recouped if the options do not vest or upon voluntary departure, demonstrating executives' commitment and belief in the success of PO2 project and value creation for both companies.
- The Exercise Price of each option is €84.34, which was a fair market value at the time of the grant (August 2022).
- Stock options were determined as a multiple of annual base salary in a range between 50% and 200%, depending on the Board's view of how critical the role is for this transformation.

The grants approved by the Board under the Remuneration Committee's proposal are subject to a number of requirements that need to be satisfied for payout or exercise of the stock option. This includes confirmation at the Shareholders Meeting for the awards to the Executive Leadership team members.

STOCK OPTIONS AND PSUS – RSUS ALLOTTED IN 2022 TO ELT MEMBERS

Country	Name	Function	Number of Options (1)	Number of PSUs (2)	Number of RSU (3)
Belgium	Ilham Kadri	CEO/Chairman of the ELT	129,418	16,926	7,254
Belgium	Karim Hajjar	ELT member	42,602	4,836	2,073
Belgium	Augusto Di Donfrancesco	ELT member	42,932	4,836	2,073
Belgium	Hervé Tiberghien	ELT member	23,355	4,018	1,722
Belgium	Dominique Golsong	ELT member	22,593	3,311	1,419
France	Marc Chollet	ELT member	22,399	3,720	1,595
Total			283,299	37,647	16,136

(1) Stock options: fair value calculated based on the closing share price on 14th March 2022, €20.09 (before Po2 announcement)
(2) PSU's share price for May 2022 grant was €94.09
(3) RSU's share price for May 2022 grant was €94.09

Taxes have been paid upfront for participants based in Belgium and such payments are not recoverable in case of voluntary departure.

Clawback provisions relating to PSU - RSU plans

Solvay has the right to claim reimbursement of any amounts paid in accordance with the plan from any PSU and RSU plan participant, during a period of three years from the date of the payment, on the basis of erroneous results that were subsequently adjusted or corrected. This clawback clause has not been applied in the past because there have not been any instances where such events occurred.

Commitment of our ELT Members to the Group with our new Shared Ownership guidelines

To align executives' interests with those of shareholders, a requirement to build and maintain a shareholding in Solvay equivalent to 150% of fixed base remuneration for the CEO and 100% of fixed base remuneration for other ELT Members was validated in May 2022 under the new Remuneration Policy.

Any shares acquired to meet this requirement should be held until at least one year after the ELT Member leaves the Group and, in any case, for at least three years after the shares were acquired.

This shareholding should normally be built up over a period not exceeding five years. At this stage every ELT member is building their shareholding. The average ELT ownership is currently 43%, and Karim Hajjar, member of the ELT since 2013, has reached the 100% requirement.

5.3.6. Amount of remuneration paid and other benefits granted directly or indirectly to the CEO and other ELT Members

According to the new Remuneration Policy and based on the Board of Directors' assessment of the performance of the Group and our executives in 2022, the remuneration of the CEO and other ELT Members was as follows:

Name, Position	Fixed remuneration/Base salary	Variable remuneration			Benefits					
		Annual variable pay based on 2022 paid in 2023	The value of vested equity based remuneration 2022 (2)	Total direct remuneration	Extraordinary items	Pension	Other (3)	Total remuneration	Proportion of fixed and variable remuneration	
Ilham Kadri, CEO & Chairman of the ELT	1,287,500	2,942,160	221,384	4,451,044	0	911,634	375,857	5,738,535	Fixed	45%
									Variable	55%
Karim Hajjar, CFO & ELT member	951,984	1,135,000	64,142	2,151,126	0	243,505	300,828	2,695,459	Fixed	56%
									Variable	44%
Dominique Golsong, ELT member (1a)	455,859	590,000	0	1,045,859	0	0	0	1,045,859	Fixed	44%
									Variable	56%
Marc Chollet LT member	442,500	563,000	41,101	1,046,601	0	193,719	47,208	1,287,528	Fixed	53%
									Variable	47%
Augusto Di Donfrancesco, ELT member (1b)	682,500	911,000	64,142	1,657,642	0	131,659	113,426	1,902,727	Fixed	49%
									Variable	51%
Herve Tiberghien, ELT member	516,150	658,000	0	1,174,150	0	123,597	98,361	1,396,108	Fixed	53%
									Variable	47%

(1a) Acting through and remuneration paid to management company "SRL Dominique Golsong"; as such not eligible to any company paid benefits
(1b) Expatriate assignment in Belgium
(2) PSU 2019-2021 paid in June 2022; overall plan result 24% of 100% as disclosed in the section "2019-2021 LTI Performance Share Unit plan performance results" of this report
(3) Long-term benefits (e.g. death-in-service, disability & medical benefits) & benefits in kinds (e.g. company vehicle, education, expatriation package expenses, tax filing assistance).

Stock options granted and held in 2022 by the ELT members as of December 31, 2022

Following the guidelines of the executive remuneration disclosure, the table below shows the evolution of outstanding balances of stock options issued to ELT Members and the balance of the Solvay Stock options held by the ELT Members at the end of the reporting period.

		Changes during the year					
Name	Balance on 31/12/2021	Granted in 2022	Exercised in 2022	Expired in 2022	Vested	Non vested	Balance on 31/12/2022
Kadri, Ilham	142,154	129,418	0	0	0	271,572	271,572
Hajjar, Karim	136,624	42,602	10,969		83,379	84,878	168,257
Di Donfrancesco, Augusto	121,481	42,932	10,969		68,236	85,208	153,444
Tiberghien, Herve	27,135	23,355	0	0	0	50,490	50,490
Golsong, Dominique	6,861	22,593	0	0	0	29,454	29,454
Chollet, Marc	67,970	22,399	7,020		34,579	48,770	83,349
Total	502,225	283,299	28,958	0	186,194	570,372	756,566

COMPARATIVE INFORMATION ON THE EVOLUTION OF REMUNERATION AND COMPANY PERFORMANCE

The table below shows the change in remuneration of the Board and the ELT in comparison to the Group's performance over a period of five years.

	2018	2019	2020	2021	2022
Remuneration					
Remuneration of the Board (€)	1,824,260	1,645,433	1,687,500	1,620,587	1,575,538
Remuneration of the CEO Iham Kadri (€)		3,328,604	3,790,614	4,025,971	5,738,535 (9)
Remuneration of ELT members (€)	9,501,971 (1)	6,499,400 (2)	7,726,374 (3)	7,707,462 (4)	8,327,681 (5)
Average remuneration of employees (€)	66,691	69,220	61,945 (6)	67,990 (7)	76,588
Ratio between the remuneration of the CEO and the average remuneration of employees (8)		48x	61x	59x	75x
Solvay Performance	2018	2019	2020	2021	2022
Underlying profit for the period (€ million)	1,131	1,113	650	1,081	1,772
Underlying EBITDA (€ million)	2,230	2,322	1,945	2,356	3,229
Free Cash Flow (€ million)	989	1,072	1,206	1,043	1,255

(1) V. De Cuyper, R. Kearns (9m), K. Hajjar, P. Juery, C. Tandeau de Marsac (10m), A. Di Donfrancesco (10m), H. Du (10m)
(2) V. De Cuyper, K. Hajjar, A. Di Donfrancesco, H. Du, H. Tiberghien (4m), P. Juery (2m), C. Tandeau de Marsac (2m)
(3) V. De Cuyper, K. Hajjar A. Di Donfrancesco, H. Du, H. Tiberghien
(4) K. Hajjar, A. Di Donfrancesco, H.Tiberghien, M.Chollet, D. Golsong
(5) Impacted by furlough and other cost measures, while variable pay payouts where significantly higher in 2021 than the previous year
(6) Considers impact of 2020 bonus paid in 2021 above target for all employees and impacted by payroll inflation in 2021
(7) Ratio will increase in the future considering the performance and vesting of the PSU plan for the CEO (first grant of 2019 will vest in 2022)
(8) Considers impact of 2020 bonus paid in 2021 above target for all employees and impacted by payroll inflation in 2021
(9) Higher short incentive payout related to 2022 due to the exceptional results and accomplishments and 2019 PSU payout in 2022 which Increased the total CEO remuneration

The remuneration of the CEO and the ELT Members includes: (1) base remuneration paid in 2022; (2) STI for the results of 2022; and (3) PSU value for the results of the 2019-2021 plan, paid in June 2022. It does not include: (1) granted or vested value of LTI's during 2022, as SOPs do not represent a value until exercised and PSUs that vest on December 31 are paid the following year, taking into account the performance of the Group over the vesting period; and (3) any one time payments. Average remuneration of employees is calculated as: "total wages and direct social benefits" divided by the "number of employees on a year over year basis for continued operations", as disclosed in the respective sections of this Annual Integrated Report.

Following the guidance issued by the Belgian Corporate Governance Commission regarding remuneration disclosure, published in November 2020, the ratio of the CEO's pay (highest paid executive in the Group) to that of the lowest paid Solvay employee in Belgium in 2022 is 114x, compared to 90x in 2021 and 108x in 2020. The ratio increased in 2022, due to two main reasons, the first one being the higher short incentive payout related to 2022 due to the exceptional results and accomplishments and the second being the 2019 PSU payout in 2022 (which was the first PSU award payout for the CEO since she joined in 2019).

The lowest paid employee is defined as a full-time employee in Belgium who has worked for a full year and holds the lowest base salary at year end. The actual total remuneration received by this employee is considered in the calculation of the ratio.

5.4. Statements of compliance of remuneration for Chairman and ELT members

This report has been prepared by the Remuneration Committee.

The remuneration packages of Ms. Ilham Kadri, the Chairman of the ELT (or CEO) and the other ELT Members, are in compliance with Article 7:91 of the Belgian Code of Companies and Associations, which provides that, in the absence of statutory provisions to the contrary or express approval by the Annual General Meeting of Shareholders, at least 25% of the variable remuneration shall be linked to predetermined performance criteria that are objectively measurable over a period of at least two years, and at least another 25% should be based on predetermined performance criteria that are objectively measurable over a period of at least three years.

The remuneration packages are set by the Board, based on recommendations from the Remuneration Committee. These remuneration packages are also compliant with the Belgian Code of Corporate Governance (2020).

Variable remuneration consisted of an annual incentive based on the performance achieved relative to the Group's economic and sustainable development performance objectives, and on the performance of the individual as measured against a set of pre-determined individual objectives.

ELT Members, including the CEO, receive, from 2022, PSUs and RSUs in the form of shares, as explained above. The Board decided to allocate an extraordinary grant of Stock Options following a proposal of the Remuneration Committee in October 2022, in the context of the Group Portfolio Transformation.

The expenses of the ELT Members, including those of its Chairman (the CEO), are governed by the same rules that apply to all senior management staff, namely the justification of all business expenses, item by item. Private expenses are not reimbursed. In the case of mixed business and private expenses, such as cars, a proportionate rule is applied in the same way as to all management staff in the same position.

According to Belgian Law, any changes to our Remuneration Policy need to be submitted to shareholders for approval before implementation.

5.5. Key provisions of Executive Leadership Team Members' contractual relationships with the Company and/or an affiliated company, including provisions relating to remuneration in the event of early departure

ELT Members, including the Chairman (or CEO), have directorships in Group subsidiaries as a function of their responsibilities. Where such directorships are compensated, they are included in the amounts given above, regardless of whether the position is deemed to be salaried or undertaken on a self-employed basis under local legislation.

ELT Members will not benefit from any contractual departure indemnity linked to the exercise of their office. In case of early termination, only the legal system applies, except for the CFO, Karim Hajjar, and the General Counsel and Corporate Secretary, Dominique Golsong[1]. The CFO's employment contract contains a contractual departure indemnity of 12 months of his salary after five years of seniority, and a non-competition clause of 12 months. The General Counsel and Corporate Secretary's services contract [(1)] is for a (renewable) fixed term that coincides with the mandate as ELT Member, but which can be terminated with notice or a departure indemnity of three months' base remuneration. A non-competition clause of 12 months applies after termination. A non-competition clause of 12 months also exists for Hervé Tiberghien, Marc Chollet and Augusto Di Donfrancesco.

In the event of a decision to terminate Ms. Ilham Kadri's contract, she will be eligible for a contractual indemnity of 18 months of her fixed and variable emoluments and all other benefits granted, and a 12 month non-compete indemnity equivalent to six months of remuneration computed in the same way as the severance fee due in case of termination by Solvay.

In the event that Ms. Ilham Kadri resigns, she is subject to a non-competition clause of 12 months with no additional remuneration.

The above report and the decisions made during 2022 about the remuneration of the executives of the Group are aligned with the Remuneration Policy approved at the Annual Shareholders meeting, which took place on May 10, 2022.

The above is in line with Belgian Corporate Governance Code requirements.

1. Acting through management company SRL Dominique Golsong

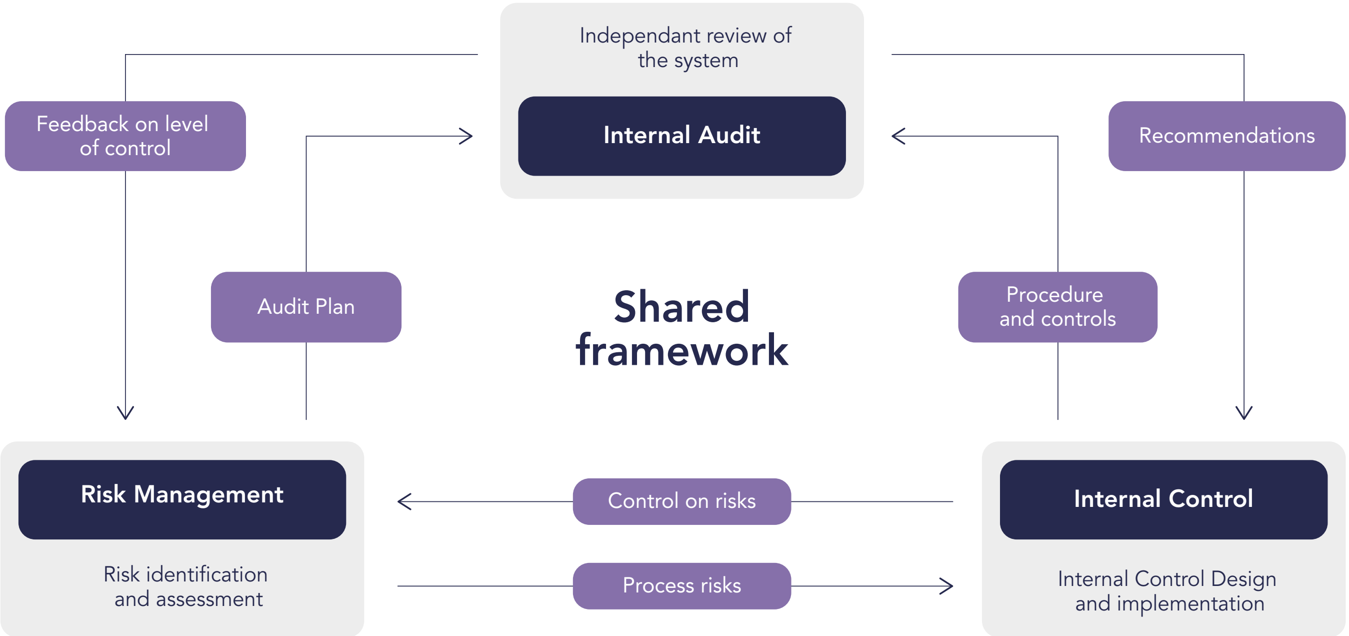
6. MAIN CHARACTERISTICS OF RISK MANAGEMENT, INTERNAL CONTROL AND INTERNAL AUDIT

6.1. Roles and responsibilities

Solvay leaders and managers are accountable for ensuring the adequacy of the risk management and internal control framework in their respective Global Business Units (GBUs) and Functions.

The Internal Audit and Risk Management department (IA/RM) organizes internal audit, internal control and risk management activities in a global assurance function to strengthen the efficiency and effectiveness of the risk management and internal control systems.

The Risk Management and Internal Control team provides advice and ensures that leaders address the challenges at stake. It is in charge of setting up and maintaining a comprehensive and consistent system for risk management and internal control across the Group, which is independently reviewed by the Internal Audit team.



The extent to which Solvay is willing to take risks in pursuit of our business strategy and our objective to create shareholder value is defined by a number of qualitative and quantitative expressions of risk appetite, operated through measures such as limits, triggers and indicators. The IA/RM department communicates directly with the Audit Committee, regularly ensuring that the risk appetite of Solvay management is aligned with the risk appetite of the Board.

Solvay has set up an internal control system designed to provide reasonable assurance that:
- current laws and regulations are respected;
- policies and objectives set by general management are implemented;
- financial and extra-financial information is accurate;
- internal processes are efficient and effective, particularly those contributing to the protection of Solvay's assets.

The five components of the internal control system and the role of internal audit as an independent assurance provider are described below.

6.2. The control environment

As the foundation of the internal control system, the control environment reflects the tone from the top, thus promoting awareness and compliant behavior among all employees. Its various elements create a clear structure of principles, rules, roles and responsibilities, while demonstrating general management's commitment to compliance.

- The Code of Business Integrity is available on Solvay's website. It refers to underlying policies and procedures. Employees regularly receive training on the Code. More information can be found in the chapter on Corporate Governance and the Extra-financial section of this report.
- An Ethics Hotline, managed by a third party, enables employees to report potential Code of Business Integrity violations if they cannot go through their managers or through the compliance organization, or if they wish to remain anonymous. More information can be found in the Extra-financial section of this report.
- Standardized processes and controls, including delegations of authority and signature rules, as well as the application of the segregation of duties principle, are in place for financial and non-financial activities.

6.3. The risk assessment process

The risk management process takes into account the organization's strategic objectives and is structured into the following phases:

- Risk analysis (identification and evaluation), risk assessment and decision on how to manage the critical risks.
- Implementation of mitigation plans with risk owners accountable for delivery.
- Monitoring of risk mitigation plans for adequacy and effectiveness.

Our approach to designing internal controls for major processes includes a risk assessment step defining which key control objectives to tackle. In particular, this is the case for processes at subsidiary, shared services, GBU or corporate level, leading to the production of reliable financial reporting.

The Audit Committee meets with the CEO and all other members of the Board once a year to discuss the major risks facing the Group. During the year, the Audit Committee systematically reviews progress and regularly invites the relevant leaders and risk owners to provide overviews of their risk assessments and progress on mitigating actions. In accordance with the defined Group risks, topics such as industrial safety, physical security, cybersecurity, ESG-related subjects, or ethics and compliance matters are addressed.

More information on Enterprise Risk Management, including a description of the Group's main risks and the actions taken to avoid or mitigate them, can be found in the Risk Management section of this report.

6.4. Control activities

Solvay uses a systematic approach to designing and implementing control activities for the most relevant Solvay processes.

After the risk analysis and risk assessment phase, the controls are designed and described by the corporate process owners with the support of the Risk Management team. The descriptions of the controls are used as a reference for the internal control assessment and roll-out across the Group.

At each level of the Group (corporate, shared services platforms and GBUs), the manager in charge of the process is responsible for the control execution.

Agile internal control governance has been set up under the CFO's sponsorship: corporate process owners and GBU representatives (process risk coordinators) are part of a network that aims to promote an internal control system tailored to the risks of each GBU.

Solvay implements policies and processes applicable to all employees in the following domains: management control, financing and cash flow; financial control; financial communication; tax and insurance policies. Control activities are defined for all of these financial processes and in major cross-Group projects, like acquisitions and divestitures. Furthermore, an online Financial Reporting Guide explains how the IFRS rules should be applied throughout the Group.

Financial elements are consolidated monthly and analyzed at every level of responsibility in the Company, including Solvay Business Services, the finance director of the entity, Group accounting and reporting, and the Executive Leadership Team. Elements are analyzed using various methods, such as a variance analysis, plausibility and consistency checks, ratio analysis and comparison with forecasts.

In addition to the monthly reporting analysis prepared by the Group Controlling teams, the Executive Leadership Team thoroughly reviews GBU performance every quarter in the context of business forecast reviews.

6.5. Internal control monitoring

The Audit Committee is in charge of monitoring the effectiveness of internal control systems. It supervises the work of internal audit and risk management relating to financial, operational and compliance monitoring. It is kept informed of the scope, programs and results of internal control testing, internal control self-assessments, and internal audit work. It also verifies that audit recommendations are properly implemented. The role and responsibilities of the Audit Committee are detailed in the Corporate Governance Charter. For additional information on the work of internal audit see section 6.7 below.

The Ethics and Compliance department coordinates investigations of potential Code of Business Integrity infringements.

6.6. Information and communication

Group-wide information systems are managed by the IT department. A large majority of Group operations are supported by a small number of integrated Enterprise Resource Planning (ERP) systems. Financial consolidation is supported by a dedicated tool.

All financial reporting procedures and internal controls ensure that all material information disclosed by Solvay to our investors, creditors and regulators is accurate, transparent and timely, and that it fairly represents the Group's most relevant developments, financial fundamentals and performance.

The Group Accounting and Reporting department circulates detailed written instructions to all financial actors involved before each quarterly closing.

The publication of the quarterly financial results is subject to various checks and validation:
- The Investor Relations team designs, develops and issues messages and information about the Group with the needs of financial markets in mind. It does so under the supervision and control of the Executive Leadership Team.
- The Audit Committee ensures that financial statements and communications by the Company and the Group conform to generally accepted accounting principles (IFRS for the Group, Belgian accounting law for the Company).
- The Board of Directors approves the consolidated periodic financial statements and those of Solvay SA (quarterly, semiannual and annual) and all related communications.

6.7. Internal Audit

The Internal Audit team provides risk-based, independent and objective assurance to enhance and protect the organization's value. It uses a systematic and methodological approach to evaluate and improve the effectiveness of governance, risk management, and internal control processes and procedures, helping the organization accomplish its objectives.

The team performs internal audit assignments across the entire Group on the basis of its Audit Charter and the risk-based annual internal audit plan approved by the Audit Committee. The audit plan takes into consideration internal and external data, risk factors and benchmarks. It includes both entity-level audits and transversal, Group-wide assignments to address the Group's main risks, which are identified as part of the enterprise risk management process. All the consolidated entities within the Group are inspected by internal audit at least every five years.

The assignments are scoped, planned and defined on the basis of a risk analysis — due diligence focuses on the areas perceived as having the highest risks. Internal audit recommendations are implemented by management. The implementation status is monitored by the Internal Audit team and reported to management and the Audit Committee on a regular basis.

In 2022, the Internal Audit team conducted 35 assignments across all Solvay regions relating to the efficiency of operations and internal controls, as well as to governance and compliance, ESG, safety of operations, information security and value protection topics.

The Head of Internal Audit and Risk Management reports to the Chief Financial Officer and maintains reporting relationships with the Chair of the Audit Committee and the CEO. She attends all Audit Committee meetings and periodically presents an activity report summarizing audit missions performed, the follow-up of recommendations and the annual audit program. She has direct access at all times to the Chair of the Audit Committee and the CEO.

7. EXTERNAL AUDIT

The audit of the Company's financial situation, financial statements, extra-financial statements and the conformity of these statements – and the entries to be recorded in the financial statements in accordance with the Code of Companies and Associations and the bylaws – are entrusted to one or more auditors. These are appointed at the Shareholders Meeting and chosen from among the members, either natural or legal persons, of the Belgian Institute of Company Auditors.

The responsibilities and powers of the auditor(s) are set by law.

- The Shareholders Meeting sets the number of auditors and their emoluments in accordance with the law. Auditors are also entitled to reimbursement of their travel expenses for auditing the Company's sites and administrative offices.
- The Shareholders Meeting may also appoint one or more alternate auditors. Auditors are appointed for three-year renewable terms, which cannot be revoked by the Shareholders Meeting without good reason.
- The Audit Committee assesses the effectiveness, independence and objectivity of the external auditor with regard to the:
  - content, quality and insights provided in key external auditor plans and reports, in particular those summarizing audit work performed on risks identified by the Company;
  - engagement with the external auditor during Committee meetings;
  - robustness of the external auditor in their handling of key accounting principles;
  - provision of non-audit services.

For the year ending December 31, 2022, professional services were performed by Ernst and Young Réviseurs d'Entreprises SRL, duly incorporated and validly existing under the laws of Belgium, whose registered office is at De Kleetlaan, 2, B-1831 Diegem, Belgium, registered in the register of legal entities of Brussels under business registration number 0446.334.711 and their respective affiliates.

The yearly 2022 audit fees for Solvay SA were set at €1.3 million. They include the audit of the statutory and consolidated accounts of Solvay SA. Additional audit fees for Solvay affiliates in 2022 amount to €3.8 million. Supplementary non-audit fees of €1.5 million were engaged in 2022 by Solvay SA and affiliates of which:

- Other assurance service missions:
  - Invoiced by the statutory auditor of the Group: €0.6 million,
  - Invoiced by other EY entities: €0.2 million.

The Ernst and Young mandate has started at the date of the Shareholders meeting of 10 May 2022. EY is the new statutory auditor of the company for a duration of three years, ending after the Ordinary Shareholders' Meeting of 2025, which will be called upon to approve the accounts for the year 2024.

8. ITEMS TO BE DISCLOSED PURSUANT TO ARTICLE 34 OF THE BELGIAN ROYAL DECREE OF NOVEMBER 14, 2007

According to Article 34 of the Belgian Royal Decree of November 14, 2007, the Company hereby discloses the following items:

8.1. Capital structure

As of December 31, 2022, the capital of the Company amounted to €1,588,146,240, represented by 105,876,416 ordinary shares with no designated par value, fully paid up.

All Solvay shares are entitled to the same rights. There are no different classes of shares.

8.2. Transfer of shares and shareholders' arrangements

Solvay's articles of association do not contain any restriction on the transfer of shares.

To the Company's knowledge, there are no agreements among shareholders relating to the Company that may result in restrictions on the transferability of the Company's shares, or the exercise of voting rights. However, the Company has been informed that certain individual shareholders who hold shares directly in Solvay may decide to consult one another when questions of particular strategic importance are submitted by the Board of Directors to the Shareholders Meeting. Each of these shareholders, however, remains free to vote as he or she chooses. None of these individuals, either individually or in concert with others, reaches the initial 3% transparency notification threshold.

Solvay is not aware of any other voting agreements among our shareholders or of the existence of a concert between our shareholders.

8.3. Holders of securities with special control rights

There are no such securities.

8.4. Control mechanism of any employee share scheme where the control rights are not exercised directly by the employees

There is no employee share scheme with such a mechanism.

8.5. Restrictions on the exercise of voting rights

Each Solvay share entitles holders to exercise one vote at Shareholder Meetings.

Article 10 of the Company's articles of association provides that the exercise of voting rights and other rights attached to shares that are jointly owned, or of which the usufruct and bare ownership rights have been separated or are pledged, are suspended pending the appointment of a single representative to exercise the rights attached to the shares.

The voting rights attached to the shares in Solvay held by Solvay Stock Option Management, a wholly-owned indirect subsidiary of the company, are, as a matter of law, suspended.

8.6. Appointment, renewal, resignation and dismissal of directors

The articles of association of the Company provide that the Company is to be managed by a Board of Directors composed of no less than five members, their number being determined by the Shareholders Meeting (Article 12). Directors are, in principle, appointed by the Shareholders Meeting for four years, and may be reappointed.

The Board of Directors submits directors' appointments, renewals, resignations or dismissals to the Ordinary Shareholders Meeting for approval. It also invites such Shareholder Meetings to vote on the independence of the directors fulfilling the related criteria, having first sought the advice of the Nominations Committee, whose mission is to define and assess the profile of any new candidate using its criteria for appointment and for specific competences.

The Ordinary Shareholders Meeting decides on proposals made by the Board of Directors on this matter by a simple majority.

If a directorship becomes vacant during a term of office, the Board of Directors may appoint a new member, subject to ratification at the next Ordinary Shareholders Meeting.

8.7. Amendment of Solvay's articles of association

Amendments to the Company's articles of association must be submitted as a resolution to the Shareholders Meeting, at which at least 50% of the share capital of Solvay must be present or represented. In principle, amendments must be passed by a 75% majority of the votes cast.

If the attendance quorum is not met at the first Extraordinary Shareholders Meeting, a second Shareholders Meeting may be convened and will take a decision without any attendance quorum requirement.

For certain other matters, such as amendment of the purpose of the Company, higher voting majorities may apply.

8.8. Powers of the Board of Directors

8.8.1. Powers of the Board of Directors

The Board of Directors is the highest governing body of the Company.

It is entrusted with all the powers that are not reserved, by articles of association, to the Shareholders Meeting.

The Board of Directors has kept responsibility for certain key areas and has delegated the remainder of its powers to an Executive Leadership Team (further detailed in the Charter).

In all matters for which it has exclusive responsibility, the Board of Directors works in close cooperation with the Executive Leadership Team, which, in particular, is responsible for preparing most of the proposals for decisions made by the Board of Directors.

8.8.2. The Board's authorizations to issue and buy back shares and increase the capital

The Shareholders Meeting of May 12, 2020 authorized the Board of Directors to acquire Solvay shares under the following conditions:
- The par value of the acquired shares, including those held in treasury and those acquired by direct subsidiaries, may not exceed 10% of the capital.
- Any purchase to be made at a unit price that may not be (i) more than 10% lower than the lowest price of the last 20 quotations preceding the transaction; and (ii) more than 10% higher than the highest price of the last 20 quotations preceding the transaction, it being understood that the price shall also comply with the requirements of Article 7:215 of the BCCA and Articles 8:2 and following of the Royal Decree implementing the BCCA.
- This authorization is valid for a duration of five years, as from June 5, 2020.

At the same Shareholders Meeting, the right of the Board of Directors to increase the capital of the Company was also authorized, under the following conditions:

- Limited to an amount of €158,000,000.
- The authorization is valid for a duration of five years, as of June 5, 2020.
- The Board of Directors can cancel the preference right of existing shareholders at the occasion of any increase it decides under the authorization.

8.9. Significant agreements or securities that may be impacted by a change of control of the company

The Ordinary Shareholders Meeting of May 10, 2016 approved the change of control provisions relating to the December 2015 Euro-denominated senior and hybrid bonds and the USD-denominated senior notes issued to finance the acquisition of Cytec and the general corporate purposes of the Solvay Group.

8.10. Agreements between the company and its directors or employees providing for compensation if directors resign or are good leavers, or in the case of a public takeover bid

Not applicable.

RISK MANAGEMENT

Risk management

Risk management

In a context of elevated global economic and geopolitical uncertainty, increasingly volatile market cycles and heightened sensitivity and expectations related to climate change and sustainability, we believe that effectively monitoring and managing risks is key to achieving Solvay's strategic objectives.

1. RISK MANAGEMENT PROCESS

Value can be created when risk is well understood and managed. Anticipating, mitigating, measuring and monitoring risks is as important to Solvay as the related activity of identifying, managing and optimizing opportunities. The extensive risk-related processes and provisions that we apply with everyone from the Board of Directors and front-line workers to supply chain partners and customers demonstrates this. These processes are outlined below.

1.1. Risk analysis and decision on how to manage critical risks

We analyze risks in three ways. First, we establish their level of priority for Solvay, which means categorizing them as "main risks" (most critical), "emerging risks" or "other risks". Second, we identify in which area the risk would have the most impact: the environment, people, economic or reputation. And third, we classify risks according to their time horizon: short term (up to one year); medium term (more than one year and less than five); and long term (more than five years).

In accordance with the Task Force on Climate-related Financial Disclosures (TCFD) and the EU Taxonomy frameworks, we also assess and categorize our main risks as "Environmental (E)", "Social (S)", or "Governance (G)", where applicable.

1.2. Risk management in action

Solvay's Enterprise Risk Management methodology, which is inspired by the Committee of Sponsoring Organizations (COSO) principles, requires our Global Business Units (GBUs) and Functions – and the Group as a whole – to prioritize risks, develop and deliver on mitigation plans, and continually scan the environment to assess whether risks and exposures are changing and test whether priorities and plans remain appropriate. This process is closely followed by the Risk Management team, with systematically recorded assessments enabling us to monitor decisions and measure actions and progress.

The process we use is regularly adjusted, in order to constantly improve the identification and classification of risks. In 2022, we introduced a more systematic classification process to help us integrate ESG risks into our Enterprise Risk Management methodology, by establishing a catalog of ESG risk categories. This helps us identify and systematically assess these risks.

Critical risks for the Group are closely and systematically monitored by the Group Risk Committee, which ensures that these risks are assessed for materiality and are adequately addressed. The Committee is composed of the Executive Leadership Team (ELT), establishing a direct link between the Group's strategy and the risk management process, the Group General Manager for Research and Innovation (R&I), the Chief Sustainability and Government Affairs Officer, and the Head of Investor Relations. Group Risk Committee meetings are facilitated by the Head of Internal Audit and Risk Management.

Business and Function leaders integrate risk management into decision making to support delivery of objectives

Leaders of GBUs and Functions are responsible for identifying, monitoring and managing the key risks in their domains. Risk management is embedded in the day-to-day operations of each entity, and operational managers are expected to anticipate and react rapidly when circumstances change. Each GBU formally presents their risk matrix, and the follow-up actions needed to mitigate any critical risks, to the ELT.

Group risks are overseen at Executive Leadership Team level

Group-level risks are managed and monitored at the top level. The Senior Leadership Team contributes to identifying risks, the Group Risk Committee contributes to assessing risks and the ELT members contribute to risk sponsorship, treatment and response. Board Members also provide independent input, contributing their broad expertise. Additional input may be provided by the Corporate Risk Management Department, which scans external sources, such as the World Economic Forum Global Risks report, the Risk in Focus report from the ECIIA1, the AXA Future risks report or the Economist Intelligence Unit Risk Outlook, for relevant information. In principle, this input is reviewed and validated by the ELT once a year, but more frequent updates are prepared and reviewed when necessary. This has been the case following the significant impact on energy markets caused by the war in Ukraine, for example.

1. European Confederation of Institutes of Internal Auditing

The Audit Committee meets with the CEO and all other members of the Board once a year to discuss the major risks facing the Group. During the year, the Audit Committee systematically reviews progress and regularly invites the relevant leaders and Risk Owners to provide overviews of their risk assessments and progress on mitigating actions. In accordance with the defined Group risks, topics such as industrial safety, physical security, cybersecurity, ESG-related subjects or ethics and compliance matters are addressed.

SOLVAY'S RISK MANAGEMENT PROCESS

	Risk analysis and decision	Implementation	Monitoring
Board	Gather input through periodic survey on Group risks	–	Annual Group risk assessment and validation
Audit Committee	Gather input through survey or dedicated session on Group risks	–	. Assess effectiveness of risk management . Quarterly presentation by risk owners . Periodic review (minimum biannually) and assessment of Group risks (minimum annually)
Senior Leadership Team	Define risks at business and function levels	. Mitigation plan developed with risk owners accountable for delivery . Ongoing systematic progress update . Regular update (minimum annually)	
Executive Leadership Team (ELT)	Provide input on Group risks establishing a direct link between the Group strategy and the risk management process	. Oversee progress as individual risk sponsors . Ad-hoc risk sessions and biannual Group risk dashboard	
Group Risk Committee*	Decide Group risks	–	–

** The Group Risk Committee comprises the Executive Leadership Team (ELT), the Group Corporate Research and Innovation Officer, the Chief Sustainability and Government Affairs Officer, and the Head of Investor Relations.*

Management of major projects linked to Solvay's transformation

An appropriate risk assessment methodology is applied to significant transformation initiatives, including the project aiming to split the Group into two independent publicly traded companies, for which a distinct organization and governance structure has been implemented and a dedicated risk identification, mitigation and monitoring process has been established.

Internal control

Internal control is a key aspect of risk management. The Corporate Governance chapter of this report provides a detailed description of Solvay's risk management and internal control system (see chapter 6.).

1.3. Crisis preparedness

There is a structured network within the Group to ensure crisis preparedness. Members of this network perform tasks and implement programs in order to ensure that their business units and Functions are prepared for specific crisis situations. These programs include crisis simulations, media training for potential spokespersons, maintenance of key databases, and analysis of relevant internal and external events. The risks identified using our Enterprise Risk Management methodology influence the scenarios used in our simulations.

2. SOLVAY'S MAIN RISKS

The Group Risk Committee assesses the impact of risks and the level of control we have over these risks. To assess impact, we use a four-level scale: low, medium, high or very high.

Impact	Low	Medium	High	Very high
Economic	Less than €10 million	€10 million to €50 million	€50 million to €100 million	€100 million or larger
Injury to people	Nuisance (noise, smoke, odor)	One or multiple first aid injuries or shelter-in-place	One irreversible injury or multiple reversible injuries	One or multiple fatalities or multiple irreversible injuries
Reputation	-	· Local news headlines · Low activity in social media · Moderate to strong reaction from local stakeholders	· National news headlines · Strong activity in social media · Strong reaction from stakeholders	· International news headlines · Massive activity in social media · Severe reaction from all stakeholders
Environment	Non reportable operating permit limits exceeded	· Damages limited to the immediate vicinity of the site · Minor impact on plants or animals around the site	· Reversible damages off-site · Major impact on plants or animals around the site	· Long-term damages off-site (ten years)

Level of control

The Group Risk Committee assesses the level of control over these risks by considering the following questions:

- Are key actions and controls clearly identified?
- Was the effectiveness of key actions and controls assessed?
- Was the level of control adequate and proportionate to the risk?
- Are additional mitigation actions appropriate?

Solvay's main risks

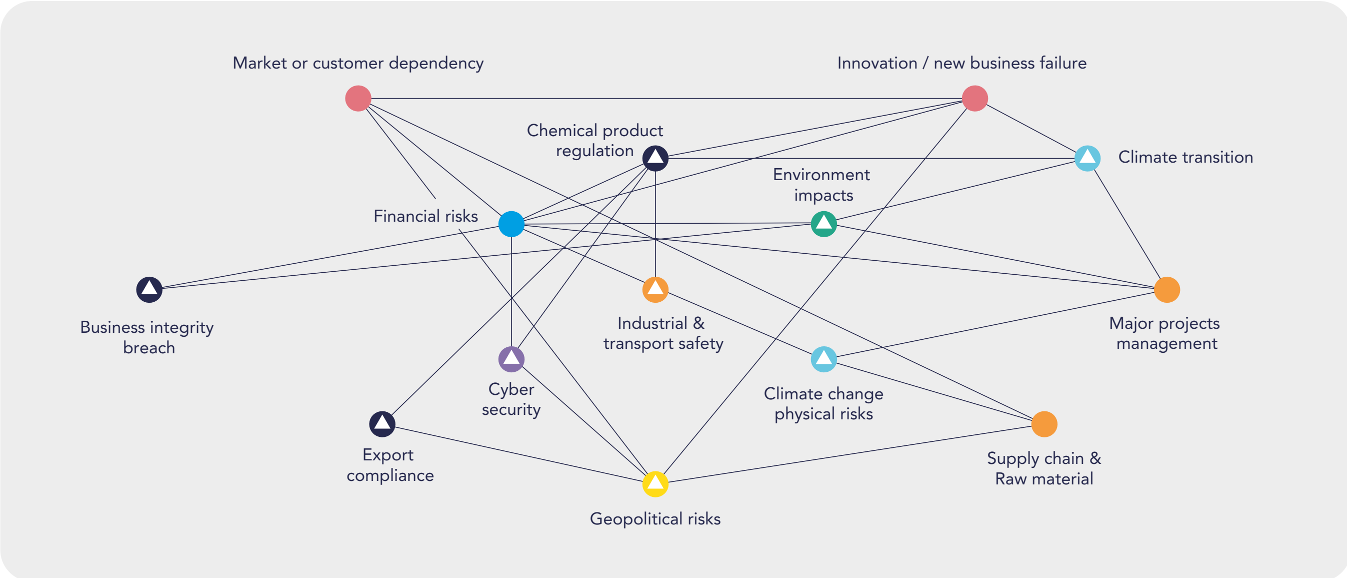
To determine how critical a risk is, we combine the two ratings described above relating to impact and level of control.

Criticality	ESG	Risk	Time horizon	Trends of level of control (after mitigation)	Link with high materiality sustainable development topics
++ **Very High**	S	Security	Short	Improvement	Data security
	E	Environmental impact and controversies	Short to long	Improvement	· Critical incident risk management · Air quality
	G,S	Compliance and business integrity	Short to medium	Improvement	Management of the legal, ethics and regulatory framework
	E,S	Operations safety	Short	Stable	· Critical incident risk management · Employee health and safety · Hazardous materials
+ **High**	E	Climate change	Short to Long	Improvement	· Greenhouse gas emissions · Biodiversity · Energy management · Product design and lifecycle management · Waste and wastewater
	N/A	Geopolitical impacts on trade and supply chain	Short to medium	Under review	–

Short term < 1 year < Medium term < 5 years < Long term
**Emerging risk: newly developing or changing risk that may have, in the long term, a significant impact that will need to be assessed in the future.*

The risks relevant to Solvay, and the Group's risk-reduction actions, are listed below. The mitigation efforts described do not guarantee that risks will not materialize or impact the Group, but they show how we proactively manage our exposure to risk.

RISK CORRELATION



Risk of different categories are often inter-connected, and these correlations are identified during the risk management exercises at GBU and Group level.

Using such correlation analysis, it is possible to obtain a wider view of the potential consequences, and thus of the impacts of the risks, as well as having a better grasp of the causes of the risks, and design more adequate mitigation strategies.

The chart above displays the correlation between the most relevant risks as presented in the following section of the annual report.

Risk categories

- Climate risks
- Compliance and business integrity
- Financial risks
- Risks on operations
- Market and growth
- Environment
- △ Main risk

2.1. Security

RISK HORIZON: SHORT TERM
TREND: IMPROVEMENT

2.1.1. Risk description

Certain security threats can have negative consequences for our business. These include terrorism, crime, violence, vandalism, theft and cyberattacks, which impact employees or other stakeholders, sites, assets, critical information or intellectual property.

Solvay is exposed to physical security risks because it has 62 high-risk operations (high Seveso level, process safety management (PSM) covered). A number of our products, if mishandled, can cause severe damage. For more information on this, see the Extra-financial statements section of the report: 6.7 hazardous materials.

We also have sites located in countries where security concerns are rated high by SOS international. One hundred and fourteen industrial, and 27 administrative and R&I sites have undergone a Security Vulnerability Self-Assessment (SVSA) and only one R&I site has been assessed as having the highest level of security risk – Level 1 – since the previous SVSA.

Solvay's exposure to cyber risk, as for most major companies, stems from our extensive use of information and communication technologies and the gradually increasing automation level of our sites. Like most multinationals, Solvay experiences cyber incidents and actively responds to those incidents to limit the impact. The Solvay management team is not aware of any incident that would have significant consequences for our financial statements or our business.

2.1.2. Prevention and mitigation actions

Solvay has a risk-based security approach to protecting sites, information, and people.

- A Chief Security Officer (CSO) coordinates all security activities globally in order to ensure efficient security risk mitigation. A Chief Information Security Officer (CIO), reporting to the Chief Security Officer, coordinates all related information security activities.

Three governance bodies lead the security risk management effort:

- a Security Board, chaired by the CEO, which provides strategic direction for the Group's security risk mitigation;
- a Cyber Security Leadership Committee, chaired by the Chief Information Security Officer, which oversees all security activities and provides budget and priority recommendations to the Security Board;
- a Security Coordination Working Group, chaired by the Chief Security Officer, which runs a continuous security threat monitoring program and an optimized security program for the Group.

Solvay management provides updates on information security to the Board at least once a year and even more frequently to the Audit Committee.

Cyber security program

The three governance bodies leading the security risk management effort also supervise our cyber security program, which includes:

- the use of assessments conducted by external experts;
- the use of penetration tests and internal phishing simulations;
- substantial training for all Solvay Business Services and Digital Technology (DT) professionals, and mandatory security training for all employees;
- the regular publication of cybersecurity tips to increase employee awareness;
- some significant improvements in security posture, which have been achieved by deploying enhanced security technology across the network. This includes controls such as endpoint detection and response, multi-factor authentication, immutable back-ups and a stronger demilitarized zone (DMZ).

A significant cyber-attack could negatively impact Solvay in many ways, including people, operations and results, as well as know-how and intellectual property. We will therefore continue to solidify our cyber defenses so that we are able to manage the evolving cyber threat landscape.

Insurance

Solvay is insured up to €150 million per claim against the potential financial impact of a cyberattack. This insurance covers damage to assets, business interruption, ransomware and third party liability in case of loss of third party confidential information. The insurance market is insufficient today to provide the full coverage Solvay needs. Solvay has therefore co-created a Mutual of Cyber Insurance (MIRIS) in collaboration with several other Groups, which will start providing coverage to its members in 2023.

2.1.3. Main events in 2022

Our Security Risk Management process and tool were completely reshaped in 2022.

All security risks – cyber, physical and personnel – are now managed in a specific register that allows us to better follow up on decisions, risk ownership and mitigation actions.

A team of two full-time employees is responsible for maintaining the register, following up with the risk owners and improving the process.

A Security Risk Operational Committee is held every two weeks, where the risk owners and security stakeholders, including the CSO and the CIO, review the new risks and decide on how to address them.

2.2. Environmental impact and controversies

RISK HORIZON: SHORT, MEDIUM AND LONG TERM
TREND: IMPROVEMENT

2.2.1. Risk description

Solvay's activities impact the environment through:

- Our use of raw materials based on fossil or non-renewable resources and our consumption of energy.
- Our access to scarce resources, including water.
- Our management of waste, by-products, emissions and effluents.

Solvay manages or remediates historical soil contamination at all sites for which we are responsible, including divested or discontinued operations, ensuring continuous compliance with the applicable environmental legislation. More information can be found in the Extra-financial section of the Annual Integrated Report.

These impacts on the environment, in turn, create the following risks:

- Challenges and expenses related to meeting increasingly strict regulatory standards and changing customer expectations, standards and purchasing decisions.
- Changes in investor sentiment and preferences as a result of the changing investor environment.
- Impact on our ability to recruit employees due to negative public perceptions of environmental issues.

2.2.2. Prevention and mitigation actions

Since 2021, an Environment SteerCo meets quarterly. It is chaired by the Chief Operating and Transformation Officer, and addresses all environmental topics, including remediation, operations and potential risks. Prevention and mitigation activities include:

- Careful monitoring and management of sites with a history of soil contamination by a dedicated expert team. We follow up on about 300 locations across the world.
- Rolling out a risk characterization approach at every affected site, when relevant.
- Regulatory monitoring to proactively assess and address upcoming changes in legislation.
- Our Group strategy for managing chemicals of concern and developing alternatives with a reduced human and environmental impact, or phasing them out completely.

We have also implemented a comprehensive program to reduce workplace chemical exposure using:

- chemical risk assessments and risk-based medical surveillance, using both qualitative and quantitative methodologies;
- pandemic preparedness and mitigation plans;
- human biomonitoring, when warranted;
- improving and adapting working conditions;
- promoting general physical and mental health; and
- setting more conservative in-house exposure limits for critical substances.

We regularly review, and update, standards governing discharge from plants and we use our Sustainable Portfolio Management (SPM) tool to help identify substances that can deliver the needed results but with a more limited environmental impact. We revise our materiality analysis on a yearly basis to align it with evolving stakeholder expectations, including environmental impacts.

Solvay is insured up to €200 million per claim and in the annual aggregate for unknown gradual pollution, and sudden and accidental pollution. Coverage includes defense costs, clean-up costs and third party liability

2.2.3. Main actions in 2022

We continued to execute our Solvay One Planet sustainability roadmap in 2022, which includes programs to:

- identify substances of concern and the develop alternatives, with a focus on 30 priority substances;
- Carbon neutrality ambition underway, with 59 energy transition projects and more than 60 waste projects;
- focus on improving our investment portfolio with regard to water consumption, to meet specific targets by 2025;
- systematically collect fines and settlements received at our sites and quarterly reporting to the ELT;
- approve sustainable investment projects using a Solvay One Planet profile review;
- identify and launch R&I projects that tackle potential risks;
- reduce our pressure on biodiversity by 30% by 2030, which includes assessing our impact on climate change, terrestrial acidification, water eutrophication and marine ecotoxicity;
- identify the Solvay sites most at risk of drought and draft roadmaps for eight priority sites;
- launch the Star Factory program, which includes a sustainability pillar.

2.3. Compliance and business integrity

RISK HORIZON: SHORT TO MEDIUM TERM
TREND: IMPROVEMENT

2.3.1. Risk description

Solvay management, in alignment with the Board, adopts a zero-tolerance approach in relation to non-compliance toward its Compliance and Business Integrity policy. Solvay's activities require that the following risk categories - among others - be considered in relation to compliance and business integrity:

- Failure to comply with governmental laws and regulations in jurisdictions in which Solvay operates.
- Failure to comply with Solvay's Code of Business Integrity, including:
  - intentional misstatements;
  - corruption, misappropriation;
  - by-passing corporate controls, and;
- Human rights violations.
- Failure to implement good governance in a joint venture.
- Failure to comply with chemical product usage standards, such as:
  - inappropriate use of a Solvay product by Solvay personnel or customers, which can lead to adverse health and environmental impacts, property damage and resulting litigation;
  - production of faulty products, which can result in exposure to liability for injury, health impairment and damage, or product recalls. Product liability risk is generally higher for products used in medical devices, healthcare, food contact and feed applications, and sensitive applications in general;

- Failure to comply with chemical and market regulations in countries where a product is sold. There are a lot of regulatory activities worldwide, in particular, we are closely monitoring the upcoming European Union Chemical Strategy for Sustainability (CSS) regulatory framework, including its possible impact on our business and operations and potential opportunities stemming from it. The US Administration is also developing a stricter regulatory framework for chemicals, as well as a framework relating to Environmental Justice.

2.3.2. Prevention and mitigation actions

Solvay's Code of Business Integrity, policies and procedures

Our Code of Business Integrity includes a wide range of topics, among which those listed above. It applies to all employees and majority-owned joint venture partners. Our Supplier Code of Business Integrity applies to suppliers.

We introduced training courses which all employees are required to take and to pass. We require that all employees sign an annual acknowledgement that they have read the Code and that they have nothing to report. We have created several training courses and increased awareness through a communication campaign to address specific behavioral risks. These include:
- anti-bribery and anti-corruption;
- anti-competitive activity;
- confidential and proprietary information;
- conflict of interest;
- reporting non-compliance with human rights in business policy;
- use of a gifts and entertainment tracking system;
- use of third-party reporting hotlines and a Group-wide "Speak Up" program to report non-compliance.

Before entering into a business relationship, our suppliers are required to sign our Supplier Code of Business Integrity and commit to its principles.

In addition, we are increasing our oversight on third parties and suppliers in the field of human rights, anti-bribery and corruption and environmental breaches through proactive screening. Human rights has now been integrated in our Ethics Helpline as a matter type and is also open to the employees of our suppliers.

Chemical product usage

- Solvay Safety Data Sheets (SDS) ensure harmonized content by implementing a common worldwide SAP system for the Group. This SAP system has now been fully implemented across the company.
- SDS are constantly maintained for all products and are distributed worldwide to all customers, in compliance with local regulations and in the local language. Our GBUs ensure that SDS are revised at least once every three years for all the products they sell.
- All GBUs perform an annual inventory of Substances of Very High Concern (SVHC) - defined by Solvay - in the products they sell. A risk assessment and analysis of any available safer alternatives is being performed for each SVHC identified in the inventory. There is also the phase out on top of the analysis of safer alternatives.
- Recall procedures are developed and deployed as prescribed by the product stewardship programs.
- Insurance reduces the financial impact of a product liability risk, including for first-party and third-party product recalls.

2.3.3. Main actions in 2022

Business Integrity

Mandatory annual training and certification ensures all Solvay employees know our Code of Business Integrity. We measure performance not only by what people deliver, but also on how they deliver, in line with our policies and values.

In 2022 our training focused on protecting a culture of integrity at Solvay, on speaking up and listening, on non-retaliation, on data privacy, and on gifts, entertainment and charitable donations. All employees are required to take the training and to certify that they have read the Code of Business Integrity and will apply it. Last year we also introduced an additional compliance certification for site leaders as they play a key role in maintaining a culture of compliance and integrity at their site.

A communication campaign was launched to increase awareness about speaking up and raising concerns when people notice a potential breach of our Code of Business Integrity, without fear of retaliation. Our Ethics Helpline was upgraded and made more accessible in 2022, ensuring that incidents can be easily reported and investigated when necessary. Speak Up was also part of the annual mandatory training for all our employees, and we raised awareness amongst employees that they can speak up about the full spectrum of topics referenced in the Code of Business Integrity. This resulted in an increase of reported incidents as reflected in the overview and increased our ability to detect, identify and address issues and risks. The increase in reported incidents does not imply that there were more incidents in 2022 than before, but shows that employees reach out more to report potential breaches, enabling us to investigate and address those breaches, identify root causes, adapt processes or take disciplinary actions when necessary.

New topics such as human rights, and diversity, equity and inclusion were added to our Ethics Helpline. To tackle human rights and environmental impacts across our upstream value chains, Solvay developed an ESG risk management approach for our supply chain in 2022. It provides a systematic approach for identifying risks and assessing their severity in more than 60 upstream value chains, and triggers risk mitigation action plans. The Ethics Helpline is also open to employees of third parties to report suspected violations of laws, regulations or policies.

Chemical product usage

The Solvay Product Safety Management Process (PSMP) identifies risks relating to products marketed by Solvay. All GBUs use this process, which involves prioritizing the required risk assessments in the product portfolio and carrying out risk assessments for the most sensitive product applications.

More information on this can be found in the Extra-financial chapter of the report: 6.7 Hazardous materials

2.4. Operations safety

RISK HORIZON: SHORT TERM
TREND: STABLE

2.4.1. Risk description

The safety of our people is a priority for Solvay, as is specified in our Solvay One Planet sustainability roadmap. A major accident – whether occupational, process or transport related – that is linked to our internal or outsourced activities may cause human, environmental or asset damages, lead to significant exposure or cause injuries or fatalities. Solvay's industrial sites, like most industrial operations, carry out high pressure and high temperature processes. We also use chemical substances that have risks associated with their chemical composition.

For more information about Solvay's management approach, see the Extra-financial chapter of the report: 6.1 Employee Health and Safety, 6.8 Critical incident risk management (process safety), 6.7 Hazardous materials.

We have identified four major operational risks:

- an occupational safety incident which results in a fatality or irreversible (life-altering) injury;
- a severe process safety incident which results in fatalities, irreversible injuries, environmental harm, and/or loss of physical assets;
- chronic exposure to occupational agents – chemical, physical, biological or psychological – known to cause work-related disease;
- a severe transport accident in connection with hazardous chemical transportation which results in irreversible injuries, fatalities or environmental damages.

2.4.2. Prevention and mitigation actions

Solvay issued a new set of Minimum Requirements to create a shared understanding and approach to mitigating major risks. As part of this approach, we also introduced a new way of working, including a more collaborative and supportive approach to health, safety and the environment (HSE) across the Group.

Our HSE strategy is based on the following four levers:

- Culture: promoting a culture of safety for all employees and contractors.
- Continuous improvement: utilizing networking, best practice, common methods and tools, Solvay HSE Minimum Requirements, external monitoring and benchmarking to improve our HSE performance. Sites are audited on Group HSE procedures at least once every five years, but currently closer to three years on average.
- Competency: ensuring all employees have the right level of knowledge and skills to put in place the HSE Minimum Requirements, starting with those working in key positions.
- Compliance: detecting and mitigating regulatory and non-regulatory compliance issues, with a focus on priority risks, both in our operations and commercialized products.

Occupational safety

Solvay has consistently prioritized occupational safety. Our efforts to create a safety culture where all employees work together and care for one another are based on:

- Solvay's Safety Excellence Plan, which involves and engages all Solvay employees. It includes activities such as Safety Days, Leadership Safety Visits, Behavior-Based Safety programs, Safety dialogues and Safety Culture training.
- The Solvay HSE Minimum Requirements for the Solvay Life Saving Rules (SLSR).
- The Creating Safety program for leadership teams, aimed at changing mindsets and behavior.
- A monthly review of occupational safety results by the relevant GBUs and at the Executive Leadership Team level.

Industrial Hygiene and Occupational Health

Solvay has implemented a comprehensive approach to reducing risks in the workplace. Our approach includes:

- risk assessments and risk-based medical surveillance, using both qualitative and quantitative methodologies, with a focus on chemicals;
- pandemic preparedness and mitigation plans;
- human biomonitoring, when warranted;
- improving and adapting working conditions;
- deployment of a well-being at work program;
- promoting general physical and mental health;
- setting more conservative in-house exposure limits for critical substances.

Process safety management

Solvay has created and uses a Process Safety Management System. Among other things, this system includes:

- a preventative risk-based approach founded on systematic Process Hazard Analyses (PHA), and the identification of critical scenarios for which mitigation action must be implemented in a committed time frame;
- management of changes (MOC);
- a team of process safety experts trained to apply the PHA methodologies.

Transport safety

We have put in place a number of tools and procedures that allow us to identify and take action to mitigate transport-related risks. These include:

- qualification standards for carriers of dangerous goods;
- enhanced training where appropriate;
- implementation of safety procedures and guidelines;
- collection and sharing of lessons learned;
- providing emergency response hotlines worldwide and in many languages.

Environment

To mitigate environmental risks, the following minimum requirements must be respected:

- the discharge of substances, wastewater and atmospheric emissions from our plants must meet all applicable emission limit values;
- waste must be disposed of using appropriate technologies and qualified companies;
- for the long-term release of potentially dangerous chemicals, risk assessments must be carried out on a periodic basis to ensure that the impact on the environment, or on the neighboring population, falls within strict limits, determined by environmental quality standards or by exposure limits.

2.4.3. Main actions in 2022

Occupational safety

- Successful implementation of Solvay Life Saving Rules at site level.
- Continuing deployment of our Safety Culture program (training and sharing). For example, training to avoid complacency and overconfidence has been rolled out this year.
- Systematic tracking and analysis of High Severity Potential (HSP) events. These events, as well as other types of significant incidents in process or transport safety, are subject to a root cause analysis.

More information can be found in the Extra-financial statements section of the report: 3.3. Health, safety and environment management.

Industrial hygiene

We continued to roll-out SOCRATES (Solvay Occupational Risk Assessment Tool for Employees), reaching an 85% deployment rate in 2022, with the expectation of reaching 100% in the first quarter of 2023. This tool:

- provides easy access to industrial hygiene (IH) methods, tools and databases;
- enables consistent documentation of IH assessments;
- enhances the traceability of potential exposure throughout a person's working life.

More information can be found in the Extra-financial statements chapter of the report: 3.3. Health, safety and environmental management

Process safety

- Application of Process Safety Management Audit protocol at 20 sites
- Process Hazard Analyses carried out for 98% of all units, on all sites, within the last five years (Group requirement). The coverage rate is planned to reach 100% in 2023.
- All detected high-risk situations are treated within one year, with any extensions having to be duly authorized. Only three situations at one site have been granted such an extension and with compensating measures implemented in the interim.
- Investigation of a selection of Process Safety Incidents and lessons learned shared with all sites.

More information can be found in the Extra-financial statements chapter of the report: 6.8. Critical incident risk management.

Transport safety

- Improvement of our Group processes on Qualification of Logistics Service Providers for Dangerous Goods, including tolling and storage operations (in progress).
- Continued application of a global Transport Emergency Response covering Level 1, Level 2 and Level 3 in all countries
- Continued development of expertise in Transport Safety through the following activities:
  - Global Transport Safety Network.
  - Feedback on transport accidents.
  - Regular training of people involved in the transportation of dangerous goods .

More information can be found in the Extra-financial statements chapter of the report: 6.8. Critical incident risk management

Environment

- Detailed annual reporting of environmental emissions (air and water), water management and waste. We focus on emissions of Substances of Very High Concern (SVHC) in particular, which are tracked and used for regular exposure assessments. We have also defined internal emission reduction targets for SVHC emissions in air and water.
- Reporting of all types of environmental non-compliance, including any occasions on which we have exceeded emission limits due to a process issue or process safety incident.
- Assessing potential climate change impact on our operations due to flooding, water scarcity, hurricanes and other environmental events, through the application of best-in-class models and collaboration with external experts.

More information can be found in the Extra-financial statements chapter of the report: 5.4. Air quality, 5.6. Water and wastewater, 5.5. Waste

Occupational health

- Covid-19 management to ensure prevention and business continuity according to the evolution of the epidemiology: information, advice, testing and return-to-work case management processes.
- Deployment of a global program for well-being at work:
  - Monitoring indicators.
  - End-of-year survey on well-being at work to help us set action plans.
  - Quarterly pulse surveys to help us understand the psychological climate at Solvay.
  - Training on resilience offered to all employees.
  - Training for managers on “Leading on well-being mindset”.
  - Stress management training facilitated by internal trainers.
- Communication campaigns on Health Promotion.
- Inclusion of health and well-being in the site Health and Safety Days.

More information can be found in the Extra-financial statements chapter of the report: 6.1 Employees health and safety

2.5. Climate change

RISK HORIZON: SHORT AND LONG TERM
TREND: IMPROVEMENT

2.5.1. Risk description

The Group strategy to address climate-related risks, as defined by the Task Force on Climate-related Financial Disclosures, could be ineffective and damage the environment, the lives of current and later generations and Solvay’s reputation. This, in turn, could cause business losses, undervaluation and difficulties in attracting long-term investors. The possible risks to Solvay that we have identified are as follows:

A - Transition risks:

Solvay’s energy mix, which uses coal, our raw materials, which include petrochemicals, and our end markets, which include the automotive, aerospace, and building and construction industries, means that we are exposed to risks and opportunities as part of the energy transition. This transition risk includes the following:

- Policies and legal context: regulations and actions to limit CO_2 emissions, such as increasing carbon taxes, barring internal combustion engines, mandating the use of certain fuel types and tightening environmental standards.
- Technology: unsuccessful investment in new, lower-emission technologies.
- Markets: failure to adapt to changing customer behavior.
- Financial: inability to cope with the influence of climate change on investors’ and lenders’ decisions.
- Changed climate: failing to adequately anticipate the impact of upcoming changes on industrial operations and in the value chain or the tightening of environmental standards.
- Reputation: negative stakeholder attitudes caused by failing to address stakeholder climate change concerns effectively.

B - Physical risks:

- Sites in water scarcity regions
- Sites in flood zones

More information can be found in the extra-financial section 3.8. Climate risks analysis

2.5.2. Prevention and mitigation actions

- Progressing towards the 2030 objective to reduce Scope 1 and 2 greenhouse gas emissions by 30% in line with a "well below 2°C" trajectory.
- Targeting carbon neutrality before 2040 for all GBUs except Soda Ash, and before 2050 for the hard-to-abate Soda Ash activity. This roadmap will require around €2 billion in investments and is expected to generate compelling economic returns.
- Solvay will also not build new coal-powered plants and has committed to phasing out the use of solid fuels (coal and petcoke) in energy production by 2030 wherever renewable alternatives exist.
- In 2022, Solvay has set a 2030 target to reduce by 24% scope 3 greenhouse gas emissions from its top five categories both upstream and downstream in the value chain and representing 85% of the total scope 3. - Early 2023, the Science Based Targets Initiative (SBTi) has validated the Solvay 2030 targets with a slight adjustment to reduce scope 1 and 2 emissions by 31%.
- Assessment of potential climate change impacts on our operations due to flooding, water scarcity, hurricanes, and other environmental events through the application of best-in-class models and collaboration with external experts.
- Establishment of a task force that develops renewable energy and other energy transition projects adapted to local markets and regulations.
- Raising our internal carbon price from €50 to €100 per metric ton of CO_2 on greenhouse gas emissions from operations and using our Sustainable Portfolio Management tool (SPM) to assess all capital investment decisions worldwide.
- Alignment of R&I projects with market expectations and assessment of operations exposure relating to the environment using an SPM lens.
- Linking the long term incentives of senior executives to our achievements in reducing greenhouse gas emissions.

2.5.3. Main actions in 2022

A new climate transition scenario analysis was performed in 2022, in line with the TCFD updated recommendations for scenario analysis. Two scenarios were considered: the 2021 International Energy Agency "Stated Policies Scenario" and the "Net Zero Emissions by 2050" scenario. As a first step, the analysis focused on the three GBUs responsible for about 60% of our total greenhouse gas emissions and with exposure to markets or raw materials that have the potential to be significantly affected by climate change: Soda Ash, Specialty Polymers and Novecare. The analysis is described in detail in the Extra-financial statements section of this Annual Integrated Report.

The quantitative analysis considered:

- The evolution in the cost of energy, CO_2 and raw materials.
- Price and volume changes, based on the market impacts of each scenario.
- Adaptation potential, or the cost passed through to customers.

Assuming that Solvay takes no decisions other than those currently announced, the conclusion of the analysis was as follows:

- The Soda Ash business is reliant on a competitive price advantage. As the cost of energy, raw materials and Solvay operations increases, the business will need to pass on costs to ensure business profitability. It will benefit from additional demand for glass, which is needed in energy efficient buildings. It will drive profit and sales overall.
- The Specialty Polymers business has the best opportunities in a +1.5°C world. Demand for our value-based solutions will provide incentive to increase prices, but additional production capacities are likely to be required to meet sustained demand and ensure costs can be effectively passed through to customers.
- The Novecare business faces risks relating to vegetable oil imports, since vegetable oils from palm oil, and other alternatives, produce significant CO_2 emissions and are highly water intensive. Shifting to sustainable alternatives is expected to be costly at the beginning, but these costs will decrease in the long run, while also bringing reputational benefits. Novecare has the highest-weighted CO_2 emissions intensity in their supply chain and Solvay is engaging with suppliers to reduce Scope 3 emissions.

Cost pass through measures have already been implemented. The analysis will be extended to more GBUs, and to physical risks.

Climate emissions reduction actions are described in detail in the Extra-financial section of the Annual Integrated Report. Among the numerous actions taken are the following:

- In Rheinberg, Germany, the first boiler using biomass instead of coal went into operation in May 2021, and a decision has been taken to install a second biomass boiler, to be operational before 2025. This will allow us to phase out coal and reduce Group greenhouse gas (GHG) emissions by 4%.
- In Dombasle, France, we have taken the decision to shift from coal to RDF (Refuse Derived Fuel). This will allow us to phase out coal at the site by 2024 and reduce the Group GHG emissions by 2%.
- Our multiple energy transition projects implemented or committed globally in 2021 will ensure that 35% of the electricity we purchase comes from renewable sources.
- An annual review of climate-related risks and opportunities for each product in each market performed with the Solvay SPM tool. This shows that our climate-related Solutions (18% of sales) outnumber our climate-related Challenges (3% of sales). For more information, see 5.1 Product Design and Life Cycle Management in the Extra-financial Statements section of this report.

The current risk linked to floods and hurricanes is assessed annually with our insurers. This exercise identifies sites in risk areas with a maximum foreseeable loss greater than US$10 million. Seven Solvay sites are located in high frequency (2% chance per year) flood areas, with a loss expectancy range of US$13.5-196.4 million. Fifteen Solvay sites are located in low frequency (0.2% chance per year) flood areas, with a loss expectancy range of US$14-243.3 million. One site is located in a wind exposed area, with a loss expectancy of US$17.3 million. Solvay has a damage insurance program in place to cover catastrophic risks, while covering smaller losses through self-insurance.

Sites in areas of water scarcity have been identified, and the risks have been assessed based on their water consumption and maximum foreseeable loss. Thirty-one Solvay sites are located in areas subject to hydric stress, of which eight have been identified as having a high business impact. The highest annual business interruption value is €400 million.

More information can be found in the Extra-financial statements chapter of the report: 4. Climate section

2.6. Geopolitical impacts on trade and supply chain

RISK HORIZON: SHORT TO MEDIUM TERM

2.6.1. Risk description

Geopolitical rivalries can cause trade wars, supply chain constraints and regulatory deadlocks, leading to an inability or impairment to trade and develop our businesses across the key regions of the world.

2.6.2. Prevention and mitigation actions

The geographical balance of our Group activities across the major regions of the world mitigate these risks up to a certain point, but this is nevertheless limited by the characteristics of our business supply chains.

2.6.3. Main actions in 2022

The consequences of the war in Ukraine, particularly for the energy markets, have triggered the Group to take action on several topics, steered by a task-force chaired by the Chief Operations and Transformation Officer:

- ensuring the safety of the few Solvay employees based in Ukraine;
- ensuring the continuity of raw material supply by looking for alternative sources to Russia;
- preparing and implementing contingency plans for energy restrictions in Europe, including restrictions to access to natural gas. Every European site has developed a contingency plans;
- ensuring that we comply with the export controls and sanctions enforced by the EU, the US and other countries.

3. OTHER RISKS

3.1. Market and growth – strategic risk

RISK HORIZON: MEDIUM TO LONG TERM

3.1.1. Risk description

Strategic risks in market and growth relate to Solvay's exposure to developments in our markets or our competitive environment (for example exposure due to a dependency to a specific market or a specific customer), and the risk of making erroneous strategic decisions (for example failing in innovation choices, new business developments or major projects).

3.1.2. Prevention and mitigation actions

- Systematic and formal analysis of markets and marketing challenges with respect to investments and innovation project ramp-ups.
- Regular performance review of strategy deployment.
- Development of long term GDP+ growth markets and building on sustainable development opportunities, particularly in the mobility, home and personal care, healthcare, resources and environment, electrical and electronics, and agro, feed and food markets.
- Development of customized, mission-critical solutions with Solvay key accounts.
- Adaptation of our operations to new energy and CO_2 markets.
- Strong focus on cash conversion and generation.
- Disposal of businesses that fall below the cyclicality threshold.

3.2. Supply chain and manufacturing reliability risk

RISK HORIZON: SHORT TERM

3.2.1. Risk description

There are several risks relating to raw materials, energy, materials and equipment for construction and maintenance, suppliers, production, storage units, and inbound and outbound transportation. These include:

- Inability of suppliers to deliver contracted volumes or capacities in line with required specifications, due to force majeure, for example, or because the supplier has insufficient access to Logistic Service Provider capacities.
- Insufficient contracting of volumes or capacities, from both a volume and delivery timing perspective, to fulfill our demand.
- Delayed delivery of volumes or capacities.

3.2.2. Prevention and mitigation actions

In order to ensure manufacturing reliability, we:

- Ensure our production units are distributed across the world.
- Use Process Safety Management.
- Define equipment and materials as critical elements to be ordered ahead for projects and maintenance.
- Regular performance reviews with our key suppliers
- Established the Group property loss prevention program, which focuses on the prevention and mitigation of damage to assets and loss of profit due to fire, explosion, accidental chemical release and other adverse events, like natural catastrophes.

To mitigate risks in our supply chain we:

- Use third party corporate social responsibility assessments and adhere to the Solvay Supplier Code of Business Integrity.
- Improved our planning processes to help us anticipate demand, both in terms of volume and timing.
- Maintain contingency plans for the most critical suppliers.

3.2.3. Main actions in 2022

With uncertainty and volatility continuing to prevail, supply chains need to continue their transformation toward additional agility using End-to-End process revision and the implementation of new tools. Logistical constraints should soften progressively, with additional capacities for container transportation. A potential new Covid lockdown in China also carries significant risk of logistical disruption.

Based on our experience in 2022, we have tested several options which would give us increased flexibility in sourcing, providing us with opportunities should risk materialize. Our inventory management has also improved, toward a more segmented approach, better visibility and better End-to-End alignment. Additional efforts are planned in 2023.

More information can be found in the Extra-financial chapter of the report: 3.5. Supply Chain and Procurement

3.3. Financial risk

RISK HORIZON: SHORT TO MEDIUM TERM

3.3.1. Risk description

We face various different types of financial risk. These include:

- Liquidity risk (see note F32 in the consolidated financial statements, Financial instruments and financial risk management);
- Foreign exchange risk (see note F32 in the consolidated financial statements, Financial instruments and financial risk management).
- Interest-rate risk (see note F32 in the consolidated financial statements, Financial instruments and financial risk management).
- Counterparty risk (see note F32 in the consolidated financial statements, Financial instruments and financial risk management).
- Pension obligation risk (see note F31.A. Provisions for employee benefits).
- Tax litigation risk (see note F31.B. Provisions other for employee benefits).

3.3.2. Prevention and mitigation actions

A prudent financial profile and conservative financial discipline

- Investment Grade status: the Group is rated Baa2/P2 (stable outlook) by Moody's and BBB/A2 (negative outlook) by Standard & Poor's as of the 2022 closing.

Solvay promotes transparency of information and engages in regular discussions with leading credit rating agencies.

Strong liquidity reserves

As of the end of 2022, the Group has €1.2 billion in cash and cash equivalents (other current financial instruments), as well as €2.9 billion of committed credit facilities (a multilateral revolving credit facility of €2.0 billion and an additional €0.9 billion from bilateral revolving credit facilities with key international banking partners), which were all undrawn at the end of 2022.

In the context of the spin-off announced in March 2022, Solvay has also secured an additional €2.9 billion Term Loan Bridge end of December. The Group has access to a Belgian Treasury Bill program for €1.5 billion and, as an alternative, to a US commercial paper program worth US$500 million, both unused at the end of 2022.

Currency hedging policy

Solvay monitors the foreign exchange market closely and takes hedging measures to:

- Limit the fluctuation of the Group's forecasted gross margin caused by currency volatility for material exposures.
- Mitigate the foreign exchange transactional risk at Group level by limiting the profit and loss (P&L) impact of rate fluctuations between the time of invoicing and the time of cash settlement.

Interest rate hedging policy

- The Group locks in the majority of its net indebtedness at fixed interest rates. Solvay monitors the interest rate market closely and enters into interest rate swaps whenever they are deemed appropriate.

Energy and CO_2 hedging policy

Solvay hedges energy prices – gas, coal and electricity – based on the net exposure of our sales not indexed on energy prices. This policy includes multi-year hedging transactions. The Group net exposure to carbon pricing is managed through hedging transactions spanning the time horizon of the European Union Emissions Trading Systems.

Monitoring of Group counterparties' ratings

For our treasury activities, Solvay works with banking institutions of high creditworthiness (investment grade, selected based on major rating systems) and minimizes the concentration of risk by limiting our exposure to each of these banks to a predefined threshold. We regularly monitor trends in Credit Default Swaps to assess changes in bank creditworthiness and take rapid action if required.

For our commercial activities, Solvay's external customer risk and cash collection is monitored by a professional network of credit managers and cash collectors located in the Group's various operating regions and countries. Their controls are supported by a set of detailed procedures and managed through Corporate and GBU Credit Committees. These loss mitigation measures have led, over the past few years, to a record low rate of customer defaults.

Pension governance and pension plan optimization

With regard to pension governance, Solvay engages proactively and constructively with trustees and stakeholders to ensure that funding, liability management and investment policies are appropriate, in line with best practice and in full compliance with domestic regulatory expectations and laws.

In terms of pension plan optimization, we reduce the Group's exposure to defined-benefit plans either by converting existing plans into pension plans with a lower risk profile for future services or closing them to new entrants.

For each of the main Group pension plans, which represent about 90% of the Group's gross or net pension obligations, Asset Liability Management (ALM) analyses are performed at least once every three years to identify and manage corresponding risks.

Control processes for tax regulation compliance and transfer pricing policies

Our control processes for tax regulation compliance involve monitoring procedures and systems, which we carry out thorough internal reviews and audits performed by reputable external consultants.

Our transfer pricing policies, procedures and controls are aimed at meeting the requirements of the authorities.

Solvay's Tax department pays close attention to the correct interpretation and application of new tax rules. This ensures compliance with applicable rules and regulations and avoids tax and future litigation risks.

3.3.3. Main actions in 2022

- Successful repayment of the remaining portion of the Solvay SA Euro bonds, due in December 2022 (€377.5 million), as well as the early redemption of the Cytec bonds on January 1, 2023 (US$196.1 million, plus the accrued interests).
- Full repayment of the Rusvinyl debt (equivalent of €100 million) and release of the Solvay guarantees (~€83 million).
- Closing of the Dombasle Energy SPV Project finance (€225 million)
- Preparation work in view of the intended spin-off announced in March 2022.
- Monitoring of ESG debt capital market issuances in the chemical industry.
- Compliance for "Ibor-transition rates" to risk-free rates and adjustments of financing documentation.
- Optimizing our liquidity reserves and rebalancing the refinancing strategy of some bilateral credit facilities.
- Further contribution of €155 million in Germany in the third quarter of 2022.

3.4. IT risk

3.4.1. Risk description

Our IT risk relates to an inability to:

- Ensure the continuity of digital technology services to business;
- Provide our businesses with new and sustainable capabilities while deploying Solvay's digital technology ambition under our new operating model;
- Deploy the cybersecurity program

3.4.2. Prevention and mitigation actions

- Close monitoring of major transformation initiatives.
- Significant workforce increase in the field of information security, together with close monitoring of the deployment of our cybersecurity roadmap (see also Security section).
- Close monitoring of security and performance indicators.
- Close monitoring of workforce and talent management.
- Globally, close monitoring of IT/Digital Technology (DT) risks:
    - Digital Technology Risks were reassessed in July 2022;
    - A Digital Technology risk coordinator has been appointed;
    - Risk owners and corresponding risk action owners have been appointed;
    - Digital Technology Risks are monitored on a monthly basis together with the DT Leadership team.
- Annual IT audit program to ensure compliance with group security policies.

3.5. Risks related to Solvay's transformation

3.5.1. Risk description

As announced on March 15, 2022, Solvay is reviewing plans to separate the Company into two independent, publicly traded companies. For further details, please refer to the introduction section of this annual integrated report. Risks related to the Power of Two project include, but are not limited to, the risks described below.

- This major transformation project is expected to be completed in the second half of 2023, subject to general market conditions and satisfaction of a number of customary conditions, including, among others, final approval by Solvay's Board of Directors, shareholder approval at an extraordinary general meeting, receipt of tax rulings in certain jurisdictions, consent of certain financing providers and receipt of certain regulatory approvals. The failure to satisfy all of the required conditions, or unanticipated developments, could delay the implementation of the separation for a significant period of time or prevent it from occurring at all.
- The implementation of the contemplated separation will likely continue to require significant time and attention of our management, which could impact other strategic initiatives, ongoing business concerns and the Group's ability to attract new business and maintain existing operational and client relationships. The separation will also place significant demands on certain functions that will be heavily involved, particularly Finance, Accounting and Digital Technology.
- During the implementation phase, a new governance and organizational structure will have to be set up at the level of SpecialtyCo and EssentialCo, which may affect employee morale due to uncertainty concerns as to their future roles within the separate companies and lead to departures of key personnel. Failure to motivate and retain key personnel could force us to divert significant time and efforts and incur additional costs to hire and train highly skilled employees as replacement in a competitive market. Despite our efforts to identify and train suitable individuals to hold senior management and key executive positions, we may not be successful in recruiting internally or externally, or in effectively transferring knowledge to newly hired employees and senior leadership teams, which may result in either or both companies' ability to successfully develop and achieve the strategic purpose of the separation being adversely affected.
- In order to implement the targeted post-spin-off capital structures of SpecialtyCo and EssentialCo, the separation project will comprise several liability management transactions to allocate certain financial instruments outstanding at the time of the partial demerger, and to seek approval of amendments to or waivers of certain terms and conditions of the relevant instruments. While Solvay expects to have backup plans ready in case the liability management transactions are not successful, failure to successfully complete these transactions may adversely affect SpecialtyCo's and EssentialCo's ability to reach their target capital structures or result in delays in the implementation of the separation.
- As announced in March 2022, Solvay expects to structure the separation in a manner that would be tax efficient for a significant majority of shareholders in key jurisdictions. However, there can be no assurance that the intended tax treatment will be achieved, or that any ruling (or similar guidance) from any taxing authority would be sought or, if sought, granted.

3.5.2. Prevention and mitigation actions

A specific risk assessment methodology is applied to the Power of Two project. Risk prevention and mitigating measures include:

- the implementation of a distinct organization and governance structure, including a dedicated team which closely monitors the risks related to this project and the implementation of mitigation measures;
- project management led by a seasoned team, combining a bottom-up and top-down approach to ensure project deliverables and milestones are met;
- close supervision by the Digital Technology team of critical IT solutions (infrastructure, applications and platforms) and projects in connection with major transformation initiatives;
- active monitoring of key employee attrition rates and implementation of appropriate measures, such as incentive and retention plans, as well increased management involvement in maintaining an active dialogue with employees;
- early and active research of both internal and external candidates for senior management and other key executive positions within the new governance structures;
- preparation of fallback measures with respect to liability management transactions and noteholders' consent solicitation processes with a view to securing the implementation of the target capital structures and limiting the impact of such processes on the implementation of the separation;
- detailed analysis of the transaction, including the potential impact of the transaction on shareholders, as well as on the Group, with a view to limiting any tax impact to the extent possible. At the appropriate stage of the transaction, shareholders will be encouraged to consult their own tax advisors.

4. LITIGATION SECTION

As a result of the diverse nature of its activities, and the geographic footprint of its operations, Solvay is exposed to legal risks, particularly in the areas of product liability, contractual relations, antitrust laws, patent disputes, tax assessments and HSE matters. In this context, litigation is a normal recurring feature of Solvay's operating business, both to protect against claims, some of which we believe to be without merit, and to defend the rights and interests of the Group.

Ongoing legal proceedings involving the Solvay Group that are currently considered to potentially involve significant risks are outlined below. The legal proceedings described below do not constitute an exhaustive list.

The proceedings summarized below represent the material matters pending against Solvay regardless of the merits of the claims and the strengths of Solvay's defenses. There can be no assurance regarding the outcome of any proceeding described below; Solvay will continue to vigorously defend itself based on the merits of its defenses while opportunistically seeking consensual resolution in appropriate cases.

For certain cases, we have created reserves or provisions in accordance with appropriate accounting governing rules and policies, to cover financial risk and defense costs (see the section "Provisions for litigation to the consolidated financial statements" in this report). In doing so, we do not ordinarily disclose the extent to which provisions are made in relation to individual proceedings, because to do so would be prejudicial to Solvay's interests. In addition, we maximize all available insurance coverage. Adverse outcomes of material contested matters, individually or in the aggregate, could exceed the amounts of applicable provisions or insurance coverage, and could have a material adverse effect on the revenues and earnings of the Group.

Antitrust proceedings

In Brazil, CADE (the Brazilian antitrust authority) issued fines against Solvay and others in May 2012, relating to hydrogen peroxide activities, and in February 2016, relating to perborate activities. Solvay's share of these fines amounts to €29.6 million and €3.99 million respectively. We have filed a claim with the Brazilian Federal Court contesting these administrative fines.

HSE related proceedings

- PFAS: A Solvay subsidiary in the US is a defendant in 35 separate lawsuits relating to its use of per- and polyfluoroalkyl substances (PFAS). The vast majority of these cases (30) are pending in the federal and state courts in New Jersey, in the US, and the majority (27) are claims by private plaintiffs seeking medical monitoring or compensation for alleged personal injury or other alleged economic loss. Two of the cases involve civil claims by separate US state governmental authorities - New Jersey and Michigan - seeking various damages, including natural resource damages. The State of New Jersey also seeks the environmental cleanup of PFAS pollution allegedly caused by a single operating facility of the subsidiary in New Jersey. Two cases allege that products purchased from the subsidiary' caused contamination elsewhere. We continue to vigorously defend against these actions, as appropriate.
- Asbestos Cases: Twenty-nine civil proceedings have been brought before Italian Courts by past workers and relatives of deceased workers at Solvay sites seeking damages, provisionally quantified at approximately €32 million, in relation to diseases allegedly caused by exposure to asbestos. Eleven proceedings are still pending before Courts of first instance and Courts of Appeal whilst the remaining 18 proceedings definitively ended as a result of dismissals, court settlements and condemnations to pay negligible damages.
- Spinetta site: A preliminary criminal investigation by the Public Prosecutor's Office of the Criminal Court of Alessandria, Italy into the alleged crime of culpable environmental disaster against two Solvay managers were closed in December 2022. We expect the final decision of the Public Prosecutor Office by the end of Q1 2023.
- Rosignano site: Preliminary criminal investigations, started in 2019 by the Public Prosecutor's Office of the Criminal Court of Livorno, regarding the alleged contamination of certain water tables outside our site of Rosignano, Italy site are still pending.
- Bussi site: administrative litigation cases are still pending in relation to the identification of the alleged polluter of the Bussi, Italy industrial site (which we sold in 2016) and of the Tirino River. These litigation cases were started by Edison, as the former owner of the Bussi site, in 2020 and 2022 as the same Edison had been recognised by the competent administrative authorities as "sole and exclusive polluter" of both the Bussi industrial site and the Tirino River.

Pharmaceutical activities (discontinued):

The contractual arrangements for the sale of our pharmaceutical activities in February 2010 established the terms and conditions for the allocation and sharing of liability arising out of activities carried out before the sale. Subject to limited exceptions, Solvay's exposure for indemnification to Abbott for liabilities arising out of sold activities is limited to an aggregate amount of €500 million, with limited duration. All post-closing indemnification claims made against Solvay have now been resolved except liabilities arising from private civil antitrust claims made against the buyer of the business. Solvay's potential exposure is limited to a possible clawback of up to the €300 million received by Solvay as an additional purchase price based on post-closing ANDROGEL® sales.

EXTRA-FINANCIAL STATEMENTS

Extra-financial statements

Extra-financial statements

1. OVERVIEW OF THE CONSOLIDATED EXTRA-FINANCIAL STATEMENTS

Since 2019, Solvay has significantly extended our sustainability strategy, both in terms of scope and in terms of ambition, and this is fully encapsulated in our Solvay One Planet roadmap. This increased focus on sustainability was accompanied by a substantial increase in the human and financial resources dedicated to sustainability and a deeper integration of sustainability into calculations of short- and long-term variable remuneration. Structured around the three major categories of climate, resources and better life, our Solvay One Planet roadmap ensures that Solvay must deliver more than just strong financial results, by acting responsibly for all stakeholders and promoting progress toward a sustainable future that provides shared value for all. Performance and delivery matter more than targets and promises, and this is especially true in matters pertaining to sustainability.

Solvay continued to make strong progress on this journey in 2022, meeting or exceeding targets. We accelerated efforts to meet stakeholders' growing expectations, including protecting the most vulnerable during the pandemic, set more ambitious environmental targets and built partnerships to enable the circular economy.

Past figures are as published (without restatements).

R: reasonable assurance

L: limited assurance

Mt: Million metric tons

Mm^3: Million cubic meters

PJ: Peta Joules

CLIMATE

		Units	2022	2021	2020	2019	2018
	PRIORITY TOPICS						
	Greenhouse gas emissions						
R	Scope 1	Mt CO_2 eq.	9.2	9.6	8.9	10.6	10.4
R	Scope 2 - gross market-based	Mt CO_2 eq.	1.1	1.4	1.2	1.4	1.9
R	Total Scope 1+2	Mt CO_2 eq.	10.3	11.0	10.1	12.0	12.3
R	Scope 3	Mt CO_2 eq.	24.2	25.8	28.8	32.6	34.2
	Total scopes 1+2+3	Mt CO_2 eq.	34.5	36.8	38.9	44.6	46.5
R	Biodiversity						
	Species potentially affected	Number	88	93	107	116	122
	HIGH MATERIALITY TOPICS						
	Energy						
	Fuel consumption for energy production	PJ	98	105	99	107	93
	Energy purchased	PJ	29	33	34	38	45
	Energy sold	PJ	26	33	31	32	23
L	Primary energy consumption	PJ	101	106	103	113	115
R	Solid fuels	PJ	28	27	27	32	33

RESOURCES

		Units	2022	2021	2020	2019	2018
	PRIORITY TOPICS						
	Product design and life cycle management						
	Revenue breakdown by Sustainable Portfolio Management (SPM) categories						
R	Solutions	%	55	53	52	53	50
R	Potentials (previously Neutral)	%	11	28	27	27	30
R	Transitions (previously Neutral)	%	16				
R	Challenges	%	7	9	8	7	7
R	Not evaluated	%	11	10	13	13	13
	SPM Solutions: sales by main impact category						
	Climate	€ billion	2.5	1.7	1.6	2.2	2.2
	Resources	€ billion	5.7	3.7	3.2	3.5	3.1
	Better life	€ billion	4.8	3.2	3.1	3.3	3.1
	Total solutions net sales	€ billion	7.4	5.1	4.7	5.4	5.1
	Circular economy						
L	Turnover of circular products	%	9	5	5	4	-
	Water						
R	Total freshwater withdrawal	Mm^3	330	315	314	330	330
	Freshwater withdrawal in water-stressed areas	Mm^3	18.5	30.7	29.0	-	-
L	Chemical oxygen demand - COD	metric tons	4,520	5,735	5,265	6,248	-
	Waste						
R	Non-hazardous industrial waste	1,000 tons	1,514	1,316	1,457	1,596	1,602
R	Hazardous industrial waste	1,000 tons	81.1	74.8	71.6	86.6	93.1
R	Total industrial waste	1,000 tons	1,595	1,391	1,529	1,682	1,696
R	Industrial non-hazardous waste not treated in a sustainable way	1,000 tons	40.7	41.9	51.4	69.2	-
R	Industrial hazardous waste not treated in a sustainable way	1,000 tons	15.8	15.9	18.2	27.2	29
R	Total industrial waste not treated in a sustainable way	1,000 tons	56.5	57.8	69.7	96.4	-
R	Mining waste	1,000 tons	600	618	637	799	-
	HIGH MATERIALITY TOPICS						
	Air emissions						
L	Nitrogen oxides - NOx	metric tons	5,594	5,882	5,587	6,197	7,704
L	Sulfur oxides - SOx	metric tons	3,304	3,449	2,808	2,888	3,750
L	Non-methane volatile organic compounds - NMVOC	metric tons	3,625	3,956	3,286	4,109	4,252
	Ozone-depleting substances (ODS)	metric tons	7.6	7.7	-	-	-

BETTER LIFE

		Units	2022	2021	2020	2019	2018
	PRIORITY TOPICS						
	Employee health and safety						
R	Reportable Injury and Illness Rate (RIIR) employees and contractors	per 200,000 hours	0.34	0.43	-	-	-
R	Lost Time Injury and Illness Rate (LTIIR) employees and contractors	per 200,000 hours	0.18	0.22	0.14	0.13	-
R	Fatal accidents - employees and contractors	number	1	0	0	0	0
	Diversity and inclusion						
R	Women in senior and middle management	%	26.5	25.0	24.7	24.3	23.7
R	Women in Solvay's workforce	%	24	23	24	23	23
R	Total headcount		22,047	21,606	23,663	24,155	24,501
	HIGH MATERIALITY TOPICS						
L	Coverage by collective agreements	%	100	100	100	100	100
	Customer satisfaction						
L	Net Promoter Score®	%	26	32	NA	33	42
	Corporate Citizenship						
	Hazardous materials						
L	All Solvay-Substance of very high concern (SVHC) present in marketed products	number	121	133	97		-
L	Analysis of safer alternatives required	number	142	152	130		
L	Percentage of completion of analysis of safer alternatives for marketed products	%	63	45	51	54	39
	Of which effective replacement	%	36	30	31	30	-
	Critical incident risk management						
L	Process safety incident with release to environment	number	25	30	26	34	-

2. BASIS OF PREPARATION

2.1. Reporting frameworks

The main reporting frameworks used to prepare the Annual Integrated Report are:

- GRI Sustainability Reporting Standards: the GRI standards are the main reference for Solvay's sustainability reporting; the latest edition of the standards is used, including the new GRI-1 and GRI-2 universal standards.
- 2014/95/EU: Solvay uses the GRI Standards to comply with Directive 2014/95/EU of the European Parliament and of the Council of October 22, 2014 amending Directive 2013/34/EU as regards disclosure of non-financial and diversity information. The Directive was transposed into Belgian law in September 2017.
- EU Taxonomy: a first estimate of eligible activities as defined by the EU Taxonomy in the delegated act of April 2021 is presented in 5.1. Product design and life cycle management.
- United Nations Global Compact: the information provided serves as a progress report on implementation of the United Nations Global Compact's ten principles.
- Task force on Climate-related Financial Disclosures (TCFD): Solvay reports on our alignment with the 11 recommendations of the TCFD.
- RESPONSIBLE CARE®: Solvay is a signatory to the International Council of Chemical Associations' (ICCA) Responsible Care Global Charter®.
- Integrated Reporting Framework: Solvay adheres to the principles and content elements of Integrated Reporting, as described in the "International Framework" published by the IFRS Foundation.
- Sustainability Accounting Standards Board (SASB): Solvay aligns our materiality analysis with the SASB approach to prepare the SASB Materiality Map™. For more details, see the Materiality Analysis section of this chapter.
- United Nations Sustainable Development Goals: Solvay has identified the nine Sustainable Development Goals on which it can have the most impact, through its operations or across the value chain, in line with the materiality analysis.
- World Business Council for Sustainable Development (WBCSD): Solvay's report aligns with the WBCSD ESG Disclosure Handbook guidance in terms of process and content selection.
- World Economic Forum: Measuring Stakeholder Capitalism - Towards Common Metrics and Consistent Reporting of Sustainable Value Creation - September 2020: Solvay reports on the WEF report Core Metrics and Disclosures.

Solvay also monitors developments in the European Sustainability Reporting Standards (ESRS), included in the new European Union Corporate Sustainability Reporting Directive, as well as the IFRS Sustainability Standards, and we are preparing to comply early and in full, to the maximum extent possible, with these standards when the official versions are available.

2.2. Reporting scope and boundaries

GRI Disclosures 2-2 2-3 2-4 2-7

Unless stated otherwise, the environmental and social reporting boundaries are consistent with the financial reporting scope and boundaries, as described in the "List of companies included in the consolidation scope" in the financial statements. In other words, social and environmental indicators are consolidated according to the equity share approach described in the Greenhouse Gas Protocol Corporate Accounting and Reporting Standard.

Environmental impacts of the site of Devnya, Bulgaria, have been consolidated at 75%.

Environmental impacts of non consolidated power plants in Spinetta (Italy) and La Rochelle (France) have been consolidated at 100% as per contractual agreements.

Headcount refers to employees that have an employment contract with Solvay and are classified as active, as they have a position in the organizational chart. Social indicators relative to headcount (i.e. occupational safety, diversity and inclusion, recruitment and retention) include employees in non consolidated companies and in companies consolidated by applying the equity method of accounting.

Solvay uses the "rolling base year" approach described in the Greenhouse Gas Protocol Corporate Accounting and Reporting Standard to calculate target achievements.

Unless stated otherwise, past years are not restated for extra-financial indicators.

The reporting scope includes all high materiality topics, as identified in Solvay's materiality analysis. Some low or moderate materiality topics have been included because they are requested by specific groups of stakeholders.

Reporting practices specific to the dimension reported are integrated in the corresponding "Definitions" subsection.

2.3. Materiality analysis

GRI Disclosures: 3-1 3-2

Solvay adopts sustainability priorities based on a materiality analysis. This approach identifies economic, environmental and social topics which can impact Solvay, or on which Solvay has the most impact, positive or negative.

Solvay uses two external references for our materiality analysis:
- GRI Sustainability Reporting Standards for the materiality analysis process;
- Sustainability Accounting Standards Board (SASB) for the list of topics and for prioritization criteria.

2.3.1. Materiality table

Category	Not material for reporting purposes	Material for reporting purposes
Governance	Customer privacy Data security Selling practices and product labeling Risk management	Management of the legal, ethics and regulatory framework
Climate	Physical impacts of climate change	Greenhouse gas emissions Energy Biodiversity
Resources	Supply chain and procurement Materials sourcing and efficiency	Product design and lifecycle management Air quality Water and wastewater Waste
Better life	Recruitment, development and retention Product quality Access and affordability	Employee health and safety Employee engagement and wellbeing Diversity and inclusion Customer welfare Corporate citizenship Hazardous materials Critical incident risk management

2.3.2. Materiality analysis process

Solvay's Sustainable Development Function coordinates materiality analysis with an internal network of Sustainability Champions in the Global Business Units and Functions. Experts in each Corporate Function review the analysis of each aspect, paying particular attention to ensuring consistency with the Group's risk analysis. These assessments are then reviewed and validated by the relevant business leadership teams, which is a critical step in ensuring that business priorities and decisions reflect sustainability matters appropriately.

Identification of topics	Use of the Value Reporting Foundation - SASB Materiality Map list of topics. The SASB Materiality Map identifies likely material sustainability topics on an industry-by-industry basis.
Prioritization of topics	Use of the SASB Materiality Map prioritization criteria: - evidence of interest, for Solvay and/or for Solvay stakeholders, including evidence of potential impacts; - evidence of financial impact, actual or potential: sales, profit, return or risk profile; - forward-looking adjustment. The network of Sustainability Champions and internal experts for each high materiality aspect was involved in the prioritization analysis. In addition to the SASB prioritization criteria, an additional focus on external impacts has been included in the assessment since the publication of Solvay's Purpose in 2019. This led to the review of the materiality analysis, which led to the publication of the Solvay One Planet sustainability ambition in 2020.
Validation	Review of the analysis by the Executive Committee and the Global Business Units and Corporate Functions leaders. The review includes verifying consistency with the analysis of the Group's main risks, and a comparison with the Value Reporting Foundation - SASB Materiality Finder for the chemical sector.
Review	A review led by the Sustainable Development Function takes place annually, based on feedback from stakeholders and Solvay experts. The findings inform and contribute to the prioritization review in the next reporting cycle.
Stakeholder inclusiveness and sustainability context	Indirectly taken into account through: - the exhaustive list of topics in the SASB's Materiality Map; - the "evidence of interest criteria", which includes the analysis of documents from representatives of stakeholder groups, with emphasis on written evidence; - identification of the main impacts.
Report	The high materiality topics are included in Solvay's dashboards and reported in the annual report, with assurance from corporate auditors.

2.3.3. 2022 updates

Solvay's materiality analysis remains substantially unchanged compared to 2021. The Russia-Ukraine war and the energy crisis in Europe confirmed the priorities defined during the preparative work for Solvay One Planet, in particular:

- An increased emphasis on climate change and biodiversity, with evidence of the link between climate resilience and energy security and independence;
- An increased emphasis on social topics, with evidence of the global inflation crisis exacerbating inequalities and poverty;
- An increased emphasis on health and safety, with evidence of growing concerns about the use of hazardous materials.

Developments in 2022 reinforce the view that Solvay's priorities helped to anticipate issues and ensure rapid responses where appropriate, ensuring the resilience of our operations.

2.3.4. Why is it material?

The tables below summarize Solvay's assessment of high materiality topics for each category. The corresponding United Nations Sustainable Development Goals (SDGs) are used to describe what impacts are considered, where they may occur and how they may be caused. For more information about these goals see https://www.globalgoals.org/.

GOVERNANCE

Topics	Boundaries	Evidence of interest	Evidence of financial impact	Forward - looking adjustment	Materiality
Management of the legal, ethics and regulatory framework Alignment to ethics frameworks and regulatory requirements	Operations Value chain SDG-12 SDG-3	High High materiality for the chemical industry	Medium Revenue, costs: yes Assets, liabilities: yes Cost of capital: no	Yes Probability, magnitude: yes Externalities: yes	High

CLIMATE

Topics	Boundaries	Evidence of interest	Evidence of financial impact	Forward - looking adjustment	Materiality
Greenhouse gas emissions Management of Scope 1, 2 and 3 greenhouse gas emissions	Operations Value chain SDG-13	High High materiality for the chemical industry; Solvay is more CO_2-intensive than the chemical industry average	High Revenue, costs: yes Assets, liabilities: yes Cost of capital: no	Yes Probability, magnitude: yes Externalities: yes	Priority
Energy Energy production and consumption optimization and management of energy transition	Operations Upstream value chain SDG-13 SDG-7	High Solvay is more energy-intensive than the chemical industry average	High Revenue, costs: yes Assets, liabilities: yes Cost of capital: no	Yes Probability, magnitude: yes Externalities: yes	Priority
Biodiversity Management of impacts on biodiversity through operations and throughout the value chain	Operations Value chain SDG-13 SDG-14 SDG-15	High Priority issue at planetary scale	Low Revenue, costs: low Assets, liabilities: no Cost of capital: no	Yes Probability, magnitude: yes Externalities: yes	Priority

RESOURCES

Topics	Boundaries	Evidence of interest	Evidence of financial impact	Forward - looking adjustment	Materiality
Product design and life cycle management Management of value chain economic, environmental and social impacts of products and services	Operations Value chain SDG-12 SDG-13	High High materiality for the chemical industry	High Revenue, costs: yes Assets, liabilities: yes Cost of capital: no	Yes Probability, magnitude: yes Externalities: yes	Priority
Air quality Management of emissions of air pollutants from operations	Operations SDG-3 SDG-15	High High materiality for the chemical industry	High Revenue, costs: yes Assets, liabilities: yes Cost of capital: no	Yes Probability, magnitude: yes Externalities: yes	High
Water and wastewater Management of water withdrawals, discharge and consumption	Operations SDG-3 SDG-6 SDG-14 SDG-15	High High materiality for the chemical industry	High Revenue, costs: yes Assets, liabilities: yes Cost of capital: no	Yes Probability, magnitude: yes Externalities: yes	Priority
Waste Management of solid wastes from operations, including hazardous wastes	Operations SDG-3 SDG-6 SDG-12 SDG-14 SDG-15	High High materiality for the chemical industry	High Revenue, costs: yes Assets, liabilities: yes Cost of capital: no	Yes Probability, magnitude: yes Externalities: yes	Priority

BETTER LIFE

Topics	Boundaries	Evidence of interest	Evidence of financial impact	Forward-looking adjustment	Materiality
Employee health and safety Occupational safety, industrial hygiene and health management of employees and contractors	Operation Contractors SDG-3	High High materiality for the chemical industry	High Revenue, costs: yes Assets, liabilities: yes Cost of capital: no	Yes Probability, magnitude: yes Externalities: yes	Priority
Employee engagement and well-being Management of labor practices, social dialogue and employee well-being	Operations SDG-3 SDG-8	High Historical commitment of the Solvay Group since its foundation	Medium Revenue, costs: yes Assets, liabilities: yes Cost of capital: no	Yes Probability, magnitude: no Externalities: yes	High
Diversity and inclusion Non-discrimination and diversity management in operations and management structures	Operations SDG-8	High Growing importance of regional diversity for specific business units	Medium Revenue, costs: yes Assets, liabilities: no Cost of capital: no	Yes Probability, magnitude: yes Externalities: yes	Priority
Customer welfare Customer relations and customer satisfaction management	Downstream value chain SDG-3	Medium High for some business units (access to customers' development pipelines)	High Revenue, costs: yes Assets, liabilities: no Cost of capital: no	Yes Probability, magnitude: yes Externalities: yes	High
Corporate citizenship Management of community relationships, corporate citizenship and philanthropy Business programs for social needs	Local communities Value chain Society at large SDG-17	High May be linked to license to operate; potential positive or negative impacts beyond chemical value chain impacts	Low Revenue, costs: no Assets, liabilities: yes Cost of capital: no	Yes Probability, magnitude: yes Externalities: no	High
Hazardous materials Management of hazardous materials in raw materials, production processes and sold products	Operations Value chain SDG-3 SDG-6 SDG-12 SDG-14 SDG-15	High High materiality for the chemical industry; REACH/SVHC	High Revenue, costs: yes Assets, liabilities: yes Cost of capital: no	Yes Probability, magnitude: yes Externalities: yes	High
Critical incident risk management Process safety programs and management of consequences of environmental accidents	Operations Local communities SDG-3 SDG-12 SDG-13	High High materiality for the chemical industry	High Revenue, costs: yes Assets, liabilities: yes Cost of capital: no	Yes Probability, magnitude: yes Externalities: yes	High

As is evident from the table above, Solvay is proud to confirm our full compliance with the requirement to publish information about compliance with SDGs wherever there is any material impact.

2.4. World Economic Forum: Stakeholder Capitalism Metrics

Solvay makes disclosures on most of the sustainability disclosure topics and accounting metrics listed in the WEF report "Measuring Stakeholder Capitalism - Towards Common Metrics and Consistent Reporting of Sustainable Value Creation," September 2020. In doing so, we are proud to confirm that Solvay is part of a growing community, comprising dozens of companies across multiple industries, that report on the Stakeholder Capitalism Metrics.

Theme	Governance: Core metrics and disclosures	Reference
Governing purpose	Setting purpose The company's stated purpose, as the expression of the means by which a business proposes solutions to economic, environmental and social issues. Corporate purpose should create value for all stakeholders, including shareholders.	https://www.solvay.com/en/our-company/our-purpose
Quality of governing body	Governance body composition Composition of the highest governance body and its committees by: competencies relating to economic, environmental and social topics; executive or non-executive; independence; tenure on the governance body; number of each individual's other significant positions and commitments, and the nature of the commitments; gender; membership of under-represented social groups; stakeholder representation.	Corporate governance statement
Stakeholder engagement	Material issues impacting stakeholders A list of the topics that are material to key stakeholders and the company, how the topics were identified and how the stakeholders were engaged.	Extra-financial statements: 2.3 Materiality analysis
Ethical behavior	Anti-corruption 1. Total percentage of governance body members, employees and business partners who have received training on the organization's anti-corruption policies and procedures, broken down by region: a) total number and nature of incidents of corruption confirmed during the current year, but related to previous years; and b) total number and nature of incidents of corruption confirmed during the current year, related to this year. 2. Discussion of initiatives and stakeholder engagement to improve the broader operating environment and culture, in order to combat corruption.	Corporate governance statement Extra-financial statements: 3.2. Management of the legal, ethics and regulatory framework
	Protected ethics advice and reporting mechanisms A description of internal and external mechanisms for: 1. seeking advice about ethical and lawful behavior and organizational integrity; and 2. reporting concerns about unethical or unlawful behavior and lack of organizational integrity.	Extra-financial statements: 3.2. Management of the legal, ethics and regulatory framework
Risk and opportunity oversight	Integrating risk and opportunity into business processes Company risk factor and opportunity disclosures that clearly identify the principal material risks and opportunities facing the company specifically (as opposed to generic sector risks), the company appetite with respect to these risks, how these risks and opportunities have changed over time and the response to these changes. These opportunities and risks should integrate material economic, environmental and social issues, including climate change and data stewardship.	Risk management Extra-financial statements: 5.1. Product design and life cycle management

Theme	Planet: Core metrics and disclosures	
Climate change	Greenhouse gas (GHG) emissions For all relevant greenhouse gasses (e.g. carbon dioxide, methane, nitrous oxide, F-gasses, etc.), report in metric tons of carbon dioxide equivalent (tCO_2e) GHG Protocol Scope 1 and Scope 2 emissions. Estimate and report material upstream and downstream (GHG Protocol Scope 3) emissions where appropriate.	Extra-financial statements: 4.1. Greenhouse gas emissions
	TCFD implementation Fully implement the recommendations of the Task Force on Climate-related Financial Disclosures (TCFD). If necessary, disclose a timeline of at most three years for full implementation. Disclose whether you have set, or have committed to set, GHG emissions targets that are in line with the goals of the Paris Agreement – to limit global warming to well below 2°C above pre-industrial levels and pursue efforts to limit warming to 1.5°C – and to achieve net-zero emissions before 2050.	Extra-financial statements: 2.5 Task force on Climate-related Financial Disclosure
Nature loss	Land use and ecological sensitivity Report the number and area (in hectares) of sites owned, leased or managed in or adjacent to protected areas and/or key biodiversity areas (KBA).	Extra-financial statements: 4.3. Biodiversity
Freshwater availability	Water consumption and withdrawal in water-stressed areas Report for operations where material: megaliters of water withdrawn; megaliters of water consumed; and the percentage of each in regions with high or extremely high baseline water stress, according to WRI Aqueduct Water Risk Atlas tool. Estimate and report the same information for the full value chain (upstream and downstream) where appropriate.	Extra-financial statements: 5.6. Water and wastewater

Theme	People: Core metrics and disclosures	
Dignity and equality	Diversity and inclusion (%) Percentage of employees per employee category, by age group, gender and other indicators of diversity (e.g. ethnicity).	Extra-financial statements: 6.3. Diversity and inclusion
	Pay equality (%) Ratio of the basic salary and remuneration for each employee category by significant locations of operation for priority areas of equality: women to men; minor to major ethnic groups; and other relevant equality areas.	Extra-financial statements: 6.3. Diversity and inclusion
	Wage level (%) Ratios of standard entry level wage by gender compared to local minimum wage. Ratio of the annual total compensation of the CEO to the median of the annual total compensation of all employees, except the CEO.	Wage level data is disclosed according to the legal requirements of various countries. Corporate governance statement: 6. Compensation report
	Risk for incidents of child, forced or compulsory labor An explanation of the operations and suppliers considered as having significant risk for incidents of child, forced or compulsory labor. Such risks could emerge in relation to: a) type of operation (such as manufacturing plant) and type of supplier; and b) countries or geographic areas with operations and suppliers considered at risk.	Extra-financial statements: 3.2. Management of the legal, ethics, and regulatory framework
Health and well-being	Health and safety (%) The number and rate of fatalities as a result of work-related injury; high-consequence work-related injuries (excluding fatalities); recordable work-related injuries; main types of work-related injury; and the number of hours worked. An explanation of how the organization facilitates workers' access to non-occupational medical and healthcare services, and the scope of access provided for employees and workers.	Extra-financial statements: 6.1. Employee health and safety
Skills for the future	Training provided (#, $) Average hours of training per person that the organization's employees have undertaken during the reporting period, by gender and employee category (total number of hours of training provided to employees divided by the number of employees). Average training and development expenditure per full time employee (total cost of training provided to employees divided by the number of employees).	Extra-financial statements: 6.4. Recruitment, development and retention

Theme	Prosperity: Core metrics and disclosures	
Employment and wealth generation	Absolute number and rate of employment 1. Total number and rate of new employee hires during the reporting period, by age group, gender, other indicators of diversity and region. 2. Total number and rate of employee turnover during the reporting period, by age group, gender, other indicators of diversity and region.	Extra-financial statements: 6.4. Recruitment, development and retention
Community and social vitality	Economic contribution 1. Direct economic value generated and distributed (EVG&D) on an accruals basis, covering the basic components for the organization's global operations, ideally split by: – revenues – operating costs – employee wages and benefits – payments to providers of capital – payments to government – community investment. 2. Financial assistance received from the government: total monetary value of financial assistance received by the organization from any government during the reporting period.	Extra-financial statements: 1. Overview of the consolidated results
	Financial investment contribution 1. Total capital expenditures (Capex) minus depreciation, supported by narrative to describe the company's investment strategy. 2. Share buybacks plus dividend payments, supported by narrative to describe the company's strategy for returns of capital to shareholders.	Financial statements: 2. Notes to the consolidated financial statements
Innovation of better products and services	Total R&D expenses ($) Total costs related to research and development.	Financial statements: 2. Notes to the consolidated financial statements
Community and social vitality	Total tax paid The total global tax borne by the company, including corporate income taxes, property taxes, non-creditable VAT and other sales taxes, employer-paid payroll taxes and other taxes that constitute costs to the company, by category of taxes.	Financial statements: 2. Notes to the consolidated financial statements

2.5. Task Force on Climate-related Financial Disclosure

The Financial Stability Board Task Force on Climate-related Financial Disclosures (TCFD) developed voluntary, consistent, climate-related financial risk disclosures, which can be used by companies to provide information to investors, lenders, insurers and other stakeholders.

The Task Force structured its recommendations around four themes that represent key aspects of how organizations operate: governance; strategy; risk management; and metrics and targets.

This section addresses the disclosures, with links to the relevant sections of the Annual Integrated Report, and provides a self-assessment of Solvay's level of alignment with the TCFD recommendations.

TCFD recommendation	Implementation	Reference
GOVERNANCE Disclose the organization's governance around climate-related risks and opportunities		
a. Describe the board's oversight of climate-related risks and opportunities	The Charter of Corporate Governance describes how the Board of Directors manages sustainability-related topics and is available on the Solvay website. The Board devotes at least one meeting per year to an update on trends in global sustainable development issues, including climate change risks and opportunities. The ESG Committee considers the material ESG issues relevant to the Group's business activities and provides guidance and recommendations to the board.	Corporate governance statement
b. Describe management's role in assessing and managing climate-related risks and opportunities	A Climate Risks Officer has been appointed at the Executive Committee level. The person in charge of ensuring that climate-related aspects are adequately considered in the Group's strategy and operations.	Risk management: 1. Risk management process

STRATEGY		
a. Describe the climate-related risks and opportunities the company has identified over the short, medium and long term	Long-term horizon assumptions are presented in the description of megatrends in the "Global business trends driving our markets" section of this Annual Integrated Report. Medium-term assumptions (in the coming five years) are explained in the description of Solvay's main markets. Short-term assumptions (one year) are presented in the Group's outlook. The presentation of the Group's main risks includes timescales (short-, medium- or long-term horizons). Quantification of impacts is not disclosed.	FOR GENERATION TO COME: 3. Business environment Performance: 7. Outlook 2. Solvay's main risks
b. Describe the impact of climate-related risks and opportunities on the organization's businesses, strategy and financial planning	Climate-related risks and opportunities were reviewed in 2022. On transition risks, a new climate transition scenario analysis was performed in 2022, in line with the TCFD's updated recommendation for scenario analysis. Two scenarios were considered: the 2021 International Energy Agency "Stated Policies Scenario" and the "Net Zero Emissions by 2050" scenario. Acute physical climate risks linked to droughts, hurricanes and earthquakes are assessed annually with our insurers. Chronic climate physical risks focus on water scarcity: sites in areas of water scarcity have been identified, and the risks have been assessed based on their water consumption and maximum foreseeable loss.	Risk management: 2. Solvay's main risks Extra-financial statements: 3.8 Climate risks analysis
c. Describe the resilience of the organization's strategy, taking into consideration different climate-related scenarios, including a 2°C or lower scenario	Solvay's climate transition risk scenario analysis was updated in 2022, in line with the TCFD's 2020 guidance. The result of this analysis is described in a new section of this Annual Integrated Report. A scenario analysis focusing on physical climate risks is planned in 2023.	Extra-financial statements: 3.8 Climate risks analysis
RISK MANAGEMENT		
a. Describe the organization's processes for identifying and assessing climate-related risks	The risk management process, the main risks and the process used to rank them are described in the "Risk management" chapter.	Risk management
b. Describe the organization's processes for managing climate-related risks	Analysis of value chain sustainability-related risks and opportunities is done through the Sustainable Portfolio Management methodology, for each product in each application or market, and includes climate change transition risks. "Greenhouse gas emissions" (GHG) have been identified as a priority in the Group's materiality analysis. "Climate transition risks" have been identified as part of the Group's main risks. Links between main risks and high materiality issues are part of the materiality analysis process. "Climate-related physical risks" have been ranked up to now as "moderate materiality topics".	Extra-financial statements: 2.3. Materiality analysis Risk management: 2. Solvay's main risks 5.1. Product design and life cycle management 3.8 Climate risks analysis
c. Describe how processes for identifying, assessing, and managing climate-related risks are integrated into the organization's overall risk management	The Sustainable Portfolio Management tool is a requirement in key Group processes and, in particular, in the assessment of capital expenditure projects, research and innovation projects, and acquisition and divestiture projects.	Extra-financial statements: 5.1. Product design and life cycle management 3.8 Climate risks analysis
METRICS AND TARGETS		
a. Disclose the metrics used by the company to assess climate-related risks and opportunities in line with its strategy and risk management process	The strategic objectives used to drive sustainable value creation are described in the Solvay scorecard. They have been fully reviewed in line with the Solvay One Planet sustainability ambition, published in February 2020.	FOR GENERATION TO COME: 4. Sustainable value creation
b. Disclose Scope 1, Scope 2, and, if appropriate, Scope 3 greenhouse gas (GHG) emissions, and the related risks	Greenhouse gas emissions, energy consumption, and Sustainable Portfolio Management metrics and targets are reported in the "Extra-financial statements" chapter. Solvay has a 2030 objective to reduce Scope 1 and 2 greenhouse gas emissions by 30% in line with a "well below 2°C" trajectory and targets carbon neutrality before 2050. Solvay will also not build new coal-powered plants and has committed to phasing out the use of solid fuels (coal and petcoke) in energy production by 2030 wherever renewable alternatives exist. In 2022, Solvay has set a 2030 target to reduce by 24% scope 3 greenhouse gas emissions from its top five categories both upstream and downstream in the value chain and representing 90% of the total Scope 3. Early 2023, the Science Based Targets Initiative (SBTi) has validated the Solvay 2030 targets with a slight adjustment to reduce Scope 1 and 2 emissions by 31%.	Extra-financial statements: 4.1 Greenhouse gas emissions 5.1. Product design and life cycle management
c. Describe the targets used by the company to manage climate-related risks and opportunities and performance against targets	Scope 1, 2 and 3 greenhouse gas emissions are fully reported and audited. The scope of emissions reporting is consistent with financial reporting.	Extra-financial statements: 4.1 Greenhouse gas emissions

2.6. United Nations Sustainable Development Goals

In 2015, the United Nations established a set of goals to end poverty, protect the planet and ensure prosperity for all. Each of these 17 Sustainable Development Goals (SDGs) includes specific targets to be achieved by 2030. Achieving the SDGs requires efforts by governments, the private sector, civil society, communities and individuals.

Nine leading chemical companies, including Solvay, and two industry associations formed a working group dedicated to the SDGs, convened by the World Business Council for Sustainable Development (WBCSD). This working group took a leadership role in piloting and refining the three-step framework described in the WBCSD's SDG Sector Roadmap Guidelines.

As part of this exercise, Solvay identified the Sustainable Development Goals on which we could have a material impact, positive or negative. We then integrated these sustainable development goals into our materiality analysis as the official agenda of the "Planet" (Governments and NGOs) stakeholder group.

This preliminary list was reviewed in 2019, within the context of the Solvay One Planet sustainability ambition, with an increasing focus on the impact of products and operations.

Solvay's main areas of impact can be grouped into three categories: climate, resources and better life. The corresponding list of SDGs on which Solvay can have the most impact, positive or negative, through our operations and the products we sell, is as follows:

- Climate and biodiversity, which includes the Group's energy consumption and greenhouse gas emissions, and other emissions or effluents that put pressure on biodiversity, but also products that may impact customers' energy consumption or greenhouse gas emissions:
  - SDG 7: Affordable and clean energy
  - SDG 13: Climate action
  - SDG 14: Life below water
  - SDG 15: Life on land
- Resources, which includes the Group's raw material consumption, water consumption, effluents, emissions and waste generation, but also products' life cycles and end-of-life management:
  - SDG 12: Responsible consumption and production
- Better life, which includes the Group's management of hazardous materials, people, process and product safety, social dialogue initiatives and potential social impacts of our product portfolio:
  - SDG 3: Good health and well-being
  - SDG 6: Clean water and sanitation
  - SDG 8: Decent work and economic growth
  - SDG 17: Partnership for the goals

Solvay discloses impact indicators for the SDGs in the corresponding sections of the Annual Integrated Report:

United Nations Sustainable Development Goals	Reference
Climate and biodiversity	
SDG 7: Affordable and clean energy	Extra-financial statements: 4.2. Energy
SDG 13: Climate action	Extra-financial statements: 4.1. Greenhouse gas emissions 4.2. Energy 4.3. Biodiversity 5.1. Product design and life cycle management 5.3. Circular Economy 6.8. Critical incident risk management
SDG 14: Life below water	Extra-financial statements: 4.1. Greenhouse gas emissions 4.3. Biodiversity 5.6. Water and wastewater 5.5. Waste 6.7. Hazardous materials
SDG 15: Life on land	Extra-financial statements: 4.1. Greenhouse gas emissions 4.3. Biodiversity 5.4. Air quality 5.6. Water and wastewater 5.5. Waste 6.7. Hazardous materials
Resources	
SDG 12: Responsible consumption and production	Extra-financial statements: 5.1. Product design and life cycle management 5.3. Circular Economy 5.6. Water and wastewater 5.5. Waste 6.7. Hazardous materials 6.8. Critical incident risk management
Better life	
SDG 3: Good health and well-being	Extra-financial statements: 5.4. Air quality 5.6. Water and wastewater 5.5. Waste 6.1. Employee health and safety 6.2. Employee engagement and well-being 6.5 Customer welfare 6.7. Hazardous materials 6.8. Critical incident risk management
SDG 6: Clean water and sanitation	Extra-financial statements: 5.6. Water and wastewater 5.5. Waste 6.7. Hazardous materials
SDG 8: Decent work and economic growth	Extra-financial statements: 6.2. Employee engagement and well-being 6.3. Diversity and inclusion 6.4 Recruitment, development and retention
SDG 17: Partnership for the goals	Extra-financial statements: 3.6. Main partnerships 6.6. Corporate citizenship

2.7. Sustainability Accounting Standards Board (SASB)

Solvay bases our materiality analysis on the SASB Materiality Map® list of material topics. In some cases, topics have been rephrased to fit the vocabulary commonly used in the chemical industry, or combined differently.

Solvay list of material topics	2020 SASB Materiality Map® topics list
Management of the legal, ethics and regulatory framework	Business ethics, competitive behavior, human rights, management of the legal and regulatory framework
Supply chain and procurement	Supply chain management, materials sourcing and efficiency
Risk management	Systemic risk management, physical impacts of climate change
Greenhouse gas emissions	GHG emissions
Energy	Energy management
Biodiversity	Ecological impacts
Product design and life cycle management	Product design and life cycle management, business model resilience
Air quality	Air quality
Water and wastewater	Water and wastewater management
Waste	Waste
Employee health and safety	Employee health and safety
Employee engagement and well-being	Labor practices
Diversity and inclusion	Diversity and inclusion
Recruitment, development and retention	Employee engagement
Customer welfare	Customer welfare
Corporate citizenship	Community relations
Hazardous materials	Hazardous materials management, product safety
Critical incident risk management	Critical incident risk management

Solvay discloses most of the sustainability disclosure topics and accounting metrics listed in the SASB Chemicals Sustainability Accounting Standard (October 2018).

Topic	SASB - CHEMICALS disclosure topics	Reference
Greenhouse gas emissions	Gross global Scope 1 emissions, percentage covered under emissions-limiting regulations	Extra-financial statements: 4.1 Greenhouse gas emissions
	Discussion of long-term and short-term strategy or plan to manage Scope 1 emissions, emissions reduction targets and an analysis of performance against those targets	Extra-financial statements: 4.1 Greenhouse gas emissions
Air quality	Air emissions of the following pollutants: (1) NOX (excluding N2O); (2) SOX; (3) volatile organic compounds (VOCs); (4) hazardous air pollutants (HAPs)	Extra-financial statements: 5.4. Air quality Hazardous air pollutants not disclosed
Energy management	(1) Total energy consumed, (2) percentage grid electricity, (3) percentage renewable energy, (4) total self-generated energy	Extra-financial statements: 4.2. Energy
Water management	(1) Total water withdrawn, (2) total water consumed, (3) percentage of each in regions with high or extremely high baseline water stress	Extra-financial statements: 5.6. Water and wastewater
	Number of incidents of non-compliance associated with water quality permits, standards and regulations	Extra-financial statements: 6.8. Critical incident risk management
	Description of water management risks and discussion of strategies and practices to mitigate those risks	Extra-financial statements: 5.6. Water and wastewater
Hazardous waste management	Amount of hazardous waste generated, percentage recycled	Extra-financial statements: 5.5. Waste
Community relations	Discussion of engagement processes to manage risks and opportunities associated with community interests	Extra-financial statements: 6.6. Corporate citizenship
Workforce health and safety	(1) Total recordable incident rate (TRIR), (2) fatality rate for (a) direct employees and (b) contract employees	Extra-financial statements: 6.1. Employee health and safety
	Description of efforts to assess, monitor and reduce exposure of employees and contract workers to long-term (chronic) health risks	Extra-financial statements: 6.1. Employee health and safety
Product design for use-phase efficiency	Revenue from products designed for use-phase resource efficiency	Extra-financial statements: 5.1. Product design and life cycle management
Safety and environmental stewardship of chem-icals	(1) Percentage of products that contain Globally Harmonized System of Classification and Labeling of Chemicals (GHS) Category 1 and 2 Health and Environmental Hazardous Substances, (2) percentage of such products that have undergone a hazard assessment	Extra-financial statements: 6.7. Hazardous materials
	Discussion of strategy to (1) manage chemicals of concern and (2) develop alternatives with reduced human and/or environmental impact	Extra-financial statements: 6.7. Hazardous materials
Genetically modified organisms	Percentage of products by revenue that contain genetically modified organisms (GMOs)	Not disclosed
Management of the legal and regulatory environment	Discussion of corporate positions related to government regulations and/or policy proposals that address environmental and social factors affecting the industry	Extra-financial statements: 3.7. Membership in associations
Operational safety, emergency preparedness and response	Process Safety Incidents Count (PSIC), Process Safety Total Incident Rate (PSTIR) and Process Safety Incident Severity Rate (PSISR)	Extra-financial statements: 6.8. Critical incident risk management
	Number of transport incidents	Extra-financial statements: 6.8. Critical incident risk management
Activity metric	Production by reportable segment	Solvay cannot share information that can be considered competitively sensitive for antitrust compliance reasons.

3. GOVERNANCE

3.1. Solvay One Planet Guide

GRI DISCLOSURES 2-24

3.1.1. Definition

The Solvay One Planet Guide is the sustainability reference framework for the Solvay Group, established in 2019. It addresses Solvay's main impacts on climate, resources and better life, describing our management approach and metrics.

The Guide is organized in three work axes: content, performance and assessment. Through the content axis we help every Solvay employee understand the indicators that are part of our Solvay One Planet program. The Group targets are sorted per impact category, namely climate, resources and better life, and for each target we describe:

- What we are talking about, why it is important and the main legislation, where relevant.
- Solvay's ambition: internal definitions which are relevant for the target, our footprint, our actions and ambitions, and key contacts.

The performance axis includes a dashboard with the results of the Solvay One Planet targets for the entire Group.

3.1.2. Management approach

The Solvay One Planet Guide was launched on September 1, 2021. The management approach and metrics have been deployed in all entities of the Group. Each Global Business Unit (GBU) president is accountable for the progress of Solvay One Planet in their business, and delegates the coordination of the roadmap to a senior executive in their leadership team.

A network of Sustainability Champions and correspondents ensures that the Guide is deployed in all Solvay sites, GBUs and Corporate Functions. They inform their entity about any changes to the strategy and objectives, ensure necessary training is organized, and develop an annual and multi-year roadmap to meet final objectives. They are then responsible for implementing the roadmap in their entity, though the leaders of every entity take full ultimate responsibility for performance, also taking into account that progress relative to targets impacts the variable remuneration of all senior staff in the entity.

Definitions, management approach, indicators and targets, and main actions specific to each topic are described in the corresponding sections of the Extra-financial statements. The management approach is adjusted each year based on the following elements:

- feedback from employees, suppliers and customers;
- knowledge gained from performance and progress in relation to strategic commitments;
- challenges orchestrated by the Executive Leadership Team, facilitated by the Sustainable Development function, taking into account changes in the marketplace and higher expectations from Solvay executives;
- the evolution of frameworks and reporting standards, such as GRI Standards;
- the auditors' report on high materiality topics;
- feedback from practitioners;
- feedback from sustainability rating agencies;
- feedback received on the Annual Integrated Report, such as the World Business Council for Sustainable Development's "Reporting Matters" yearly analysis.

In order to further improve the employee awareness about the guide and what is at stake with our Solvay One Planet program, and to ensure the deployment of the program from top management to the shop floor, we launched a Sustainability e-learning program in 2022, which is available to all Solvay employees.

This learning program is composed of four modules: Climate; Nature; Sustainable Business; and Social Responsibility. The modules are available in seven different languages, allowing us to reach as many employees as possible. The modules also encourage employees to provide their ideas, feedback and concerns on sustainability matters.

3.1.3. Indicators and targets

Solvay One Planet is our roadmap for a sustainable future that provides shared value for all. Structured around the three major impact categories of climate, resources, and better life, it sets out the following main targets to be achieved by 2030, as compared to the 2018 baseline:

Climate Pillar

- GHG reduction: reduce Scope 1 and 2 greenhouse gas emissions by 30% by 2030 and reach carbon neutrality by 2050.
- Solid fuels phase-out: phase out of solid fuels (coal and petcoke - excluding anthracite and coke considered as raw materials) used in energy production, wherever renewable alternatives exist. Coke and anthracite used in the soda ash production process are excluded.
- Biodiversity preservation: reduce negative pressure by 30%.

Resource Pillar

- Sustainable solutions: 65% of total Group sales to come from sustainable solutions.
- Circular economy: more than double total Group sales to come from renewable or recycled resources.
- Waste: reduce industrial waste by 30%.
- Water: reduce freshwater intake by 25%.

Better Life Pillar

- Safety: make Solvay a safe organization with a zero accidents mindset.
- Inclusion and diversity: gender parity for mid- and senior-level management by 2030.
- Maternity and paternity leave: extended to 16 weeks and to co-parents inside the company, regardless of gender, in 2021.

3.2. Management of the legal, ethics and regulatory framework

GRI DISCLOSURES 2-26 2-27 3-3 205-2 205-3 406-1 415-1
MATERIALITY: HIGH

Management of the legal, ethics and regulatory framework encompasses business ethics, namely human rights, anti-corruption and non-discrimination, and anti-competitive behavior.

3.2.1. Commitments and policies

Solvay's Code of Business Integrity

Solvay's Code of Business Integrity and the policies and procedures adopted to enhance good governance apply to all employees wherever they are located. In addition:

- third parties are expected to act within the framework of the Code of Business Integrity;
- all core suppliers must confirm that they adhere to the principles set out in the Solvay Supplier Code of Business Integrity;
- majority-owned joint ventures are held to the Solvay Code of Business Integrity, or to a separate code adopted based on similar principles.
- The Code of Business Integrity is available on Solvay's website.

Anti-Bribery and Anti-Corruption Policy and Policy on Gifts and Entertainment

Solvay's Code of Business Integrity expressly states that the Group prohibits bribery in any form. Solvay and our employees do not use gifts or entertainment to gain competitive advantage. Facilitation payments are not permitted by Solvay and disguising gifts or entertainment as charitable donations is also a violation of the Code of Business Integrity.

The Code is supported by more detailed policies. At the end of 2020, Solvay split our Gifts, Entertainment and Anti-Bribery Policy into two separate policies: an Anti-Bribery and Anti-Corruption Policy and a Policy on Gifts, Entertainment, Charitable Donations, and Sponsorship.

The Group employs an internal tracking system to record gifts and entertainment that exceed the acceptable reasonable value applicable in each region, as well as charitable donations and sponsorship with charitable purpose, and requires manager approval for accepting or giving them. The use of the Gift and Entertainment Tracking System ("GETS") is part of Solvay's Internal Audit review process.

Solvay is also a member of Transparency International Belgium.

Human Rights in Business Policy

Solvay's Human Rights in Business Policy, published on our website, sets out Solvay's commitment to respecting human rights and acting with due diligence to avoid any infringement of human rights or any adverse impact on or abuses of such rights. The policy emphasizes Solvay's commitments to our stakeholders, namely our employees and business partners, the communities and environment in which we operate and children.

Solvay has a Global Human Rights Committee (GHRC), which oversees implementation of the policy, ensures compliance and monitors the Group's performance. Members of the Global Human Rights Committee include the heads of the following Solvay business service activities: General Counsel; Compliance; Human Resources; Procurement; Communication; Internal Audit and Risk Management; and Sustainable Development. The GHRC is chaired by the Group General Counsel, who is the head of the General Counsel Function. Members of Solvay's Global Business Units and other business service activities contribute to the work of the GHRC on an ad hoc basis, as necessary.

The GHRC discusses its activities before the Group's annual report is issued, and also validates any human rights reporting made in conjunction with the report. Upon request, the Chair of the GHRC may be called upon to provide an annual report to the Audit Committee.

Human rights due diligence and risk assessment

Two parallel processes are used to assess human rights risks at Solvay sites. These focus on Solvay employees, based on internal data, or on our business partners, namely suppliers and contractors identified according to the risk associated with the country they operate in. Six human rights dimensions are considered: child labor; forced labor; trafficking in persons; human development; freedom of association; and collective bargaining. The assessment is used by Solvay's internal auditors to identify priorities for their work on the subject.

This assessment was suspended during the Covid-19 crisis, as priorities shifted to protecting the most vulnerable employees and local communities from the impact and consequences of the pandemic.

Competition Law Policy

Solvay's goal is to conduct business ethically and not to enter into any business arrangements that eliminate or distort competition. Solvay develops and maintains a culture of compliance to keep the company and our people on the right side of the law. Solvay has a formal Competition Law Policy that stresses the importance of strict adherence to all competition laws. It has been approved by Solvay's Executive Committee and is published on Solvay's intranet, to which all our employees have access. Any violation of this policy may result in disciplinary action, subject to, and in conformity with, applicable laws.

Implementation of the Competition Law Policy

Solvay has put in place a Competition Law Compliance Program that has a zero-tolerance approach to competition law infringements. As part of our Competition Law Compliance Program, we provide a competition law toolkit on the Solvay intranet that includes up-to-date guidelines on specific areas of competition law, including guidance on dealing with competitors, dawn raids, information exchange on mergers and acquisitions transactions, swaps, price announcements and vertical relationships.

To minimize cartel risks, Solvay has put in place a computer-based system that tracks all contacts relevant employees have with competitors through a procedure based on managerial approval.

3.2.2. Resources and responsibilities

Solvay set up a compliance organization to reinforce a Group-wide culture based on ethics and compliance. The Ethics and Compliance Department operates under the leadership of the Chief People Officer, who also works closely with the Group General Counsel. It consists of Regional Compliance Officers who serve in the four zones in which the Group operates, under the direction of the Chief Compliance Officer, who reports to the Chief People Officer. This department is responsible for investigating, either alone or with the assistance of other departments, all reports that are brought to its attention. All cases of non-compliance with the Solvay Code of Business Integrity and related policies and procedures, including Speak Up, are reported to the Leadership Team and the Board of Directors Audit Committee annually.

Solvay has a dedicated team of legal experts for competition law within the General Counsel Function. They are responsible for implementing the Competition Law Compliance Program and are in charge of providing competition law advice and guidance, as well as deploying effective and regular communication and training on subjects related to competition law.

3.2.3. Grievance mechanisms

Employees have various internal channels through which they are encouraged to report suspected violations or concerns. These include management, Human Resources, the General Counsel Function, Ethics and Compliance, Internal Audit and employees' representatives.

A Group-wide Speak Up program is in place and overseen by the Audit Committee of the Board of Directors. An external, third-party helpline, active 24 hours a day, 365 days a year, allows employees to ask questions, raise concerns or file reports. The helpline is open to internal and external parties, available in nineteen languages covering most of Solvay locations.

The following chart shows the types of claims made from January to December 2022 through Solvay's Speak Up program.

SOLVAY'S SPEAK UP PROGRAM

Categories have been modified in 2022; in particular, Data Privacy has been added.

Number of claims	2022	2021	2020
Misconduct or inappropriate behavior	29	15	27
Discrimination	17	14	
Harassment including Retaliation	23	28	
Previously: Discrimination including harassment and retaliation			14
Conflict of interest	14	7	4
Computer, Email, Internet use and Social Media	4	3	
Previously: Computer, email, internet			2
Environmental, Health or Safety	12	9	
Previously: Environmental, health or safety law			14
Accounting, Auditing Matters, Financial Records and Banking	5	4	
Previously: Accounting or auditing			0
Bribery/Corruption	6	2	
Antitrust/Competition	1	2	
Previously: Anti-bribery			5
Confidentiality and Misappropriation	7	5	
Previously: Confidentiality/Misappropriation			1
Data Privacy	6	0	
International Trade/Trade compliance	1	2	
Previously: International Trade compliance			0
Substance abuse	2	5	0
Embezzlement, Theft, Robbery	5	4	
Previously: Theft			2
Violence or threat	2	3	3
HR Matters	40	23	
New category: Diversity, Equity and Inclusion	9		
New category: Human Rights Violations	0		
Other	13	11	33
Total	196	137	105

Through the Speak Up program, any concern relating to a breach is investigated by the Ethics and Compliance Function. In keeping with our commitment to transparency, the Speak Up tool is used to report progress on investigations and to communicate the results of investigations that have concluded directly to those concerned. An online brochure advertising the website and toll-free numbers needed to access this tool in the relevant region are available to employees.

A communication campaign was also launched in 2022 to increase awareness about speaking up and raising concerns without fear of retaliation when people notice a potential breach of our Code of Business Integrity. Speak Up was also part of the annual mandatory training for all our employees, in order to raise awareness that speaking up applies to the full spectrum of topics referenced in the Code of Business Integrity. This led to an increase in reported incidents, as reflected in the overview, and increased our ability to detect, identify and address breaches. The increase in reported incidents does not imply that there were more incidents or issues in 2022 than before, but shows that employees reach out more to report potential breaches, enabling us to investigate and address them. New topics, such as Diversity, Equity and Inclusion, and Human Rights Violations, were added to our Ethics Helpline, reflecting the increased regulatory focus on Environment, Social and Governance (ESG) topics, and on the supply chain and third parties.

The Board's Audit Committee oversees the running of Speak Up and reviews the effectiveness of the process and the outcomes in depth.

In 2022:

- 196 cases opened:
  - 12 cases still in progress;
  - 192 cases resolved. These include:
    - 64 substantiated cases;
    - 84 unsubstantiated cases;
    - 16 insufficient information;
    - 26 misdirected;
    - 1 referred;
    - 1 frivolous.

Definitions:

- Substantiated: if the allegation or at least one of the allegations are considered founded.
- Unsubstantiated: if none of the allegations are considered founded.
- Misdirected: if a case has been reported to Ethics and Compliance but does not fall under the competence of Ethics and Compliance.
- Referred: if a case has been reported to Ethics and Compliance but needs to be addressed by another department.
- Insufficient information: if a reporter has not provided sufficient information and/or Ethics and Compliance is unable to collect sufficient information to conclude whether an allegation is substantiated or unsubstantiated.
- Frivolous: if a reported case lacks sense or significance.

RESOLVED CASES

	Cleared of involvement	Discipline	Final Written / Legal Warning Letter	No action necessary	Policy / Process Review
Substantiated	2 (3.13%)	4 (6.25%)	7 (10.94%)	2 (3.13%)	12 (18.75%)
Unsubstantiated	0 (0%)	0 (0%)	0 (0%)	46 (54.76%)	18 (21.43%)

	Reassignment / Transfer	Termination	Training / Coaching Required	Verbal Feedback / Warning	Written / Feedback Warning
Substantiated	2 (3.13%)	9 (14.06%)	12 (18.75%)	9 (14.06%)	5 (7.81%)
Unsubstantiated	1 (1.19%)	0 (0%)	15 (17.86%)	4 (4.76%)	0 (0%)

3.2.4. Communication and training

Solvay's Code of Business Integrity

Mandatory Code of Business Integrity training, both in person and web-based, is organized for all employees to ensure understanding and to address behavioral risks, such as anti-bribery and corruption, conflict of interest and harassment. As part of this training, employees are also trained on the Speak Up Helpline. Specific anti-corruption training is tailored to management. Special campaigns to maintain and improve awareness levels in the Group are identified and implemented annually. In the period 2021-2022, 98% of the target population was trained on the Code of Business Integrity. Anti-bribery and anti-corruption training takes place every two years, with a new training course planned for 2023. In the period 2020-2021, 96% of the target population was trained on the Anti-Bribery and Anti-Corruption Policy.

Competition Law and Antitrust

Solvay has a concrete Competition Law Compliance Action Plan, designed to mitigate the specific risks the Group has identified in this field of law. It has been in force since 2003 and is updated yearly. In 2022, it covered e-learnings on competition law in general, on activities in trade associations, and on the use of the above-mentioned computerized tracking system of meetings with competitors. We also organized ad hoc training for specific high-risk target populations. All training courses had participation rates of over 95%.

Anti-Corruption

Anti-bribery and anti-corruption training is now carried out on a two-year cycle for a pre-identified target population. The most recent online training course took place in 2021, with 96% of the target population, which includes all employees grade S15 and above, completing the course. The training will be rolled out again in 2023.

Public policy

Solvay pursues a constructive dialogue with governmental and political stakeholders, both to ensure and improve our license to operate and as part of our commitment to developing sustainable solutions with partners. This exchange helps us to understand societal trends and anticipate legislative and regulatory expectations and developments as well as to advocate for and communicate our views in support of Solvay's interests. These includes:

- Promoting sustainable solutions to act on climate change and facilitate the energy transition: Solvay supports the UN Paris Climate Agreement and contributes to implementing it. We therefore argue for the development of a clear and predictable legislative framework that promotes sustainable growth while maintaining industry competitiveness and ensuring a balanced transition to a low-carbon economy.
- Competitiveness: Solvay advocates for a regulatory system that fosters entrepreneurship and industrial innovation by safeguarding or improving competitiveness, and that creates highly-skilled jobs worldwide.
- Environmental and chemical policy: Solvay collaborates with trade associations, public authorities and other stakeholders to develop science- and risk-based regulations and standards that promote a more sustainable industry and products.
- Promoting global trade: as an international company, Solvay recognizes the importance of free trade based on a multilateral and rules-based trading system. Reducing trade barriers is essential for economic growth and thus for industrial activity.
- Geopolitical assessment: Solvay assesses the geopolitical situation in order to better understand the potential impact, in relation to trade, logistics, investments and security, on our businesses.

Solvay's Government Affairs and Country Management Function is responsible for coordinating our relations with government and political officials. In line with Solvay's Code of Business Integrity, and with the aim of ensuring the best possible business environment, the Government Affairs and Country Management team works to foster long-term partnerships with public authorities and other relevant stakeholders. They do this by building a transparent and constructive dialogue that supports company strategy.

In our relations with government officials, we commit ourselves to responsible, honest and transparent action based on our values and principles. We are committed to ensuring that our dialogue and advocacy complies with our Code of Business Integrity, and the rules and principles set out in our policies. Employees involved in relations with government officials have to take mandatory training on business integrity, competition law, and antitrust and anti-corruption. In addition, we welcome initiatives for greater transparency in the area of interest representation and are listed as a company in the Lobby and Transparency registers of the European Commission, the United States, France and Germany.

Solvay's public policy activities include participation in industry and trade associations, as outlined in section 3.7. Membership of associations. We aim to conduct political relations and advocacy with our own staff resources, meaning that relevant contacts and meetings between Solvay and political stakeholders are made and held by Solvay representatives in person, and not by agency or partner staff acting on behalf of Solvay.

The Group does not take part in party political activities, nor do we make corporate donations to political parties or candidates. We engage in constructive debate with public authorities on subjects of legitimate interest to Solvay, where necessary, but only those employees specifically authorized to do so may carry out such activities.

Solvay respects the freedom of our employees to make their own political decisions. Any personal participation or involvement by an employee in the political process must be done on an individual basis, on the employee's own time and at the employee's personal expense.

3.2.5. Animal testing

Solvay provides innovative products for a wide variety of uses and a large number of users. The Group must have a proper understanding of the hazards of our products in order to carry out our activities and protect users, the general public, Solvay personnel and the environment. With society continually pushing for new, better and safer chemicals and plastics, there is growing demand from both regulatory authorities and the public for product risk and hazard assessments. These require testing, both with and without the use of animals.

Testing

To comply with new and existing chemical regulations, or to further consolidate safety data, Solvay commissioned animal tests in 2022. Solvay avoids animal testing whenever possible, but in cases in which animal testing is required we commit to conducting studies that treat animals humanely, giving them the best care possible, and using all animals responsibly, with great regard for their welfare. In compliance with European cosmetic regulations, Solvay does not perform specific testing solely to support cosmetic uses.

Substance-based testing for multiple applications

Solvay carries out tests required for all regulations and applications relating to a given substance just once. We avoid the need for new studies by actively advocating for the reuse of data from studies conducted within a given framework, such as REACH, for other registration systems.

Ethical compliance

Solvay's policy, outlined in the Solvay Animal Care and Use Procedure, is to apply the "3R principles" (Replacement, Reduction and Refinement) in each case and to comply with all applicable regulations. All of our studies comply with international standards, such as Organization for Economic Cooperation and Development (OECD) guidelines. Regulatory studies are almost exclusively performed by laboratories accredited by the Association for Assessment and Accreditation of Laboratory Animal Care International (AAALAC). This worldwide organization sets quality standards for testing laboratories and ensures responsible and humane treatment of laboratory animals. Before they start, all studies commissioned by Solvay are subject to an ethical assessment at local or national level by the laboratory conducting the study.

Once a study is underway, Solvay staff monitor the execution and quality of the studies and maintain a continuous qualification and evaluation program for the laboratories. A dedicated Solvay corporate committee reviewed the animal testing activities commissioned by Solvay during 2022, verifying conformity with the principles and mandatory elements of Solvay's Animal Care and Use Procedure.

VERTEBRATE ANIMAL TESTS COMMISSIONED BY SOLVAY IN 2022

	Number of studies	Number of vertebrates (*)
Registration obligations (EU, China, Korea, US)	19	4925
Additional product safety questions (toxicity, classification)	11	188
Total	30	5113

(*) Includes all animals, including control animals not being exposed to test substances and used as reference.

Regulatory testing

In 2022, 96% of the vertebrate animals (representing 63% of the animal studies) were used to address mandatory requirements from authorities. The remaining 4% were used to address additional product safety questions. In total, 5113 vertebrate animals (67% rats, 18% rabbits, 11% fish, 2% guinea pigs, 2% mice and 0.1% birds) were used. Solvay did not commission any studies on dogs, cats, pigs or non-human primates. Most vertebrate animals (89%) were used in tests required by the EU REACH Regulation, and these studies will also be valid for demonstrating compliance with chemical regulations elsewhere in the world. The number of vertebrate animals used in 2022 was half that of 2021.

Drivers for the future

While studies are needed for regulatory and scientific purposes, Solvay continues to strengthen its capabilities and understanding of alternative methodologies that do not involve vertebrate animals.

However, the higher tier animal studies requested by authorities, which required the largest number of animals in 2022, will remain the major driver for animal tests in the near future. A significantly higher number of these studies is already ongoing and it is therefore expected that the number of animals in 2023 will increase in comparison to 2022.

Advances in the implementation of non-animal methods and alternative hazard identification strategies are crucial in achieving a reduction in animal use for hazard assessment. For instance, the upcoming information requirements for nanomaterials and endocrine disruptors, appears to require more, rather than less, animal testing in Europe, and even more if existing studies are systematically challenged and have to be repeated.

3.3. Health, safety and environment management

GRI DISCLOSURE 2-25
MATERIALITY: PRIORITY
SDG 3, 6, 7, 12, 14, 15

3.3.1. Definition

Solvay's health, safety and environment (HSE) management system is aligned with ISO 45001 and ISO 14001 definitions and our Responsible Care Policy.

Through our Responsible Care Policy, we commit to safeguarding people and the environment, by continuously improving our environmental, health and safety performance, the security of our facilities, processes, and technologies, and chemical product safety and stewardship throughout the supply chain. This reflects Solvay's position as a signatory to the ICCA's Responsible Care Global Charter®.

3.3.2. Management approach

Solvay's HSE strategy relies on the following:

- An approved HSE management system, which is implemented at every industrial (manufacturing, and research and innovation) site. This includes a Responsible Care Policy and a set of risk-based procedures that apply to all areas, including health monitoring, industrial hygiene, occupational safety, process safety, transport safety, and environment and product safety. For each domain, a network is organized at Group level to ensure implementation of the procedures, compliance with regulations and sharing of good practice.
- A Product Safety Management System (PSMS), applied in every Global Business Unit.
- A safety culture approach, which ensures people's safety, health and well-being. It relies on a safety leadership style, where managers act as mentors and demonstrate genuine care for all.
- A reporting process used to evaluate performance, analyze events, and define short- and long-term improvement plans.

Industrial sites

Each industial site:
- Implements at least one approved health, safety and/or environment management system, in compliance with Solvay's Responsible Care Policy.
- Sets up a dedicated, systematic regulatory watch mechanism.
- Undergoes a compliance audit conducted by an internal or external third party at least once every five years, addressing both regulatory and internal requirements.
- Addresses all identified risks, areas for improvement and gaps in compliance.

Environmental rehabilitation

Solvay's Sustainable Environment and Climate (SEC) Department is responsible for managing the environmental liabilities resulting from the Group's industrial and mining activities. SEC helps the sites and GBUs manage their environmental legacy, whether historical or recent, providing them with technical expertise and cash management through environmental provisions. Where the local regulations allow it, a risk-based approach is used to define management actions. For our operational sites, SEC collaborates with the local HSE team. Our closed sites are managed directly by the SEC team on behalf of the relevant GBU. SEC is also responsible and accountable for managing Group environmental provisions.

3.3.3. Indicators

Approved HSE management systems at sites

Of our 109 sites, 90% have a management system in place and have been audited by a third party in the past five years. Sites with fewer than ten people or that are not under Solvay's operational control are excluded.

Three of our sites are certified by ISO 45001, 18 by the American Chemistry Council's Responsible Care Management System (ACC RCMS). Eighteen are certified by at least one of ISO 14001 and ACC RCMS 14001, and 54 are certified and have implemented both ISO 45001 and ISO/RC 14000 systems.

Twenty-eight of our sites have another approved management system in place:
- The Responsible Care Program by Asociación Nacional de la Industria Química (ANIQ) in Mexico.
- The Responsible Care Program by Associação Brasileira da Indústria Química (ABIQUIM) in Brazil.
- The Occupational Safety and Health management system (GB/T 33000-2016) in China.
- The Occupational Safety and Health Administration Voluntary Protection Programs (OSHA VPP management system) in the US.

At 12 of our sites, we plan to implement a management system by the end of 2023.

Regulatory Watch

Solvay has installed a systematic process for monitoring regulation in all domains – health and safety, process safety, environment and transport safety – at 85% of our sites.

3.4. Research and innovation

MATERIALITY: PRIORITY

3.4.1. Definition

Solvay Research and Innovation (R&I) is the Group's engine for delivering highly differentiated and valuable innovations that address major human challenges associated with resource scarcity, climate change and quality of life. Solvay wants to build a better future by developing innovative, profitable and sustainable solutions that turn science and chemistry into business and create value for the Group, our shareholders, our customers and all other stakeholders.

3.4.2. Management approach

Solvay's G.R.O.W. strategy led to a redefinition of R&I priorities in 2020. Our priorities are now aligned with the ambitions and mandates of Solvay GBUs and Growth Platforms, taking into account their missions and strategic directions. The Chief Technology Officer (CTO) is in charge of all Group R&I activities and reports to the CEO. This evolved in 2022, through the strengthening of growth opportunities for the G (Growth) GBUs, and a strong reinforcement of efforts to develop new sustainable technologies for the R (Resilient) GBUs. This is fully aligned with the Group's strategic development, namely the separation into two different companies.

The main missions of the CTO are:
- to define a vision for innovation and strategy that is aligned across the Group;
- to drive Group R&I portfolio management and allocation of resources to maximize and accelerate value delivery;
- to manage talent, efficiency and the implementation of transformational programs within the organization.

The key guiding principles for Solvay R&I are:

- Mobilizing to support market megatrends, namely lightweighting, electrification, resource efficiency, healthcare, digitalization and bio-based solutions, meeting the priorities of key customers in order to accelerate business growth.
- Delivering innovation in alignment with our Solvay One Planet sustainability roadmap.
- Reinforcing a Group-wide scouting effort to identify and develop new growth opportunities beyond the core of the existing businesses.
- Deploying a "one R&I" mindset that encourages agility and nurtures a community of talents.

3.4.3. Indicators

		2022	2021	2020
Expected revenue from sustainable solutions	%	84	78	77
R&I Effort	€ million	343	298	291
R&I Staff	FTE	2,150	1,950	1,950
First patent filings	Number	147	181	135
New sales ratio	%	13	14	15

3.4.4. Key achievements

Together with customers and partners, Solvay innovates to develop sustainable solutions by addressing the key drivers that will shape our future and focusing on the world's sustainability needs. Solvay also believes in the importance of working with academia, and with other companies or startups, to identify new solutions. In total, the Group currently manages more than 100 collaborative innovation projects.

In 2022, our main achievements in R&I are outlined below.

An important growth in sales of new products.

New product sales increased from €1.4 billion in 2021 to €1.75 billion in 2022, representing 13% of sales. This was driven mainly by volumes of new products, resulting from the redeployment of resources under the G.R.O.W. strategy. New products are those introduced less than five years ago.

A significant increase in the portfolio value

The increase in portfolio value was driven by our first three strategic growth platforms moving key projects into the pilot phase and sharing significant volumes of samples with customers. These growth platforms focus on batteries, green hydrogen and thermoplastic composites.

Significant progress in our strategic growth initiatives (Platforms)

Important steps were taken to advance our Battery Platform, with the inauguration of our two new pilots at our La Rochelle plant in France, one focused on solid state batteries, and the other on new sodium ion battery technology. We also launched an industrial pilot in China, focused on new solvent technology for high voltage electrolytes. These new technologies should start impacting businesses as soon as 2025.

Research and innovation for our Green Hydrogen Platform focused on enabling both the dramatically accelerating volume demand growth and the diversification of market technologies for the sustainable production, storage and end-usages of GH2. Solvay has been involved in designing new collaborative funded projects that are structuring the value chains for GH2 market technologies.

To consolidate its industrial infrastructure, the Thermoplastic Composite Platform brought a new world-class unidirectional tape plant fully on stream in Piedmont, South Carolina, and completed an expansion project at our Anaheim site in California. These industrial assets in the US and our MSAC customer engagement center in Brussels put Solvay in a strong position to support the fast growing aerospace and energy markets, as well as numerous other opportunities in several different segments. We also broadened our portfolio of unidirectional tapes, with the addition of tapes based on PPS, PPA and BioPA.

These three group strategic initiatives are well on track to deliver additional 3 B€ growth for the group at the 2030 horizon.

Launch of a new strategic growth initiative focused on Renewable Materials and Biotechnology

We announced our Renewable Materials and Biotechnology (Biomattech) Platform in May 2022. It takes a holistic approach to innovation in the bio-space, focusing on increasing the use of more renewable and sustainable raw materials, fostering the use of biotechnology combined with chemistry and accelerating our transition toward biodegradable-by-design solutions in non-durable chemicals like surfactants or water-soluble polymers. The platform aims to generate an additional €500 million in sales in 2030, coming from businesses associated with renewable resources, biotechnology and biodegradable solutions, paving the way for Solvay to develop safer chemicals, foster more environmentally-friendly solutions and enhance circularity.

Re-Inventing sustainability of our essential products

We took major innovation steps to transform our more traditional businesses, to make them more sustainable, leading the way in this field by establishing new developments for the future.

Our soda ash business has engaged in the industrialization of a major new technology to reduce greenhouse gas emissions at our green river plant in the US, which will produce results as soon as 2024. We are also reinventing the initial Solvay process for soda ash manufacture, by introducing new electrochemistry technology that can significantly reduce overall greenhouse gas emissions for this process.

In rare earths, we are investing in recycling technologies to produce magnets as an important step toward circularity and the protection of our planet's resources.

We are introducing a new process to manufacture natural silica, starting from rice husk, and are also working on improving the circularity of silica for the tire industry.

A significant increase in our capabilities in different domains:

- Continuous investment in the digitization of our research tools, including automation and robotics, data management and simulation, and artificial intelligence.
- New laboratory capabilities, mainly in Asia, with the addition of a new building to support growth in China at our Shanghai research center, and investment in new clean room and dry room capabilities in our Seoul research center to support our growth in the battery and electronic market. We also installed new laboratories for our Novecare business in our Indian research center in Vadodara, to support growth in South-East Asia.
- Global reinforcement of our research and innovation workforce, adding more than 150 scientists in various fields to support our growth initiatives.

Reinforcement of our open innovation worldwide

Our open innovation allows us to monitor and drive technological breakthroughs. We do this by:

- Reinforcing our collaboration with academia worldwide. We continue to be heavily involved in high-level scientific collaborations with top universities globally. These collaborations range from direct contracts to longer-term partnerships. In 2022, we reinforced our partnership with the National Institute of Advanced Industrial Science and Technology, Tsukuba (AIST) through a scientist exchange agreement. We also reinforced our partnership in China with East China University of Science and Technology (ECUST). Our strong involvement in science for the future can be seen in our award of the Solvay Prize to Katalin Kalicko, who is one of the key inventors of mRNA vaccine technology, and by the Nobel prize awarded to Carolyn Bertozzi, who received the Solvay Prize in 2020.
- Using Solvay Ventures to strengthen our Key Account Management (KAM) activities, which focus on using external insights, such as identifying customer pain points and entrepreneurial solutions, by connecting directly to startups and creating joint development opportunities aligned with Solvay's focus areas. In 2022, we assessed more than 500 new start-ups in the fields of advanced materials and composites, electronics, biotechnology, green hydrogen, battery materials and chemical formulations. We added to our portfolio with investments in Plyable, a digital marketplace for composite tooling; 9T, which focuses on TPC additive manufacturing; Chengyang, which focuses on distributed electrochemical H_2O_2 production; and Sofinnova, a late stage biotech venture capital fund. Equally significant for Solvay Ventures was the financial return received in 2022 from the sale of two portfolio companies, Kumovis and Solid Power. This complemented our strategic return, showing we can not only develop strong partners for Solvay, but also be self-sustaining through capital returns, building credibility with entrepreneurs and co-investors.

3.5. Supply chain and procurement

GRI DISCLOSURES 308-1 308-2 407-1 414-1
MATERIALITY: MODERATE

3.5.1. Definition

Our supply chain organization accounts for about 2,000 people. Most of them are located in the GBUs, where they are in charge of planning, customer care, logistics operations and improvement projects. In addition to this, a small Supply Chain Excellence team is located in Solvay's Excellence Center. We have programs in place to foster continuous improvement in the value chain performance of our GBUs, while also contributing positively to cost and cash management, as well as fulfillment at the service of customers.

Our procurement organization consists of about 600 people, located in Corporate Procurement, the GBUs and the Purchasing Service Line support teams. Their mission is to source products and services leveraging scale and expertise, and to secure sustainable value creation and supply security to directly support Solvay's G.R.O.W. and One Planet agenda.

3.5.2. Management approach

Solvay integrates our Corporate Social Responsibility (CSR) principles and Solvay One Planet ambition into our procurement processes and strategies in order to create sustainable business value in collaboration with our suppliers.

Procurement strategy

Procurement resources and capabilities are shared across an international network of category and sourcing managers, and individuals responsible for site procurement, all of whom follow a common way of working known as the Solvay global procurement process.

Our procurement strategies are defined by category experts in collaboration with the GBUs. These strategies are then executed and deployed at global, regional or local level, depending on the category specifics and suppliers' market structure. Our strategies include ESG elements and criteria.

Core Suppliers

Solvay applies supplier segmentation in order to identify key suppliers, which we refer to as Core Suppliers. Core Suppliers encompass three categories:
- Strategic Alliances: strategic suppliers at Group level that contribute to Solvay's growth, market differentiation and innovation.
- Strategic Partners: suppliers that deliver strategic materials or services to Solvay that can have a possible business impact.
- Bottlenecks: suppliers that represent a high potential risk to Solvay or the business.

This approach enables Solvay to focus on managing performance, mitigating supply risk and improving relationships, while also forming the basis for collaboration and stimulating innovation.

Actions to be performed, such as carrying out a supplier evaluation survey, or requesting a mandatory third-party sustainability assessment, are defined according to the type of supplier. Key Account Managers are appointed for some of our Core Suppliers, allowing us to generate additional value and mitigate risk through strategic relationships. We have identified 410 suppliers as Core Suppliers. They account for 40% of Solvay spend and 92% of them are currently covered by a third party sustainability assessment.

Supplier Engagement Program

We launched our Supplier Engagement Program journey in 2021, with the aim of achieving common sustainability ambitions with our suppliers to create shared value for all. This continued into 2022, with a call to our suppliers to submit collaborative projects. More than 20 innovation projects were kicked off in 2022, focused on bio-based and recycled sourcing, energy and waste recovery, and decreasing the GHG emissions footprint across our supply chain.

Together for Sustainability initiative

Solvay is a founding and Steering Committee member of Together for Sustainability (TfS), a global procurement-driven initiative that improves the sustainability performance of chemical companies and their suppliers.

The TfS program is based on the UN Global Compact and Responsible Care® principles. It provides a framework and tools – TfS Assessments and TfS Audits – that enable TFS member companies to assess, drive and improve the sustainability performance of chemical supply chains through a shared infrastructure. TfS assessments are carried out by the initiative's key partner EcoVadis, a global service provider specialized in sustainability performance assessments. For audits, TfS cooperates with a tfs-approved audit company.

In 2022, TfS made significant progress in addressing the challenges of climate change and improving the sustainable supply chain knowledge of the chemical industry. This included addressing Scope 3 emissions. Together with members of TfS, we created the first Product Carbon Footprint (PCF) Guidelines to enable chemical companies and our suppliers to share and develop high-quality carbon footprint data, which will be an essential tool to drive decarbonization initiatives in the industry. In 2022, Solvay used the PCF Guidelines to develop our own PCF software, which is currently at a pilot stage. We also called on our top suppliers to collect and share the product carbon footprint of the raw materials they supply.

TfS also rolled out the TfS Academy which contains over 335 exclusive and tailored capability-building contents in multiple languages. Membership in TfS grew to 40 in 2022, with the addition of five European, one Chinese and one Japanese member companies during the period. This increased the reach and impact on the sustainability performance of chemical supply chains, covering over €400 billion of combined spend.

ESG risk in the Supply Chain

To tackle human rights and environmental impacts across our value chains and to comply with the dynamic regulatory landscape, Solvay has developed an ESG risk management approach for our supply chain. It provides a systematic approach for risk identification and risk severity assessment for more than 62 upstream value chains, and triggers risk mitigation action plans. Thanks to our due diligence process, 12 suppliers conducted a TfS audit in 2022 and 2,250 suppliers performed an Ecovadis assessment.

Supplier Code of Business Integrity

Our Supplier Code of Business Integrity is key for the implementation of our Responsible Procurement Policy. It is fully aligned with Solvay's Code of Business Integrity and inspired by the UN Global Compact principles and Responsible Care® practices.

All written procurement contracts must make reference to the Supplier Code of Business Integrity or an acceptable alternative. Suppliers or partners are invited to report any breach of Solvay's ethical policies or Supplier Code of Business Integrity through the Solvay Ethics Helpline. Every report will be carefully reviewed by the Ethics and Compliance team, who review the case and conduct an investigation as appropriate.

Solvay is concerned that the trade in tantalum, tin, tungsten and gold, and the metals known as 3TGs that are refined from such minerals and mined in certain conflict-affected and high-risk regions, such as the Democratic Republic of the Congo and neighboring countries, may be contributing to human rights abuses. We are continuously working to improve our overview on 3TGs included in products, components and materials supplied to Solvay.

We continue to work to verify the integrity of our sourcing, and to support the actions of governments, our customers and suppliers toward achieving this aim globally. If our suppliers fail to meet our expectations in this regard, we will take these factors into consideration when making future business and sourcing decisions.

3.5.3. Indicators

Ecovadis assessment

One of our main priorities for 2022 was to assess our core suppliers. During the year, a total of 2,250 Solvay suppliers were assessed through EcoVadis. These assessments currently cover 376 (92%) of our 410 core suppliers. One of our objectives of the year was to assess our core suppliers as priority. In terms of how many of our suppliers are covered by an Ecovadis assessment, Solvay ranks as the fourth best performer among Together for Sustainability members.

Supplier Diversity

In 2022, Solvay performed an analysis to assess the diversity status of its supplier database in North America. It revealed that 2.4% of Solvay suppliers based in the USA are diversity certified by Coupa, a third party screening database.

Raw materials

As a large chemical manufacturer, Solvay uses raw materials from a range of suppliers and sources: the overall volume purchased in 2022 was over 4.45 million metric tons.

NON-BIOSOURCED AND BIOSOURCED RAW MATERIALS – MATERIAL PURCHASED

		2022	2021	2020
Mineral products	1,000 metric tons	2,460	2,690	2,370
Biosourced products	1,000 metric tons	180	240	230
Natural gas	1,000 metric tons	840	940	900
Petrochemical	1,000 metric tons	870	950	830
Other raw materials	1,000 metric tons	100	100	120
Total	1,000 metric tons	4,450	4,920	4,450

3.6. Main partnerships

SDG 17

IndustriAll Global Union

Building on twenty years of strong industrial relations between IndustriALL and Solvay, we signed an improved Global Framework Agreement (GFA) on March 31, 2022. The content of the agreement was strengthened around several important areas, including:

- Telework rights
- C190
- EU due diligence and UN binding treaty – supply chain oversight
- Just Transition
- Conflict resolution
- Maintaining the agreement following the upcoming split of the company
- Workers' rights to health and safety
- Skills transfer
- Battery supply chain
- US Taskforce Agreement renewed for the duration of the GFA

The four-year agreement includes serious commitments on due diligence along the supply chain. Taking note of the different international standards on this issue, including the upcoming EU Directive on corporate sustainability due diligence, the agreement establishes a new working group of workers and management to investigate supplier respect for core labor rights and seek remediation where problems are found. Solvay commits to suspend contracts with suppliers that fail to remedy human rights and environmental abuses following warnings.

Ellen MacArthur Foundation

Solvay has been engaged with the Ellen MacArthur Foundation since 2018 to listen and learn from them, to accelerate our transition to a circular economy, and to engage with them to promote our leadership in the transition.

Achievements :

- Solvay joined a call to connect the dots between climate change and biodiversity through a regenerative chemistry by design at the Ellen Macarthur Foundation Summit 2022.
- Solvay partnered with the EMF on its strategic circular design initiative, together with other strategic partners. We also took part in a circular design week to embed sustainable and circular design into the innovation organization and drive systemic change across businesses.
- Solvay continued to immerse our employees in circular economy learning and development opportunities, with targeted workshops and bespoke e-learning Ellen Macarthur Foundation modules. Three cohorts attended the Ellen Macarthur Foundation Circular Economy Exeter University masterclass.

Wildlife Habitat Council

As part of our Solvay One Planet goals, we have committed to reduce our pressure on biodiversity by 30% by 2030. To support us in achieving this aim, in 2021 we joined the Wildlife Habitat Council (WHC), an international NGO that works with businesses to encourage, promote and certify biodiversity conservation. The partnership helps us to better focus our efforts on biodiversity and identify areas for improvement, both at our sites and in collaboration with our customers.

WHC is the only international conservation NGO focused exclusively on the private sector and is a leader in taking bold action for biodiversity conservation through partnerships and education. WHC provides a framework for voluntary conservation action on a wide variety of corporate lands, promoting a collaborative and comprehensive approach to conservation activities around the world.

Membership in the WHC helps us to implement conservation projects that are locally relevant, practical and adaptable to any regulatory requirements, but which don't conflict with operations. As part of our partnership, we work to mainstream biodiversity across sectors, in collaboration with our partners and sites, taking concrete actions to protect species and habitats and deliver impact through biodiversity restoration and enhancement at a local level.

World Alliance for Efficient Solutions (Bertrand Piccard)

Solvay joined the World Alliance for Efficient Solutions in 2017, created by Solar Impulse founder Bertrand Piccard to promote efficient technologies, processes and systems that help improve the quality of life on earth. Alliance members consist of startups, companies, institutions and organizations.

The strong partnership has enabled Solvay to work together with the Solar Impulse Foundation (SIF) to develop sustainable solutions to fight climate change. The SIF's objective was to identify, select and label "1,000 solutions to change the world," helping to fight climate change and improve the quality of life on earth. This was achieved in 2021.

Twenty-one Solvay solutions have been labeled efficient solutions. In line with our Solvay One Planet goals, these include sustainable solutions for batteries, exhaust gas treatments, semiconductor applications, thermoset composites developed for high-volume automotive applications, rare earth-based formulations, biostimulants for farming and wastewater adsorbents, and benefit various industries such as water, energy and agriculture.

R&I partnerships

Solvay has set up Joint Research Units with the CNRS (National Scientific Research Center) and universities in Bordeaux, France, focused on microfluidics and high throughput screening, and in Shanghai, China, focused on organic chemistry and catalysis. Other long-term partnerships established with École Polytechnique Fédérale de Lausanne (EPFL) and the National Institute of Advanced Industrial Science and Technology, Tsukuba (AIST), have delivered very interesting results on modeling and machine learning. A series of more recent collaborations have also been launched on topics related to energy generation and storage, biobased chemistry, advanced polymers and formulations with institutions such as the University of Chicago, Edinburgh University and Politecnico Milano.

3.7. Membership in associations

GRI DISCLOSURES 2-28

The Group maintains a dialogue with stakeholders and is a member of several associations at global, regional and national levels. Trade associations adopt policy positions as close as possible to a consensus. Member companies can still express disagreement in a number of ways, including internal discussion within working groups or public stances that differ from those of the trade associations.

In September 2022, Solvay introduced new guidelines on membership of trade and industry associations. These include that each membership should be aligned with our business strategy and our company interests – the association should support Solvay's business and company interests, and should be in alignment with Solvay's public policy interests. We also review our memberships on a regular basis, to check whether positions taken by associations are still aligned with Solvay's interests.

Senior Solvay representatives sit on the steering boards of many of the associations we are a member of. We also participate in working groups and policy coordination groups. The major association memberships in the regions and countries where Solvay is present are listed below.

3.7.1. International Council of Chemical Associations

Solvay is a member of the International Council of Chemical Associations (ICCA). Solvay's CEO, Ilham Kadri, is a member of the Board of Directors. Through Responsible Care®, which is an essential part of the ICCA's contribution to the Strategic Approach to International Chemicals Management (SAICM), global chemical manufacturers commit to pursuing safe chemical management and performance excellence worldwide.

3.7.2. European Chemical Industry Council

The European Chemical Industry Council (Cefic) is the forum and the voice of the chemical industry in Europe. Solvay CEO Ilham Kadri is Vice-President and Member of the Cefic Board ExCom. The association facilitates dialogue that allows the industry to share its technical expertise with policymakers and other stakeholders. Solvay experts provide input on energy, industrial, environmental and research policy, as well as on issues relating to product stewardship. Solvay representatives also work with the different Cefic sector groups on specific issues related to individual substances or groups of substances. In addition, we play an active role within Cefic in leading a proactive industry response to the need for a more innovative and sustainable chemical industry. In 2022, Solvay proactively encouraged Cefic to contribute to the Science Based Targets initiative (SBTi) standards being developed. Solvay also participated on behalf of Cefic in the EU Commission high-level roundtable, an active stakeholder platform with business representatives, NGOs and academics, on the implementation of the EU Chemicals Strategy for Sustainability.

3.7.3. France Chimie

France Chimie represents chemical sector companies in France in front of public authorities at national, European and international level. Solvay France Délégué Général François Pontais is a Member of France Chemie's Board and ExCom. The association integrates 12 regional federations, representing 1,200 companies nationwide, and provides expertise and support relating to technical, economic and fiscal legislation, and social and labor affairs. Solvay representatives contribute to all key commissions. This includes those concerning competitiveness, with two Solvay sites rated among a pool of "unique" sites in France; energy and logistics, which focuses on the decarbonization subsidy plan; and health, safety and environment (HSE). In 2022, Solvay actively supported France Chimie positions to further decarbonize the chemical industry and promote the use of renewable energy sources.

3.7.4. Federchimica

Federchimica is the Italian chemical industry association. Our Country Manager in Italy is Vice-President of the association's Board. Federchimica facilitates dialogue with regional and national policymakers and government bodies, by sharing technical expertise and knowledge with policymakers and other stakeholders. Solvay experts participating in Federchimica provide input on energy, industrial, environmental and research policy, as well as issues relating to product stewardship.

3.7.5. American Chemistry Council

The American Chemistry Council (ACC) represents a diverse set of companies engaged in the chemistry business. Solvay sits on the Executive Committee, as well as on several Board-level committees that contribute to setting the association's strategy. Solvay representatives contribute their expertise to the ACC's work on transportation, energy, environment, sustainability, chemical management, process safety, trade and product stewardship issues. Solvay experts also provide technical input for activities that focus on product-related issues relevant for Solvay businesses, such as advanced materials and sustainable technologies. In 2022, Solvay actively supported the development and implementation of the ACC Sustainability Principles. The chemical industry is committed to creating a cleaner, safer and more sustainable future, and has a vitally important role to play in the critical areas of addressing climate change, improving air and water quality, and the circularity of our products. Solvay's portfolio, which spans the key sustainability megatrends of the future, is well positioned to accelerate progress toward these goals.

3.7.6. Brazilian Chemical Industry Association

Solvay works with the Brazilian Chemical Industry Association (ABIQUIM) and its other members to help make Brazil's chemical industry more competitive and sustainable. Solvay is represented on the Board of Directors and in all of ABIQUIM's key commissions and supported activities. These cover topics such as the Chemical Industry Parliamentary Coalition, Responsible Care management, energy and climate change, product stewardship, community dialogue, labor, international trade and trade remedies, logistics and supply chain, and innovation.

3.7.7. Indian Chemical Council

The Indian Chemical Council (ICC) is the leading industry body representing all segments of the Indian Chemical Industry. Solvay sits on the Executive Council of the ICC. The ICC monitors and helps frame industry-specific government legislation, formally interacts with the relevant authorities on policies and regulatory matters, and is recognized as the official voice of the Indian Chemical Industry. It also provides a forum for dialogue and debate within the chemical industry, channeling and reinforcing the industry's endeavors to boost development in India. The ICC promotes the Responsible Care® initiative and encourages safety, research and development, energy conservation and quality consciousness within the industry by organizing workshops and seminars and presenting annual awards recognizing excellence and outstanding contributions to the chemical industry. In 2022, Solvay CEO Ilham Kadri provided the keynote speech at the Annual Convention of the ICC, strongly promoting sustainable business models, the need for carbon emissions reduction to meet the Paris Agreement targets, the need for increased use of renewable energy in the chemical industry, the use of organic chemicals in beauty products, circularity, corporate responsibility and gender equality.

3.7.8. China Petroleum and Chemical Industry Federation

The China Petroleum and Chemical Industry Federation (CPCIF) is a comprehensive national industry organization and the official representative of the Chinese chemical industry in the International Chemical Industry Association (ICCA). The CPCIF speaks up for the interests of the industry, while also serving as a bridge between businesses and the government in China. Solvay sits on the Executive Board of the Committee of Multinationals (MNC) of the CPCIF, which is a CPCIF sub-committee representing nearly 70 multinational companies in China. Solvay is a founding member of this committee, which was set up in 2013. Key interests of the committee include, but are not limited to, industrial policies, regulatory demands, chemical management, carbon trade, sustainability and innovation. In 2022, Solvay took on the role of executive board member of CPCIF's multinational companies committee, and actively promoted low-carbon practices in the association's Carbon Working Group. We also contributed expertise to the CPCIF to prepare input on the central government's National Development and Reform Commission, aimed at developing China's carbon system in line with international standards.

3.7.9. Association of International Chemical Manufacturers

The Association of International Chemical Manufacturers (AICM) represents nearly 70 major multinational companies in the Chinese chemical industry active in the manufacture, transportation, distribution and disposal of chemicals. Together with other leading international chemical players in China, Solvay helps promote Responsible Care® and other globally-recognized chemical management principles among all stakeholders, advocates cost-effective, science- and risk-based policies to policymakers, and strengthens the contributions made by the chemical industry to the economy. In 2022, Solvay actively promoted the rational implementation of environmental protection and safety administration regulations in AICM, with a focus on achieving clarification for the industry development balance while respecting the spirit of the Yangtze River Protection Law.

3.7.10. BusinessEurope

BusinessEurope is the leading European business trade association. Its direct members are national business federations, but selected companies may participate in BusinessEurope through the Advisory and Support Group (ASG). BusinessEurope and its members campaign on the issues that most influence the business performance and growth of European companies, in Europe and globally. Solvay provides input through participation in working groups dealing with energy, environment and research, as well as trade policy. Solvay's position on climate is more ambitious than the federation position.

3.7.11. European Round Table of Industrialists

The European Round Table of Industrialists (ERT) is a forum that brings together around 50 CEOs of European companies. Solvay CEO Ilham Kadri is a member of the Steering Committee of the ERT. Among its activities, the ERT advocates policies to improve European competitiveness, growth and employment. In particular, Solvay actively participates in the working groups dealing with energy, trade, competitiveness and innovation, jobs and skills, and finance, as well as competition policies. Solvay CFO Karim Hajjar is a member of the ERT Finance Task Force, and sustainable finance is a key part of the agenda. In 2022, Solvay focused in particular on promoting the human skills agenda, supporting the creation of new jobs through the transition to a more sustainable economy.

3.7.12. World Business Council for Sustainable Development

The World Business Council for Sustainable Development (WBCSD) is a CEO-led organization of over 200 leading businesses working together to accelerate the transition to a sustainable world. Solvay has been an active member since 2010, and Solvay CEO Ilham Kadri is personally involved. In 2021, the WBCSD appointed Ilham Kadri as its new executive committee chair. She is the WBCSD's first female chair in its 26-year history. Solvay CFO Karim Hajjar serves as co-chair of the Redefining Value Program. Solvay plays an active role in four of the six programs:

- Redefining Value Program: Redefining Value helps companies measure and manage risk, gain competitive advantage and seize new opportunities by understanding environmental, social and governance (ESG) information. By building collaborations and developing tools, guidance, case studies, engagement and education opportunities to help companies incorporate ESG performance into mainstream business and finance systems, the ultimate goal is to improve decision-making and external disclosure, eventually transforming the financial system so that it rewards the most sustainable companies.
- Circular Economy: The future of business is circular, and there's no room for waste in it. Factor 10, the WBCSD's circular economy program, brings circularity into the heart of business leadership and practice. It builds a critical mass of engagement within and across businesses to spur the circular economy to deliver and scale the solutions needed to build a sustainable world.
- Climate and Energy: Combating climate change and transforming the energy system are core challenges on the path to a sustainable future for business, society and the environment. The Paris Agreement has sent a decisive and global signal that the start of the transition to a thriving, clean economy is inevitable, irreversible and irresistible. The WBCSD Climate and Energy Program facilitates interaction on cutting-edge climate and energy topics between WBCSD members, their peers and stakeholders as they address critical industry issues and share best practice and solutions.
- People: Our current society is characterized by a range of dynamic shifts and evolutions. We are faced with a world that is polarizing, a world that presents risks and opportunities in the way we work, a world that is on the move and a world in which people are living beyond their means. The People program provides solutions that support companies by ensuring that they remain in tune with the needs, rights, goals and aspirations of society against the backdrop of this rapidly evolving landscape.
- Solvay also plays an active role in the WBCSD Chemicals Group. Together with leading chemical company members, ACC and Cefic published the SDG Roadmap for the Chemical Sector in 2018. This methodology provides clear guidance on how the chemical sector can contribute to change across the spectrum of the SDGs, unlocking their value by acting on key impact opportunities. Notably, Solvay works proactively to accelerate adoption of our Sustainable Portfolio Management system across the chemical industry and other sectors.

3.8. Climate risks analysis

3.8.1. Transition risks

Scenario analysis

In 2022, we revised our scenario analysis under the following scope:

- Transition risks.
- Focusing on the three most exposed business units, based on total emissions (Scope 1, 2 and 3) and exposure to climate sensitive markets, like automotive and buildings: Soda Ash, Specialty Polymers and Novecare. These three GBUs represent 52% of Solvay's 2021 sales.
- Two International Energy Agency (IEA) scenarios: 1.5°C Scenario (IEA Net Zero Emissions Scenario 2021) and 3°C Scenario (IEA Stated Policy Scenario 2021).
- Using a leading audit, tax and consulting services company's tool for climate scenario analyses.
- Assumptions of price and cost changes, volume changes and adaptation potential (cost pass-through) were taken from the consultant's models. This included price trajectories up to 2050 for oil, coal, gas, CO2, electricity and energy usage in transport, in our own operations and upstream.
- Analysis of the market dynamics and identification of the essential characteristics of individual sites was based on the consultant and Solvay sector and climate expertise, considering products sold in main markets, namely construction, packaging, automotive, oil and gas, home and personal care, food and feed, and electronics.

The main conclusions of the scenario analysis were:

- The soda ash business relies highly on a competitive price advantage. Since prices for raw materials and our own operations will increase in a 1.5°C scenario, the scenario analysis concluded that, in the absence of cost pass-through measures, the contribution margin could decrease by up to 16%, while additional demand for glass for energy efficient buildings would drive overall profit and sales. Sales could increase to €2.4 billion in the 1.5°C scenario and to €2.1 billion in the 3°C scenario, by 2050.
- The specialty polymers business has the most significant opportunities in a 1.5°C world. Products are expensive and resilient to cost increases and the demand for most customer segments would increase. Focusing on increasing production capacities for this GBU should be prioritized in a 1.5°C world. Sales could increase to €4.7 billion in the 1.5°C scenario and to €4.3 billion in the 3°C scenario, by 2050.
- Novecare faces risks relating to vegetable oil imports. This is because vegetable oils from palm oil and other alternatives are highly CO_2 emissions and water intensive. Shifting to sustainable alternatives is expensive, but it may result in a reputation boost for Solvay and decrease costs for these alternatives in the long run. Novecare has the highest weighted CO_2 intensity in their supply chain. This should be monitored and suppliers should be engaged to reduce Scope 3 emissions. Sales could increase to €2 billion by 2050 in both scenarios.

As stated by the Task Force on Climate-related Financial Disclosures in their Guidance on Scenario Analysis for Non-Financial Companies (2020), "scenario analysis helps companies in making strategic and risk management decisions under complex and uncertain conditions such as climate change. It allows a company to understand the risks and uncertainties it may face under different hypothetical futures and how those conditions may affect its performance, thus contributing to the development of greater strategy resilience and flexibility". Actual results or future events may differ materially from those expressed or implied by such analysis.

Examples of actions decided upon to manage the risks and opportunities identified by the scenario analysis include:

- Cost pass-through measures, which have already been implemented, as demonstrated by the resilience of Solvay's financial results during the 2022 energy crisis.
- Solvay's announcement in February 2022 of a PVDF capacity investment in Europe to meet growing EV battery demand. The €300 million investment supports a fully integrated and digitalized PVDF operation and will increase capacity at Solvay's site in Tavaux, France to 35 kilotons, making it the largest PVDF production site in Europe.
- Solvay's announcement in June 2022 that our Changshu site had significantly increased production capacity for Solef® PVDF, demonstrating the Group's commitment to meeting the needs of customers worldwide. The Group has now more than doubled the onsite production volume of our high-performance polymer Solef® polyvinylidene fluoride since mid-May 2022.
- Solvay and Orbia's announcement in November 2022 that they are creating a Joint Venture in North America to supply critical materials to the battery market. The joint venture will create the largest PVDF production facility for battery materials in the region. The total investment is estimated at around $850 million, partially funded by a grant to Solvay from the US Department of Energy totaling $178 million.

Product and market related risks

The Sustainable Portfolio Management (SPM) global and systematic assessment helps alert our businesses to sustainability market signals, in particular on climate risk and opportunities, to anticipate their impact and develop the right answers in a timely manner. SPM is a robust, fact-based, future-oriented compass that allows us to take a snapshot of products' sustainability risks and opportunities in their business environment.

SPM informs us about the contribution Solvay's products make to sustainability along the value chain considering both:

- their environmental manufacturing footprint and the associated risks and opportunities – vertical axis – with a quantitative assessment using 21 impact indicators;
- how their applications bring benefits or face challenges from a holistic market perspective – horizontal axis – with a qualitative assessment of social and environmental topics covering four main themes, namely health and safety, climate change, resources and opinion leaders.

For more details about SPM, see section 5.1 Product design and life cycle management and the SPM guide published on Solvay's website.

Climate change is one of the focus areas for SPM assessment. This involves identifying if a product in a given application brings a climate change benefit or challenge. Product-Application Combinations (PACs) that lead to benefits are identified as "climate solutions", while those that pose challenges are considered "climate challenges".

Solvay's Sustainable Portfolio Management tool classifies a sustainable solution as a product in a given application that makes a significant climate change contribution to the customer's performance while also demonstrating a lower carbon impact in its production phase. In 2022, sales from "climate solutions" reached €2.5 billion.

The SPM methodology is also used to identify eligible enabling activities, requested under the Taxonomy's Delegated Act 2021. For more details about Taxonomy reporting, see section 5.1 Product design and life cycle management in the section EU Taxonomy Eligible Activities.

SPM is a key tool for enabling Solvay to integrate the sustainability dimension into strategic and operational decision making in key business processes, such as strategy, research and innovation, investment, marketing and sales, and mergers and acquisitions. We also apply the SPM tool to strategic projects, using the same logic as for our portfolio, to make sure that these projects are heading toward business solutions that support growth and value creation. This makes SPM a key tool for Solvay to identify if an investment, or a strategic or innovation project can be considered a climate transition opportunity for Solvay.

3.8.2. Physical risks

Acute

Solvay sites in areas exposed to natural hazards, with loss expectancy, calculated by our insurers, of higher than €10 million (physical damage and contribution margin loss):

- Eight Solvay sites in 100-year frequency (2% chance per year) flood areas, with a loss expectancy range of €13.7-178 million: Marietta, US; Bernburg, Germany; Gunsan, South Korea; Orange Texas, USA; Winona, US; Paulinia, Brazil; Santo André, Brazil; and Torrelavega, Spain.
- Sixteen Solvay sites in 500-year frequency (0.2% chance per year) flood areas, with a loss expectancy range of €10.3-220.7 million: Willow Island, USA; Lock Haven, USA; Pasadena, USA; Alorton, US; Gunsan, South Korea; Dombasle, France; Marietta, US; Bernburg, Germany; Winona, US; Anaheim, US; Orange Texas, US; Santo André, Brazil; Rheinberg, Germany; Paulinia, Brazil; Changsu, China; and Torrelavega, Spain.
- Three sites in a wind exposed area, with a loss expectancy range of €11-14.5 million: Orange Texas, US; Anan, Japan); and Baton Rouge, US.
- Solvay has a property damage and business interruption insurance program in place to cover catastrophic risks, and covers smaller losses through self-insurance.
- The flood risk materialized into €3 million in losses at the Torrelavega site in 2008. The freeze risk materialized during the 2021 Texas deep freeze event, which impacted 25 Solvay sites and led to €10 million in total losses.
- The risk is continually assessed throughout the year, with the support of Solvay's Property insurer FM Global and reinsurers, like Swiss Re, based on their proprietary flood modeling. Each site with reported insured values greater than €50 million is visited by FM Global loss prevention engineers and benchmarked with FM Global's resilience index, which takes into account inherent risks and completion of any recommendations.
- Based on FM Global's benchmarking, Solvay Corporate Insurance and Prevention proposed an action plan to improve risks to the Executive Leadership Team. In 2021, the Executive Leadership Team decided that all sites should reach a minimum of 75% on the Resilience Index by 2025. Each site has received a list of recommendations to complete that will enable them to achieve this objective. Recommendations can be related to procedural improvements, like developing a flood, freeze, wind or earthquake emergency response plan, or physical improvements, like installing flood barriers, or improving levees or earthquake emergency shutdown valves.
- This Business Resiliency Action Plan has already been successful in some areas. During Hurricane Harvey in the US, for example, ten Solvay sites were exposed to flooding but the loss was lower than €1 million in total. Our Deer Park site in Texas is located on an industrial site that suffered very significant losses of more than €100 million and weeks of downtime, but due to its preparedness and emergency response plan the Solvay site only experienced very minor damage, amounting to €250,000 and a short turnaround period. Torrelavega has also finished a project to improve their flood levee, mitigating the 100-year (2% chance per year) flood risk at this location. The loss expectancy will be updated after we perform a new hydraulic flood analysis to validate this improvement.

Chronic

Solvay updated our analysis of water scarcity risks in 2019, classed as a chronic climate-related physical risk. To do this we used the database from Hoekstra et al. (2016), in conjunction with QGIS, a Free and Open Source Geographic Information System.

Thirty-one Solvay sites are located in areas subject to hydric stress. Eight of these have been identified as having a high business impact. The highest annual business interruption value is €400 million.

Of our 138 production sites, 31 (22.5%) are in areas subject to water stress. These sites withdraw a total of 29 million cubic meters of water, out of a total of 314 million cubic meters (9.2%) withdrawn by Solvay sites.

Eight sites have been prioritized based on a risk analysis combining three criteria: location; freshwater intake; and business interruption value. These sites are: Chao Phraya, Thailand; Chicago Heights, US; Melle, France; Green River, US; Qingdao, China; Devnya, Bulgaria; Spinetta Marengo, Italy; and Bernburg, Germany.

4. CLIMATE

4.1. Greenhouse gas emissions

4.1.1. Definitions

GRI DISCLOSURES 3-3 305-1 305-2 305-3 305-4 305-5
MATERIALITY: PRIORITY
SDG 13 14 15

Solvay uses the following references to address greenhouse gas emissions:
- the Guidance for Accounting and Reporting Corporate Greenhouse Gas Emissions (GHG) in the Chemical Sector Value Chain published by the World Business Council for Sustainable Development;
- the Greenhouse Gas Protocol Corporate Accounting and Reporting Standard;
- the Greenhouse Gas Protocol Corporate Value Chain (Scope 3) Standard.

To better reflect our sustainability policy, we decided to use the market-based method to calculate CO_2 emissions associated with purchased electricity (Scope 2). To comply with Global Reporting Initiative requirements, we apply the following criteria, listed in decreasing order of priority, when selecting the CO_2 emission factor of each electricity supply contract:
- Energy attribute certificates: emission factors resulting from specific instruments, such as green energy certificates.
- Contract-based: the emission factor obtained from contract agreements on specific sources for which there is no emission of specific attributes.
- Supplier or utility emission rates: the emission factor disclosed as a result of the supplier's retail mix.
- Residual mix: if a residual mix is unavailable, grid-average emission factors are used as a proxy.

Location-based: if none of the above factors are available, we use the national emission factor published by national authorities or the International Energy Agency. Based on a World Resources Institute (WRI) recommendation, Emissions and Generation Resource Integrated Database (eGRID) emission factors published by the United States Environmental Protection Agency are used for the US, instead of the state emission factor. Similarly, grid emission factors published by the Ministry of Ecology and Environment are used for China, instead of the state emission factors.

4.1.2. Management approach

Solvay has a 2030 objective to reduce Scope 1 and 2 greenhouse gas emissions by 30% in line with a "well below 2°C" trajectory and targets carbon neutrality before 2050. Solvay will also not build new coal-powered plants and has committed to phasing out the use of solid fuels (coal and petcoke) in energy production by 2030 wherever renewable alternatives exist. In 2022, Solvay has set a 2030 target to reduce by 24% Scope 3 greenhouse gas emissions emissions from its top five categories both upstream and downstream in the value chain and representing 90% of the total Scope 3. Early 2023, the Science Based Targets Initiative (SBTi) has validated the Solvay 2030 targets with a slight adjustment to reduce Scope 1 and 2 emissions by 31%.

To achieve our targets, we are taking a range of different actions. This includes transforming our energy mix and investing in clean technologies. We are developing a growing pipeline of energy climate transition opportunities through collaborations between a dedicated team of experts in energy transition and operational teams at our industrial sites. We're also accelerating energy efficiency initiatives within our plants through our STAR Factory program. For greenhouse gas emissions not related to energy, specific task forces have been set up with strong technical support in order to help them develop the required clean technologies. In addition, Solvay applies an internal carbon price of €100 per metric ton of CO_2 to all greenhouse gas emissions in our capital investment decisions worldwide.

An externally verified greenhouse gas emission reporting system, and responses to rating agencies such as the Carbon Disclosure Project, help the Group align our efforts with the magnitude of the greenhouse gas challenges we face.

4.1.3. Indicators

Solvay's target is to reduce greenhouse gas emissions by 30% by 2030, compared to the 2018 baseline.

GREENHOUSE GAS EMISSIONS – TARGET ACHIEVEMENT

Total greenhouse gas emissions (Scope 1 and 2) in 2022	Mt CO_2eq	10.3
Total greenhouse gas emissions (Scope 1 and 2) in 2021 - as published	Mt CO_2eq	11.0
Variation due to changes in reporting scope (structural changes)	Mt CO_2eq	-0
Variation due to changes in methodology or improvements in data accuracy	Mt CO_2eq	0.1
Emissions increase or reduction at constant scope year on year	Mt CO_2eq	-0.7
Cumulative emissions increase or reduction since 2018 at constant scope	Mt CO_2eq	-2.5
Percentage increase or reduction since 2018 at constant scope (reference 2018: 12.3 Mt CO_2eq)	%	19
Cumulative emissions increase or reduction since 2017 at constant scope	Mt CO_2eq	-2.5

The cumulative emissions reduction since 2017 at constant scope is -2.5 Mt CO_2eq. This is in line with our previous objective, to reduce Scope 1 and 2 greenhouse gas emissions by one million tons in comparison to 2017, by no later than 2025, at constant scope.

Decreased emissions of 0.7 Mt CO_2eq in 2022, as compared to 2021, can be explained by lower activity (-0.3 Mt CO_2eq), lower energy sales (-0.3 Mt CO_2eq), an increase in coal consumption due to the exceptional energy situation (+0.1Mt CO_2eq), an increase in GHG emissions (+0.2 Mt CO_2eq : due to higher emissions in Green River and Spinetta) and new GHG reduction projects, including starting to green all our electricity in China with Renewable Energy Certificates (RECs) (-0.4 Mt CO_2eq).

GREENHOUSE GAS EMISSIONS (SCOPE 1 AND 2)

	Units	2022	2021	2020
Direct and indirect CO_2 emissions (Scope 1 and 2)	Mt CO_2	8.8	9.7	8.8
Other greenhouse gas emissions according to Kyoto Protocol (Scope 1)	Mt CO_2eq	1.5	1.4	1.3
Total greenhouse gas emissions according to Kyoto Protocol	Mt CO_2eq	10.3	11.0	10.1
Other greenhouse gas / CO_2 emissions not according to Kyoto Protocol (Scope 1)	Mt CO_2eq	0.1	0.0	0.0

DIRECT GREENHOUSE GAS EMISSIONS (SCOPE 1)

	Units	2022	2021	2020
Methane – CH4	Mt CO_2eq	1.07	1.0	0.80
Nitrous oxide – N2O	Mt CO_2eq	0.03	0.03	0.02
Sulfur hexafluoride – SF6	Mt CO_2eq	0.00	0.00	0.05
Hydro fluoro carbons – HFCs	Mt CO_2eq	0.11	0.06	0.03
Perfluorocarbons – PFCs	Mt CO_2eq	0.33	0.26	0.38
Nitrogen trifluoride – NF3	Mt CO_2eq	0.0	0.0	0.0
Total other greenhouse gas emissions	Mt CO_2eq	1.54	1.36	1.28
Carbon dioxide - CO_2	Mt CO_2	7.73	8.23	7.6
Total direct emissions	Mt CO_2eq	9.27	9.59	8.89

In 2022, direct emissions were 0.32 Mt CO_2eq lower than in 2021. The improvement in the reduction of CO_2 emissions (-0.50 Mt CO_2eq) was partially offset by a degradation of GHG emissions other than CO_2: +0.06 Mt CO_2eq for HFCs and PFCs emissions at Spinetta, +0.07 Mt CO_2eq for CH4 emissions at Green River, which is linked to an increase in mine activity and +0.06 Mt CO_2eq due to changes in methodology for GWP values for all sites .

INDIRECT CO_2 EMISSIONS (SCOPE 2)

	Units	2022	2021	2020
Gross market based				
Electricity purchased for consumption	Mt CO_2	0.3	0.7	0.7
Steam purchased for consumption	Mt CO_2	0.7	0.7	0.5
Total indirect CO_2 – Gross market-based	Mt CO_2	1.1	1.4	1.2
Gross location based				
Electricity purchased for consumption	Mt CO_2	0.8	0.9	0.9
Steam purchased for consumption	Mt CO_2	0.7	0.7	0.5
Total indirect CO_2 – Gross location based	Mt CO_2	1.5	1.6	1.4

Since implementing the market-based method, we carry out a detailed review of emissions factors for purchased electricity at all of our sites every year. In 2022, indirect emissions were 0.1 Mt CO_2eq lower than in 2021.

OTHER INDIRECT GREENHOUSE GAS EMISSIONS (SCOPE 3)

	Units	2022	2021	2020
Purchased goods and services	Mt CO_2eq	5.4	4.9	5.6
Capital goods	Mt CO_2eq	2.5	1.8	1.5
Fuel- and energy-related activities	Mt CO_2eq	1.3	1.3	1.0
Upstream transportation and distribution	Mt CO_2eq	Included in purchased goods and services		
Waste generated in operations	Mt CO_2eq	Included in purchased goods and services		
Business travel	Mt CO_2eq	0.005	0.001	0.002
Employee commuting	Mt CO_2eq	0.03	0.03	0.03
Upstream leased assets	Mt CO_2eq	0	0	0
Downstream transportation and distribution	Mt CO_2eq	0.7	0.7	0.5
Processing of sold products	Mt CO_2eq	3.4	3.2	4.3
Use of sold products	Mt CO_2eq	5.1	5.7	8.1
End-of-life treatment of sold products	Mt CO_2eq	5.3	7.8	6.9
Downstream leased assets	Mt CO_2eq	0	0	0
Franchises	Mt CO_2eq	0	0	0
Investments	Mt CO_2eq	0.4	0.4	0.9
Total Scope 3 emissions	Mt CO_2eq	24.2	25.8	28.8

Scope 3 greenhouse gas emissions are categorized according to the Greenhouse Gas Protocol corporate value chain (Scope 3) accounting and reporting standard, and are estimated as follows:

1. Purchased goods and services: we carry out a cradle-to-gate Life Cycle Analysis (LCA) for most of our products, representing 94% of our total turnover. The calculated greenhouse gas emissions are extrapolated to reach the totality of our purchases. They include all emissions related to raw material extraction and precursor processing, indirect emissions from energy use for these operations, and transport between suppliers and to our plants.

Note: some Scope 3 subcategories are calculated by difference between on one hand cradle to gate emissions of products and on the other hand with the Scope 1, Scope 2, and emissions related to the fuel and energy-related activities of the industrial sites. We have identified that the methodology, combining life cycle assessments based on yearly averages and Scope 1 and 2 emissions based on primary data, is limited in accuracy when Scope 1 and 2 emissions make up a high share of cradle-to-gate assessments and when a high share of the energy produced in some plants is sold to third parties. We estimate that the level of the related uncertainty from the methodology affects particularly the subcategories of emissions related to purchased goods and services, upstream transportation and distribution and waste generated in operations. Solvay is working on an alignment of its methodology to the Guideline developed under the Scope 3 GHG emissions program of Together for Sustainability and released in September 2022. It will address the identified limitation in accuracy and allow to rely more on primary data than on generic emissions factors.

2. Capital goods: we have used the emission factors of the WBCSD Guidance for Accounting & Reporting Corporate GHG Emissions in the Chemical Sector Value Chain, assuming that capital goods are a mix of concrete and steel.

3. Fuel- and energy-related activities not included in Scope 1 or Scope 2: they represent GHG emissions that occur during the extraction and transport of energy.
4. Upstream transportation and distribution: this is included in category 1 (see above), purchased goods and services.
5. Waste generated in operations: this is included in category 1 (see above).
6. Business travel: business travel undertaken by Solvay employees is recorded by our travel agency and monitored by our purchasing department. For air and rail travel, travel mileage is recorded. This covers more than 95% of our air and rail travel. The calculated greenhouse gas emissions are extrapolated to represent the totality of our travel. For each transportation mode, mileage is converted into CO_2 equivalent using emission factors from ecoInvent.
7. Employee commuting: the estimation is based on assuming that all employees commute every day in an average diesel or petrol car.
8. Upstream leased assets: this is not applicable as we have no upstream leased assets.
9. Downstream transportation and distribution: greenhouse gas emission during transportation of our products from our plants to our customers are reported and monitored by our supply chain excellence department. Emissions factors from the European Chemical Industry Council (Cefic) are used to calculate total emissions.
10. Processing of sold products; 11. Use of sold products; and 12. End-of-life treatment of sold products: the computation principles for these three categories are the same.The emissions due to product processing and transformation by third parties subsequent to sale by Solvay are calculated according to product chemical composition and expected chemical reactions likely to generate emissions during the transformation, the usage and end-of-life of our product.
13. Downstream leased assets: this is not applicable as Solvay has no leased assets.
14. Franchises: This is not applicable as Solvay has no franchises.
15. Investments: Scope 1 and 2 emissions from non-consolidated entities (that are not consolidated in Solvay's Scope 1 and 2) are reported according to Solvay's financial interest in these entities, to ensure consistency with our financial statements.

4.1.4. Key achievements

At Solvay's Spinetta site in Italy, an innovative clean technology developed in-house and commissioned in 2019 with further add-ons led to a decrease of 1.1 Mt CO_2eq in CF4 emissions in 2022, compared to 2018.

At our Rheinberg plant in Germany, a first biomass boiler was commissioned to replace coal firing in 2021, reaching full capacity in 2022.

At our Green River plant in the US, process equipment allowed us to replace coal with natural gas in 2022.

In 2022, 63 of our sites sourced a share of their electricity supply from renewable energy, such as solar or wind. This represents an additional saving of 0.28 Mt CO_2eq compared to 2021.

4.2. Energy

GRI DISCLOSURES 3-3 302-1 302-2 302-3 302-4
MATERIALITY: PRIORITY
SDG 7 13

4.2.1. Definitions

The different components of Solvay's energy consumption are converted into primary energy sources as follows:

- fuels, using the net calorific values;
- steam purchased, taking into account the boiler efficiency reference value for the type of fuel used to generate the steam, for example 90% efficiency based on the net calorific value for natural gas;
- electricity purchased, assuming an average efficiency of 39.5% for all types of power production except for nuclear power (33%), hydro (100%), solar (100%) and wind (100%), based on net calorific value (source: International Energy Agency - IEA).

4.2.2. Management approach

Solvay has both industrial activities that consume large amounts of energy, such as our synthetic soda ash plants and peroxides business, and industrial activities that have a relatively low energy content as a percentage of the sales price, such as fluorinated polymers.

The Group considers it particularly important to swiftly transition our energy consumption toward zero- or low-carbon sources without compromising on competitiveness or supply security. We have therefore taken the following strategic initiatives:

- Creation of a Sustainable Environment and Climate (SEC) Department within Solvay's Industrial Function to support the development of energy transition projects worldwide, taking into account the specifics of each site's local energy market.
- Technological leadership in processes and high-performance industrial operations to minimize energy consumption.
- Diversification and flexible use of the different types and sources of primary energy.
- Periodic review of the condition of industrial sites' energy assets and connections.
- A strategy for supply coverage, with long-term partnerships and medium- to long-term contracts, and price-hedging protection mechanisms when needed.
- In-house market intelligence and direct access to energy markets, including gas hubs, electrical grids, financial spots and future exchanges, when possible.
- Dedicated services aimed at optimizing energy purchasing and helping Global Business Units manage energy and greenhouse gas emissions.

The Group has reduced its overall energy intensity. Key factors in this progress have been the SOLWATT® energy efficiency program rolled out at most plants worldwide and the dissemination of technological breakthroughs to improve the overall energy efficiency of our operations. In 2022, the roll-out of the STAR Factory program led to an acceleration of our energy efficiency initiatives.

4.2.3. Indicators

PRIMARY ENERGY PURCHASE FOR CONSUMPTION FROM NON-RENEWABLE AND RENEWABLE SOURCES

	Units	2022	2021	2020
Solid fuels	PJ	28	27	27
Liquid fuels	PJ	0.4	0.4	0.3
Gaseous fuels	PJ	64	71	66
Total non-renewable energy sources	PJ	92	99	93
Renewable energy sources	PJ	5.6	6.2	5.7
Total fuel consumption	PJ	98	105	99

Note: the accounting methodology was adapted in 2020. Coke and anthracite used as raw materials in chemical reactions have been removed from classification as solid fuels. High purity coke or anthracite are required in the chemical reactions of the soda ash production process, as a source of CO_2, and cannot be substituted. Historical figures have been restated retroactively.

In 2020, we set the target to phase out solid fuels (coal and petcoke) usage in energy production where renewable alternatives exist by 2030. The increase of 1 PJ in 2022 compared to 2021 results from the exceptional energy situation. Over a longer period, our solid fuels consumption decreased by 4PJ from 32PJ in 2019 to 28 PJ in 2022.

Fuel consumption decreased in 2022. This variation is explained mainly by lower activity.

SECONDARY ENERGY PURCHASED FOR CONSUMPTION

	Units	2022	2021	2020
Electricity	PJ	17	20	22
Heating	PJ	0	0	0
Cooling	PJ	0	0	0
Steam	PJ	12	13	12
Total	PJ	29	33	34

Secondary energy purchased for consumption decreased in 2022, largely due to lower activity.

ENERGY SOLD

	Units	2022	2021	2020
Electricity	PJ	14	18	17
Heating	PJ	0	0	0
Cooling	PJ	0	0	0
Steam	PJ	12	15	14
Total	PJ	26	33	31

In 2022, the sale of self-generated secondary energy decreased due to the exceptional energy situation.

TOTAL RENEWABLE ENERGY

	Units	2022	2021	2020
Energy produced from renewable energy sources	PJ	5.5	6.2	5.7
Renewable electricity purchased	PJ	3.9	1.6	1.0
Renewable electricity sold	PJ	0	0	0
Total renewable energy	PJ	9.4	7.8	6.7

ENERGY CONSUMPTION OUTSIDE THE ORGANIZATION

The life cycle assessment performed for our Sustainable Portfolio Management analysis makes it possible to estimate cradle-to-gate energy consumption:

	Units	2022	2021	2020
Cradle to gate energy consumption	PJ	237	235	246

4.2.4. Key achievements

In 2022, we accelerated our shift to renewable energy sources. In China, 100% of our operations are now supplied by renewable electricity. In the US, 34 of our manufacturing sites are now fully supplied by green electricity, covering the needs of six GBUs. We continued to ramp-up renewable electricity purchases for the third consecutive year, with an additional impact of 2.3 PJ in 2022.

In Europe, the biomass boiler at our Rheinberg plant in Germany reached its full potential in 2022.

With the energy crisis, a significant effort was made to improve energy efficiency in 2022. This led to the worldwide deployment of workshops on energy efficiency at our sites, the creation of a common database gathering all opportunities and the prioritization of projects to be implemented. Within one of our GBUs, we delivered a 7 ktCO_2 reduction, resulting from improvements in technologies. In another GBU, we performed steam trap surveys to assess steam leakages and replace dysfunctional equipment. We also rolled out onsite squads to perform energy walkthrough audits and identify energy savings. At one of our plants, we optimized regulation on a natural gas boiler, leading to better electricity consumption efficiency and a CO2 reduction of 0.5kt per year.

In France, one of our sites consumed 119 GWh of biogas, reducing CO_2 emission by 22 ktCO_2 per year.

4.3. Biodiversity

GRI DISCLOSURE 3-3 304-1 304-2 304-3 304-4
MATERIALITY: PRIORITY
SDG 13, 14, 15

4.3.1. Definitions

To assess the sensitivity of Solvay sites toward biodiversity, we use two international reference tools that help us understand and assess biodiversity-related risks at Solvay's operational locations:

- The Integrated Biodiversity Assessment Tool (IBAT), a web-based map and reporting tool developed by the IBAT Alliance (BirdLife International, Conservation International), UN Environment Programme World Conservation Monitoring Centre (UNEP-WCMC) and the International Union for Conservation of Nature (IUCN). The IBAT tools provide integrated access to three of the world's most authoritative global biodiversity datasets:
  - The World Database on Protected Areas (WDPA). The IUCN defines a Protected Area as a "clearly defined geographical space, recognized, dedicated and managed, through legal or other effective means, to achieve the long-term conservation of nature with associated ecosystem services and cultural values."
  - Key Biodiversity Areas (KBAs), which are sites recognized as contributing significantly to the global persistence of biodiversity in terrestrial, freshwater and marine ecosystems.
  - The IUCN Red List of Threatened Species. Vulnerable, endangered and critically endangered species are considered to potentially be on the path to global extinction.
- The Worldwide Fund for Nature (WWF) Biodiversity Risk Filter, a web-based tool covering physical and reputational biodiversity-related risks that may affect our operational sites. These risks are evaluated through databases that provide 33 different indicators covering several topics of biodiversity. A final score is then calculated for each location, ranging from zero (very low risk) to five (very high risk)

The calculation of the Solvay Group's pressure on biodiversity is performed along the value chain, from cradle-to-gate (from resource extraction to the factory gate, before it is transported to the consumer), for our entire portfolio of products. This is a global approach that is based on a Life Cycle Impact Assessment (LCIA) methodology: the ReCiPe2016 method. This method translates emissions and resource extractions into a limited number of environmental impact scores through what are known as characterization factors.

The first step in this method is using emissions from environmental reporting that are linked with the following "midpoint impact categories":
- global warming, from CO_2 and greenhouse gas emissions, for example;
- water use;
- freshwater ecotoxicity;
- freshwater eutrophication;
- ozone formation;
- terrestrial acidification;
- terrestrial ecotoxicity;
- marine ecotoxicity;
- land use.

The potential damage to nature is calculated by connecting the midpoint indicator with an endpoint factor, such as damage to freshwater, marine or terrestrial species and natural resources. The unit for measuring ecosystem quality is local relative species loss in terrestrial, freshwater and marine ecosystems, respectively, measured over space and time.

4.3.2. Management approach

Local biodiversity

We screened 185 operational sites with both the IBAT and WWF tools to assess their biodiversity risks.

On the basis of the results of these analyses, and considering other criteria such as climate change, environmental impact and strategic dimensions, we prioritized 30 sites for which to develop a biodiversity roadmap. The first step in the development of the roadmap is to identify a vision for the site based on the long-term goals we want to achieve. The second step is to identify all possible actions that would support nature conservation and the restoration of biodiversity. This involves identifying all of the stakeholders involved in each action, such as employees, local communities, nature conservation associations and universities, as well as defining a timeline, indicators and a budget to complete each action. The final step is to prioritize the actions, planification and governance allocation.

The local assessment of the biodiversity-related risks related to Solvay's operations is fully integrated into the STAR Factory program. All sites involved in STAR Factory are developing a biodiversity roadmap as part of the sustainability workstream of the program.

Global biodiversity

As part of Solvay One Planet, we set a target to reduce our pressure on biodiversity by 30% by 2030, as compared to 2018. Using the environmental profiles of our products, and looking at their life cycle from raw materials to the gate of our manufacturing sites, we were able to identify the areas of our portfolio that put the most pressure on biodiversity. We found that greenhouse gas emissions, freshwater eutrophication, marine ecotoxicity and soil acidification represent 90% of the drivers affecting biodiversity.

As part of our efforts to contribute to biodiversity preservation, Solvay joined the Caisse des Dépôts et Consignations' Business for Biodiversity (B4B+) interest group, which is working on an international Global Biodiversity Score (GBS) as part of a European initiative. Solvay is also a founding member of Entreprises pour l'Environnement (EpE), which was created in 1992. This is a think-tank and platform for expertise, bringing together around 60 large French and international companies from all sectors of the economy to work together to better integrate the environment into both their strategies and their day-to-day management. Within the EpE, Solvay is an active member of the Commission on Biodiversity.

4.3.3. Indicators

Local biodiversity

Assessing our 185 operational sites for biodiversity risks using the IBAT and WWF tools revealed that:
- 112 of the 185 sites (59%) were within 5km of a protected area;
- 48 of the 185 sites (25%) were within 5km of a Key Biodiversity Area;
- more than 15,000 vulnerable, endangered and critically endangered species are potentially present within 50km of our sites

IBAT AND WWF RESULTS FOR 30 PRIORITY SITES

Site	Number of Protected areas within 5km	Number of Key Biodiversity areas within 5km	Number of endangered species within 50km	WWF biodiversity-related risk score
Anan	4	1	154	4.5
Augusta, GA	2	1	36	5
Bad Wimpfen	13	2	85	4.5
Bangpoo	0	1	203	4
Baton Rouge	1	0	26	3.5
Bernburg	8	0	62	4.5
Brussels campus NOH	5	0	50	4.5
Changshu	0	0	104	4.5
Chernevo	6	1	61	3.5
Clamecy	2	0	46	4.5
Dombasle	1	0	55	4.5
Green River, WY	0	0	15	3
La Rochelle	8	1	88	4.5
Linne Herten	3	3	63	4.5
Map Ta-Phut	0	0	183	3.5
Mount Pleasant, TN	0	0	62	4.5
Oestringen	16	1	87	4.5
Oldbury	8	0	44	4.5
Panoli	0	0	128	2.5
Piedmont, SC	1	1	38	4.5
Roha	0	0	158	5
Rosignano	6	0	128	3
Saint Fons Specialités	0	0	69	3.5
Santo Andre Est	1	0	184	4.5
Spinetta Marengo	0	0	67	3.5
Tavaux	4	1	74	4.5
West Deptford, NJ	5	0	90	2.5
Willow Island, WV	1	0	34	4
Wloclawek	3	1	38	4.5
Zhanghjiagang	0	0	105	4.5

Global biodiversity

GLOBAL PRESSURE ON BIODIVERSITY

	Units	2022	2021	2020
Species potentially affected	Number	88	93	107
Of which:				
Global warming potential	%	50	50	43
Acidification	%	12	11	14
Eutrophication	%	15	15	16
Marine ecotoxicity	%	17	17	16
Other (land use, water, etc.)	%	6	7	11

Our baseline pressure on biodiversity, from 2018, was 122 species potentially affected. The results for 2022 show that we have decreased our pressure on biodiversity by 28%. While new data from suppliers and manufacturing sites, like the source of energy, impacted the calculation of the global pressure on biodiversity, the main driver of the progress in 2022 is a decrease of the volume of sales.

4.3.4. Key achievements

Our Paulinia site in Brazil was awarded the Wildlife Habitat Council's (WHC) Gold Certificate in 2021. This is the highest level of certification awarded by the WHC, which is an international organization that promotes biodiversity conservation practices in the private sector. Following several decades of work to promote harmonious coexistence with nature, the site has become a hub for wildlife in the region. The certification has given the site a boost to continue increasing biodiversity protection and restoration. In 2022, a biologist was hired to conduct two inventories of species. These inventories led to the identification of 183 native fauna species, including reptiles, amphibians, insects, mammals and birds. Endangered species were also identified, allowing us to plan conservation actions. For example, the puma which was specifically studied in order to help us protect its habitat.

Our efforts to restore the Cuchia Quarry in Spain also received recognition in 2021. The project won the European Council of Chemical Industry Federations (Cefic) award for ecosystem preservation. The quarry supplied our site in Torrelavega with limestone for almost 80 years – from 1927 to 2006. Restoration efforts have been underway for the last 30 years, including when the quarry was still in operation.

Biodiversity roadmap development and implementation has progressed well at two other sites: Oldbury and Rosignano.

At Oldbury, a UK site located in the center of the urban West Midlands, the biodiversity roadmap has various objectives: to green several areas after dismantling operations; to create suitable habitats connected with surrounding nature corridors; and to connect the site with local communities. The commitment of the site manager has enabled the site to implement several projects, with the support of local universities and scientists. In Spring 2022, over fifty four-meter-tall trees were planted along the site's principal avenue to create a nature corridor and provide shade for employees. To complement this, 300 spring bulbs were then planted in the fall. The planting of the trees and bulbs was a site-wide effort organized by the Site Biodiversity Group. In addition to this, the site carried out tree thinning in a small wooded area in early 2022, and installed bird boxes, bug and hedgehog houses, along with wildlife cameras to monitor the visitors. Since then, foxes, squirrels, many birds – some of which have nested in the bird boxes – and even sparrow hawks have been spotted.

Other actions taken by the site to protect resources included giving new life to old, disused, textile equipment and transporting some extremely large machinery to Bangladesh where it is now running for the first time in many years in a textile mill.

Our Rosignano site is located in the Tuscany region of Italy. Its biodiversity roadmap includes 35 different actions, with a total budget estimated at €5 million. Implementation of the roadmap started with several projects on the site and its surroundings.

A lake was built in the 1960s to provide water to the plant and has since become a natural reserve. Now certified as a "Natura 2000" protected area, the reserve is also used for educational and scientific projects, including studies by the LIPU bird protection association. The reserve is fully connected with the local community in Santa Luce, which recognizes the importance of this reserve for economic, environmental and social activities.

The project was recognized as a "Nature-based Solution" – defined as a project providing environmental, economic and social benefits – by the IUCN, in December 2022. We also presented the projects in Brazil, Spain and Italy, as well as Solvay's strategy on biodiversity, during a workshop organized by the IUCN as part of the COP 15 UN Biodiversity Conference in December 2022. Steve Edwards, IUCN Senior Programme Manager, Enterprise and Investment team, Centre for Economy and Finance testified to Solvay's commitment in biodiversity protection:

"During the recent CBD COP in Montreal, we were really pleased to hear about successful conservation and restoration efforts from Solvay and others that go beyond regulatory requirements. We are hopeful that the company will show leadership in conserving nature in the coming years."

The conference COP15 ended with the adoption of the "Global Biodiversity Framework", an ambitious programme of targets and recommendations relating to biodiversity conservation and restoration. The private sector was included in negotiations and Solvay signed the resulting "Make it mandatory" pledge, which requires businesses to measure and report on their impact and dependency on nature.

5. RESOURCES

5.1. Product design and life cycle management

GRI DISCLOSURE 3-3 416-1
MATERIALITY: PRIORITY
SDG 12, 13

5.1.1. Definitions

Solvay's Sustainable Portfolio Management focuses on sustainable business solutions. The SPM methodology is designed to boost Solvay's business performance and deliver higher growth, by letting decisionmakers know how our products contribute to sustainability with regard to two factors:

- The environmental footprint related to their production and associated risks and opportunities, based on cradle-to-gate Life Cycle Assessments (from resource extraction to the factory gate, before it is transported to the consumer).
- How their applications create benefits or challenges from a market perspective, based on a qualitative assessment using a cradle-to-cradle scope.

Life Cycle Assessment (LCA) is a tool for compiling inputs and outputs, along with an evaluation of the potential environmental impacts of a product system throughout its life cycle. LCA methodologies follow international standards, namely ISO 14040, ISO 14044 and ISO 14046 norms.

A sustainable solution is defined by Solvay's Sustainable Portfolio Management tool as a product in a given application that makes a greater social and environmental contribution to the customer's performance and, at the same time, demonstrates a lower environmental impact in its production phase.

5.1.2. Management approach

SPM assessments are performed every year in order to capture the most recent signals from the market and cover more than 80% of Group revenue. Since its implementation in 2009, the Sustainable Portfolio Management tool has been widely adopted by Solvay Global Business Units and Functions to integrate sustainability into their key processes:

- The Sustainable Portfolio Management profile is an integral part of strategic discussions between Global Business Units and the Executive Committee.
- The SPM tool is used to evaluate merger and acquisition projects, to determine whether an investment is feasible in light of Sustainable Portfolio targets.
- Investment decisions (capital expenditure above €10 million and acquisitions) made by the Executive Committee or the Board of Directors include a sustainability aspect that involves an exhaustive SPM analysis of the potential investment.
- All research and innovation projects are evaluated using SPM.
- SPM is used in marketing and sales to engage customers on fact-based sustainability topics, such as climate change action, renewable energy, recycling and air quality, with the goal of differentiating and creating value for Solvay and the customer.

Solvay Life Cycle Assessments are managed by a dedicated corporate team with direct links to all business units and services. Having a dedicated LCA team makes it possible to maintain a high level of staff competency and coordinate updates of the main methodologies used based on best practice. Core LCA activity is based on recognized tools, software and databases, and we also have our own database, specific to Solvay business and innovation segments, in material science or battery development for instance.

The LCA team is also called upon to support business activity concerning customer relations, by sharing environmental and LCA data on products to enhance understanding and environmental impact assessments along the value chain, from cradle to grave or recycling. Examples include the automotive sector, the construction sector and Product Carbon Footprint declarations for our customers.

Taking part in world class Life Cycle Assessment platforms

To maintain a high level of LCA expertise, we participate in the following collaborative platforms:

- International Reference Centre for the Life Cycle of Products, Processes and Services (CIRAIG): Solvay joined CIRAIG in 2012 as an industrial partner, ensuring access to high level research and expertise on Life Cycle Assessment methodologies.
- Association Chimie du Végétal: Solvay is a member of this association in France focused on the use of bio-sourced materials in chemistry.
- SCORE Life Cycle Assessment platform: this platform was created in March 2012 to promote collaboration between industrial, institutional and scientific actors, and to foster positive developments in environmental quantification methods, particularly in Life Cycle Assessments, to be shared and recognized at European and international levels.
- World Business Council for Sustainable Development (WBCSD): Solvay takes part in Life Cycle Assessment projects and Product Carbon Footprint working groups organized by the WBCSD.
- Roundtable for Product Social Metrics: this association of industry representatives and consultants establishes guidelines for assessing the social impacts of industrial product life cycles.

5.1.3. Indicators

In 2022, extensive cradle-to-gate Life Cycle Assessments were performed for 94% of our products, by turnover share, placed on the market, as compared to 96% in 2021. Solvay's LCA team manages a product database representing more than 1,300 different chemicals and materials, which is continuously updated to include the most recent industrial or innovation data. As set out in our Solvay One Planet sustainability roadmap, we will continue to shift our portfolio toward opportunities that grow our sustainable solutions, with a target of increasing sustainable solutions to 65% of total Group sales by 2030.

REVENUE BREAKDOWN BY SPM HEAT MAP CATEGORIES

<table>
<tr><th></th><th>Units</th><th>2022</th><th>2021</th><th>2020</th></tr>
<tr><td>Solutions</td><td>%</td><td>55</td><td>50</td><td>52</td></tr>
<tr><td>Potentials</td><td>%</td><td>11</td><td rowspan="2">28</td><td rowspan="2">27</td></tr>
<tr><td>Transitions</td><td>%</td><td>16</td></tr>
<tr><td>Challenges</td><td>%</td><td>7</td><td>9</td><td>8</td></tr>
<tr><td>Not evaluated</td><td>%</td><td>11</td><td>10</td><td>13</td></tr>
</table>

In 2022, the proportion of sales from sustainable solutions improved by five percentage points, largely due to the organic growth in the automotive and battery market with Specialty Polymers and Silica, in the agro market with Novecare, in air and water treatments with Peroxides and Soda Ash, and better market alignment of our solutions toward sustainability with Novecare, Aroma and Technology Solutions. Effective 2022, the CO_2 reference price was increased from €75 to €100 per metric ton CO_2 eq. As a consequence, the value for 2021 has been restated to 50%.

We substitute the Neutral category by two new categories: Transitions and Potentials. The Potentials category mirrors the potential to join the Solutions category by acting on the manufacturing environmental footprint which do not have negative nor outstanding sustainability performance, if any. These are products that consumers need, but which environmental footprint can be improved. The Transitions category identifies low negative sustainability.

Starting in 2023, the evolution of the increase or decrease in sustainable solutions in percentage of group sales is split between operational performance, changes in methodology and new ESG material risks. Operational performance measures progress from operational vulnerability, organic growth in sustainable solutions and new sustainable solutions. New ESG material risks covers the evolution of the sustainable solutions score as a result of new external material market signals or adaptations to regulation taken into account in SPM assessments. Changes in methodology refers to the evolution of new standards for ecoprofiles and changes in shadow costs.

In 2022, the proportion of sales from sustainable solutions improved by 4.5% (from 50.3% to 54.8%). This increase is accounted for as follows:
- Operational Performance: +4.5%
- New ESG Material risks: 0%
- Changes in methodology: 0%

SPM SOLUTIONS: SALES BY MAIN IMPACT CATEGORY

	Units	2022	2021	2020
Climate	€ billion	2.5	1.7	1.6
Resources	€ billion	5.7	3.7	3.2
Better life	€ billion	4.8	3.2	3.1
Total Solutions net sales	€ billion	7.4	5.1	4.7

The total Solutions net sales figure is inferior to the sum of impact categories because products may have multiple impacts. For example, composite materials used in planes make the plane lighter, allowing lower greenhouse gas emissions (climate impact), but they also increase the plane's lifespan (resources impact).

EXTERNAL VALIDATION

Since 2009, with the exception of 2019 and 2020, Arthur D. Little (ADL), our partner in developing and improving our SPM methodology, has performed an in-depth verification of our market alignment results. In 2022, ADL screened every Product Application Combination in the database and 70 PACs were selected for deeper review, covering about 15% of the global turnover.

Discussions with Arthur D. Little revealed that we reach the same conclusion for 57 PACs out of the sample of 70, representing an agreement rate of 81%. For ten PACs (14%), Arthur D. Little came to a more negative conclusion than Solvay. From this, six PACs will be subjected to an in-depth investigation in 2023 before we implement the ADL conclusion in the SPM results. For three PACs (4%), Arthur D. Little reached a more positive conclusion than Solvay.

5.2. EU taxonomy eligible activities

The EU taxonomy (2020/852) is a classification system, establishing a list of environmentally sustainable economic activities. It is intended to play an important role in helping the EU scale up sustainable investment and implement the European Green Deal. The EU taxonomy would provide companies, investors and policymakers with appropriate definitions under which economic activities can be considered environmentally sustainable. According to the new timeline set out in the taxonomy's Delegated Act 2021, companies published their first taxonomy eligibility report in 2022 and will have to publish their first taxonomy eligibility and alignment report in 2023.

In order to be taxonomy-eligible, an economic activity must contribute substantially to at least one of the six environmental objectives – climate mitigation, climate adaptation, water, circular economy, pollution prevention and biodiversity – and do no significant harm to the others. Currently, only climate mitigation and climate adaptation are considered. As such, the taxonomy only addresses a limited number of Solvay activities.

In order to be taxonomy-aligned, an economic activity needs first to be eligible as described above, and then fulfill the following criteria:
- The economic activity must make a substantial contribution to one or more of the climate and environmental objectives relevant to that activity.
- The activity should do no significant harm to the other remaining objectives.
- The activity should fulfill the minimum social safeguard standards based on OECD and UN guidelines.

Our calculation of the share of 2022 Solvay sales eligible for and aligned with the EU taxonomy is based on our best interpretation of the EU taxonomy texts, including the 2021 version of Technical Annex of the Taxonomy Report.

Figures reported for soda ash correspond to our Soda Ash and Derivatives business, which is a mono-technology business, as described on Solvay's website.

Figures reported for plastics in primary form correspond to our Speciality Polymers business. Solvay's portfolio of specialty polymers is described on the Solvay website.

Enabling economic activities, as referred to in Article 10(1), point (i), of Regulation (EU) 2020/852, do not substantially contribute to climate change mitigation on their own. Such activities play a crucial role in the decarbonization of the economy by directly enabling other activities to be carried out at a low carbon level of environmental performance.

We identified eligible enabling activities using our Sustainable Portfolio Management methodology, taking into account product and application combinations identified as "climate solutions", as described above. This enables us to avoid double counting, as double counting is neutralized in the Sustainable Portfolio Management reporting of Solutions for each impact category, as described above. Possible double counting between transition activities and enabling activities are detailed in the table.

Some of our activities, such as polymer membranes in batteries, or soda ash for glass in double glazing, may be eligible both as transitional and enabling activities. We have therefore removed these activities from the total of eligible activities.

The basis on which the turnover, capital expenditure and operating expenditure were calculated is explained in the Financial Statements chapter of this report, note F1: revenue and segment information.

Capital expenditures and operating expenditures corresponding to enabling activities are not yet available. The eligible share of investments depends on the estimation of the corresponding eligible share of future sales. The allocation rules chosen mean that we estimate that 1% of turnover required 1% of capital expenditure and 1% of operational expenditure.

We also believe that the share of Group capital expenditure dedicated to Research and Innovation should be considered as eligible as it aims to improve our product portfolio to become more sustainable. This means that our total eligible capital expenditures is the sum of eligible capital expenditures from our transition activities and the estimation of capital expenditures from eligible enabling activities. Similarly the total eligible operating expenses is calculated as the sum of eligible operational expenditure from transition activities, the operational expenditures estimated for enabling activities and the amount dedicated to the operational expenditures spent on research and development.

Regarding reporting on our aligned activities, our only manufacturing activities eligible as "transition activities" are soda ash and polymers, and these are not considered aligned for their turnover as they do not meet the technical criteria. The activities eligible as "enabling activities" were also not considered for their turnover as we cannot demonstrate that they fulfill the "do no significant harm" criteria for water, biodiversity, circular economy or pollution. However, Solvay has launched our STAR Factory Program, which aims to fully implement our Solvay One Planet at site level. STAR Factory will progressively be deployed in all our plants by 2030 and we believe that it will gradually deliver the required data to qualify our activities as aligned.

About the calculation of the share of capital expenditures aligned with the EU taxonomy, we consider the capital expenditures spent on decreasing the environmental footprint of our soda ash production plus the amount spent by the Group on Research and Innovation.

Following a similar reasoning, the calculation of operational expenditures aligned with the EU taxonomy mainly considers the share of operational expenditures spent on Research and Development.

The Group works hard to constantly improve our share of economical activities considered eligible for or aligned with the EU taxonomy. We believe that STAR Factory and other major programs will deliver on these objectives in the coming years.

Activities	NACE codes	2022 share of sales	2022 share of capital expenditures	2022 share of operational expenditures
Eligible as transitional activities				
Production of soda ash	C.20.1.3	16.5%	18.6%	16.2%
Manufacture of plastics in primary forms	C.20.1.6	23.2%	33.9%	21.2%
Total eligible as transitional activities		39.7%	52.5%	37.4%
Eligible as enabling activities				
3.1. Manufacture of renewable energy technologies	C25 C26 C27 C28	0.1%	0.1%	0.1%
3.4. Manufacture of batteries	C27.2, E38.3.2	2.8%	2.8%	0.1%
of which plastics		2.8%	2.8%	0.1%
3.6. Manufacture of other low carbon technologies	C22.1.1, C22.2.9	15.1%	15.1%	15.1%
of which soda ash		0.9%	0.9%	0.9%
of which plastics		4.6%	4.6%	4.6%
Research & Innovation		0%	11.4%	7.2%
of which soda ash		0%	0.1%	1.2%
of which plastics		0%	1.7%	2.7%
Total eligible as enabling activities + R&I		18%	19.3%	13%
Total of eligible activities		49.4%	71.8%	50.4%
Aligned as transitional activities				
Production of soda ash	C.20.1.3	0%	1.5%	NA
Manufacture of plastics in primary forms	C.20.1.6	0%	4.2%	NA
Total aligned as transitional activities		0%	5.7%	NA
Aligned as R&I activities				
Research & Innovation		0%	11.4%	7.2%
of which soda ash		0%	0.4%	1.2%
of which plastics		0%	4.2%	2.7%
Total of aligned activities as R&I activities		0%	11.4%	7.2%
Total of aligned activities		0%	8.3%	7.2%

NA: not available. Work is ongoing to adapt databases to be able to extract capital expenditures and operational expenditures corresponding to selected projects, and to allocate the share of the capital expenditures of each project that corresponds with eligibility criteria for enabling activities.

Economic activities (1)	NACE Code(s) (2)	Absolute CAPEX €million	Proportion of CAPEX %	Climate change mitigation %	Climate change adaptation %	Water and marine resources %	Circular economy %	Pollution %	Biodiversity and Ecosystems %
A. TAXONOMY-ELIGIBLE ACTIVITIES									
A.1. Environmentally sustainable activities (Taxonomy-aligned)									
Production of soda ash	C.20.1.3	190	1.2	NA	NA	NA	NA	NA	NA
Manufacture of plastics in primary forms	C.20.1.6	347	2.7	NA	NA	NA	NA	NA	NA
Turnover of environmentally sustainable activities (Taxonomy-aligned) (A.1)									
Production of soda ash	C.20.1.3	0	0	0	0	NA	NA	NA	NA
Manufacture of plastics in primary forms	C.20.1.6	0	0	0	0	NA	NA	NA	NA
A.2. Taxonomy-eligible but not environmentally sustainable activities (not Taxonomy-aligned activities)									
Production of soda ash	C.20.1.3	190	18.6						
Manufacture of plastics in primary forms	C.20.1.6	347	33,9						
3.1. Manufacture of renewable energy technologies	C25, C26, C27, C28	1	0,1						
3.4. Manufacture of batteries	C27.2, E38.3.2	28	2,8						
3.6. Manufacture of other low carbon technologies	C22.1.1, C22.2.9	154	15,1						
Turnover of Taxonomy-eligible but not environmentally sustainable actvities (not Taxonomy-aligned activities) (A.2)									
Production of soda ash	C.20.1.3								
Manufacture of plastics in primary forms	C.20.1.6								
3.1. Manufacture of renewable energy technologies	C25, C26, C27, C28								
3.4. Manufacture of batteries	C27.2, E38.3.2								
3.6. Manufacture of other low carbon technologies	C22.1.1, C22.2.9								
Total (A.1 + A.2)									
B. TAXONOMY-NON-ELIGIBLE ACTIVITIES									
All other activities									
Turonver of Taxonomy-non-eligible activities (B)									
Total (A + B)									

Climate change mitigation Y/N	Climate change adaptation Y/N	Water and marine resources Y/N	Circular economy Y/N	Pollution Y/N	Biodiversity and Ecosystems Y/N	Minimum safeguards Y/N	Taxonomy-aligned proportion of turnover, year N %	Taxonomy-aligned proportion of turnover, year N-1 %	Category (enabling activity or) E	Category (transitional activity) T
Y	Y	NA	NA	NA	NA	NA	0	0		T
Y	Y	NA	NA	NA	NA	NA	0	0		T
Y	Y	NA	NA	NA	NA	NA	0	0		T
Y	Y	NA	NA	NA	NA	NA	0	0		T
							16,5	15,4		T
							23,2	21,5		T
							0,1	0,1	E	
							2,8	1,7	E	
							15,1	16	E	
							49.4	48,7		
							50.6	51.3		
							50.6	51.3		
							100	100		

5.3. Circular Economy

SDG 12, 13

5.3.1. Definitions

Circular Economy is a new approach to business that aims to decouple economic growth from consumption of natural resources. Solvay's Circular Economy Business Solution Program is underpinned by a transition to renewable energy sources. It is based on three principles:

- Shifting our product portfolio to bio-based feedstocks, recycled-based feedstock and CO_2-captured based feedstock.
- Retaining the value of the products and materials currently in use by enabling product recycling (process additives and technology) or recyclability by design.
- Designing products that increase the longevity of reusable materials.

We use the following definitions:

- Renewable resources: materials that are continually replenished at a rate equal to or greater than the rate of depletion. This includes plant-based materials from cultivation and animal-based materials from breeding. To fit in a circular economy, the material should be produced from food waste or using regenerative production practices.
- Renewable energy: energy produced from renewable resources, namely solar, wind, hydroelectric power, biomass or geothermal. Energy provided by technological waste, such as solid recovered fuels, is not considered. Sales of energy to third parties are not included.
- Products enabling increased durability: products designed to increase the longevity and durability of other products further down in the value chain in such a way that encourages longer use than the industry standard and at scale, without compromising circularity at the end of the product's functional life.
- Products enabling recycling: products designed to increase the recycling yield, with regard to quality and quantity.

The measurement of products based on recycled or renewable materials and renewable energy is weighted by applying a factor of 85% to renewable materials and 15% to renewable energy, according to the average manufacturing cost weight. A similar approach has been defined at the research and innovation level to monitor the contribution of innovation projects to Solvay's circularity ambition.

5.3.2. Management approach

As a company committed to the transition to a circular economy, we aim to more than double our circular revenues by 2030.

We define circular revenues as revenues generated with products and solutions that meet the following specific requirements:

- made of bio-based, recycled-based and CO_2 captured carbon based raw materials, or produced with renewable energy;
- designed to increase the lifespan of end-products, in such a way that encourages longer use than the industry standard in practice and at scale (e.g. marketing repair rather than replacement, timeless design with durable material choices) and in such a way that does not compromise circular treatment at the end of functional life;
- innovative with regards to the recycling of materials in closed and open loops, and business models: designed to increase the recycling yield (quantity and quality) of the customers products.

The transformation of Solvay into a circular economy model is embedded in our business strategy. We are working individually and with customers, suppliers and partners to identify opportunities where the Group can leverage our capabilities.

Our research and innovation project portfolio is screened and prioritized according to the principles of the circular economy and around 20% of our innovation budget was attributed to circular innovation in 2022.

Solvay is the Chemical Strategic Partner of the Ellen MacArthur Foundation, contributing to accelerating the transition toward a circular economy. Chemistry, as a science and an industry, is a tremendously relevant and powerful enabler of material transformation and re-use.

Indicators

We monitor our progress in circular sales in accordance with the three principles of Solvay's circular business solutions, outlined above.

	Units	2022	2021	2020
Turnover of circular products	%	9	5	5
Turnover of products based on recycled or biobased resources or produced with renewable energy		6	5	5
Turnover of products increasing longevity	%	3	n.r.	n.r.
Turnover of products enabling recycling	%	0	n.r.	n.r.

n.r. (not relevant) these indicators were deployed in 2022.

The Solvay One Planet KPI "share in circular revenues" is calculated by adding:
- sales of products increasing longevity in the use phase downstream in the value chain;
- sales based on recycled or renewable materials (85%) and renewable energy (15%);
- sales enabling recycling at the end of life downstream in the value chain.

Potential double counting is avoided by considering the above mentioned order of priority.

External assessment

Our Circular Economy performance level is assessed annually using the Circulytics® framework, co-developed with the Ellen MacArthur Foundation.

Circulytics® aims to:
- measure the entire company's circularity, not just products and material flows;
- support decision making and strategy development for circular economy adoption;
- demonstrate strengths and highlight areas for improvement.

Representatives from the main Solvay Functions and Global Business Units are involved in order to collect relevant information. This process is used as an opportunity to develop a circular economy mindset throughout the organization.

A single point of contact is identified to consolidate the data and fill in the questionnaire for assessment. The scorecard and feedback provided by the Foundation are shared and discussed at an appropriate level inside the Group.

5.3.3. Key achievements

To meet the unmet needs of our customers and to address the transition of our strategic markets in a circular economy, we accelerated our transformation .

We created a growth innovation platform focused on renewable materials and biotechnology to move away from fossil resources and develop sustainable, circular products.

We launched new high-performance surfactants in our Mirasoft® range for beauty care applications that are 100 % biobased and biodegradable. By developing a regenerative, sustainable chemistry, manufactured using a biotechnology process, we support the development of a bio-circular value chain in the personal care industry.

We achieved the ISCC+ certification, an internationally-recognized standard for bio-based and recycled-based materials, at our site in Zhangjiagang, China for our Fentamine® DMAPA UP, a bio-circular intermediate for surfactants.

We launched a new range of specialty polymers, the ReCycle MB polymers, made with recycled raw materials in order to reduce the carbon footprint of the product and meet our customers' recycled-content regulatory requirements. Udel® PSU ReCycle MB and Radel® PPSU ReCycle MB, used for hemodialysis membranes, will be produced from a recycled-based sulfone monomer in Augusta, Georgia, in the US, also certified ISCC+ in 2022.

5.4. Air quality

GRI DISCLOSURES 3-3 305-6 305-7
MATERIALITY: HIGH
SDG 3 15

5.4.1. Definitions

Nitrogen oxide (NOx) emissions, conventionally expressed as nitrogen dioxide (NO_2), comprise the emissions of nitrogen monoxide (NO) and nitrogen dioxide (NO_2). NOx are reported due to their impact on acidification. NOx emissions from Solvay's operations result mainly from the combustion of fossil fuels. Emissions of nitrous oxide (N_2O) are excluded from this definition, as they have no impact on acidification. The impact of our N_2O emissions is taken into account when assessing Solvay's contribution to climate change.

Sulfur oxide (SOx) emissions, conventionally expressed as sulfur dioxide (SO_2), comprise the emissions of sulfur dioxide (SO_2) and sulfur trioxide (SO_3). SOx emissions arise mainly from the combustion of solid and liquid fuels (coal, anthracite or tar…).

According to the EU Solvent Directive 1999/13/EC, Volatile Organic Compounds (VOCs) are compounds with a standard boiling point below or equal to 250°C. Non-methane volatile organic compounds (NMVOCs) include all VOCs other than methane. The impact of main methane emissions from Solvay's mining activity at Green River, Wyoming, in the US, is therefore not included here, but is taken into account when calculating our contribution to climate change.

Ozone-depleting substances (ODS) are expressed as their summed CFC-11 equivalent, which is defined as the metric tonnes of ODSs weighted by their Ozone Depletion Potential (ODP).

5.4.2. Management approach

Air quality is managed through the health, safety and environment management systems deployed by our sites, in line with their regulatory requirements. Sites report at least on the substances they are allowed to emit according to their exploitation permit. Solvay works in close cooperation with local stakeholders to improve air quality at local and regional levels.

5.4.3. Indicators

ABSOLUTE AIR EMISSIONS

	Units	2022	2021	2020	2019
Nitrogen oxides – NOx	metric tons	5,594	5,882	5,587	6,197
Sulfur oxides – SOx	metric tons	3,304	3,449	2,808	2,888
Non-methane volatile organic compounds – NMVOC	metric tons	3,625	3,956	3,286	4,109
Ozone-depleting substances - ODS	metric tons eq. CFC-11	7.6	7.7		

Due to some historical corrections, the previously published value for nitrogen oxides in 2021 has been corrected in our database to 5,755mt.

Compared to this value, nitrogen oxides emissions decreased by 161t (2.8 %).

No historical corrections were needed on our sulfur oxides emissions. Compared to 2021, the 2022 emissions dropped by 145mt (4%). This global reduction was achieved through a withdrawal from Russian coal and process improvements at our Torrelavega site in Spain.

Due to some important historical corrections, the previously published value for non-methane volatile organic compounds in 2021 has been corrected in our database to 3,576mt.

Compared to this value, NMVOC emissions increased slightly by 74mt (2%).

Due to a few historical corrections, the previously published value for ozone-depleting substances in 2021 has been corrected in our database to 7.5 metric tons eq. CFC-11.

Compared to this value, ODS emissions increased by 0.1 metric tons eq. CFC-11.

5.5. Waste

GRI DISCLOSURES 3-3 306-1 306-2 306-3 306-4 306-5 416-1
MATERIALITY: PRIORITY
SDG 3 6 12 14 15

5.5.1. Definitions

Industrial waste is defined as the waste resulting from our regular manufacturing and research activities. It does not include domestic waste or waste from demolition or construction projects. Mining waste, which results from the prospecting and extraction of minerals, is reported separately from industrial waste. All our waste volumes are expressed as dry matter.

For EU sites, Hazardous Industrial Waste (HIW) is defined according to Appendix III of the Waste Framework Directive (2008/98/EC). For non-EU countries, classification follows local legislation.

Non-sustainably treated waste comprises waste that is landfilled or incinerated without energy recovery. It includes the waste with unknown final treatment at the time of the reporting.

5.5.2. Management approach

For industrial waste, and hazardous industrial waste in particular, Solvay's focus is on switching to more sustainable disposal methods that avoid landfill or incineration without energy recovery and therefore promote material or thermal recovery.

For non-hazardous, mostly mineral, waste, Solvay is launching material recovery initiatives aligned with our ambition to contribute to the circular economy.

5.5.3. Indicators

WASTE PRODUCTION

	Units	2022	2021	2020
Non-hazardous industrial waste	1,000 tons*	1,514	1,316	1,457
Hazardous industrial waste	1,000 tons*	81.1	74.8	71.6
Total industrial waste	1,000 tons*	1,595	1,391	1,529
Hazardous industrial waste not treated in a sustainable way	1,000 tons*	15.8	15.9	18.2
Non-hazardous industrial waste not treated in a sustainable way	1,000 tons*	40.7	41.9	51.4
Total industrial waste not treated in a sustainable way	1,000 tons*	56.5	57.8	69.7
Mining waste	1,000 tons*	600	618	637

** Metric tons of dry waste.*

Due to some historical corrections, the previously published value for total industrial waste not treated in a sustainable way (NSIW) in 2021 has been corrected in our database to 57.3kt of dry waste. Compared to this value, the NSIW for the Group was 0.8kt (1.4%) lower in 2022.

The main reasons for this global change are summarized as follows:

- +2.7kt due to a change in calculation method of the suspended solids sent by our Tavaux site to Inovyn's settling pound.
- -3kt due to a change of perimeter for the Wastewater Treatment Plant (WWTP) at our Spinetta (CTE) site, where the sludges are excluded from the financial perimeter starting in 2022.
- -0.9kt due to a change of perimeter for the WWTP at our Saintt-Fons SP (GEPEIF) site, where the sludges are excluded from the financial perimeter starting in 2022.
- -0.8kt resulting from the valorization of bottom ashes from the coal boiler at our Torrelavega site in Spain, which are now entirely recovered by the cement industry.
- -0.5kt at our Borger site in the US resulting from significant reductions in polymer scraps and waste solvents losses in production.

5.6. Water and wastewater

GRI DISCLOSURES 3-3 303-01 303-02 303-03 303-4 303-5
MATERIALITY: PRIORITY
SDG 3 6 12 15

5.6.1. Definitions

Water management encompasses the management of water flows and water quality, from extraction from the natural environment to restitution in the same or another part of the environment.

Freshwater withdrawal, measured in millions of cubic meters per year, is the amount of incoming freshwater purchased from third parties, such as drinking water from the public network, or pumped by Solvay from the public network (drinking water), from freshwater systems, such as rivers and lakes, and from groundwater sources, such as aquifers. Freshwater consumption, also measured in millions of cubic meters per year, is calculated as the sum of water lost through evaporation, leakage, and exportation of products and waste. Water purchased or pumped for third parties are included in freshwater withdrawals. For example, water that is taken from a river for cooling and returned to it after use counts as freshwater withdrawal but not as freshwater consumption.

Areas subject to hydric stress are identified using the database from Hoekstra et al. (2016), in conjunction with QGIS, a Free and Open Source Geographic Information System.

Chemical Oxygen Demand (COD) is the amount of oxygen-reducing substances, mainly dissolved organic matter, discharged into aqueous receivers. COD is expressed as metric tons of oxygen. In addition to nitrogen and phosphorus species, COD also contributes to aquatic eutrophication.

Our estimation of water consumption for Solvay's cradle-to-gate production – from resource extraction to the factory gate, before it is transported to the consumer – is effectively equivalent to the water consumption of a product. Simply put, it is the amount of water withdrawn, minus the amount of water of similar quality released back into the same watershed. This means that the water used in turbines for hydropower and the cooling of water in open-loop systems are not included in this indicator. Solvay's main areas of water consumption are in production, or what is known as industrial water, and in irrigation for bio-based raw materials.

5.6.2. Management approach

Solvay has a company-wide approach to water that includes limiting freshwater withdrawal and consumption, particularly in locations subject to hydric stress, and ensuring that the water quality remains good in bodies of water in which effluents are discharged, so that the impact on downstream users and natural biota is minimized. Specifically, we focus on reducing the impact of freshwater withdrawal and Chemical Oxygen Demand releases.

The water balance of the Group for 2022 is shown in the table below.

Water input from (Mm^3)*		Water discharge to (Mm^3)*	
Surface water (freshwater)	216	Surface water (freshwater)	237
Surface water (other water)	0	Surface water (other water)	4
Groundwater (freshwater)	73	Groundwater (freshwater)	0
Groundwater (other water)	0.13	Groundwater (other water)	0.63
Sea water	83	Sea water	84
Third party (freshwater)	46	Third party (freshwater)	39
Third party (other water)	12	Third party (other water)	55
Other sources	23	All losses	36
TOTAL	453	TOTAL	456

(*) Excluding the H_2O_2 HPPO plants from Zandvliet (Belgium) and Jubail (Saudi-Arabia), where the secondary cooling circuit is integrated in a primary cooling loop managed by the external partner.

5.6.3. Indicators

FRESHWATER WITHDRAWAL

	Units	2022	2021	2020
Freshwater withdrawal*	Million cubic meter	330	315	314
Total water withdrawal**	Million cubic meter	537		
Water used for process**	Million cubic meter	141		
Water used for cooling (once-through)**	Million cubic meter	279		
Water used for cooling (closed-loop)**	Million cubic meter	1,130		
Water used for other uses (including domestic)	Million cubic meter	6		

(*) (*) Excluding the H2O2 HPPO plants from Zandvliet (Belgium) and Jubail (Saudi-Arabia), where the secondary cooling circuit is integrated in a primary cooling loop managed by the external partner.

(**) Sum of freshwater and non-freshwater.

The apparent increase of freshwater withdrawal in 2022 is mainly due to a stricter application of internal reporting rules for freshwater pumped by Solvay but sold to third parties. From the 330 million cubic meters for 2022, 30 (9%) is sold to third parties. The total freshwater withdrawal at Group level for 2022 is slightly lower than in 2021 (-1.7 million cubic meters or -0.5%) at constant scope and methodology.

The freshwater intake for our own operations decreased more significantly, from 306 million cubic meters in 2021 to 300 million cubic meters in 2022 (-2%). From this 300 million cubic meters, 36 million cubic meters (12%) is lost: 21 million cubic meters through evaporation from industrial cooling towers and 13 million cubic meters through exportation with aqueous end products, such as hydrogen peroxide. The remaining volume is lost with exported wastes or through leakages from underground piping networks.

The table below shows the number and percentage of sites located in areas subject to hydric stress and gives the freshwater withdrawal and freshwater consumption for these in 2022 compared to the areas not subject to hydric stress.

2022	Units	Areas subject to water stress	Areas not subject to water stress	All areas
Number of sites	Number	23*	90	113
Percentage of industrial sites under operational control	%	20.0%	80.0%	100%
Freshwater withdrawal	Million cubic meters	18.5*	311.5	330
Freshwater consumption	Million cubic meters	6.6*	29.4	36

(*) For 2022, the sites in areas subject to hydric stress have been determined using the WWF Water Risk Filter. Only sites with a scarcity index above three have been taken into account.

CHEMICAL OXYGEN DEMAND

	Units	2022	2021	2020
Chemical oxygen demand (COD)	metric tons O_2	4,520	5,735	5,265

Due to some historical corrections, the previously published value for Chemical Oxygen Demand (COD) in 2021 has been corrected in our database to 5,560 metric tons of O_2.

The Group's 2022 COD release was 1,040 metric tons O_2 (-19%) lower than in 2021. This change is mainly due to a better alignment with the financial perimeter for the Wastewater Treatment Plants at our Spinetta (CTE) and Saint-Fons (GEPEIF) plants.

WATER CONSUMPTION IN THE VALUE CHAIN

Cradle-to-gate Life Cycle Assessments allow us to estimate water consumption, including in the upstream value chain.

	Units	2022	2021	2020
Water consumption including the upstream value chain	Millions cubic meters	188	195	501

For 2021 and 2022, the values reported here are lower due to a change in methodology. The 2021 and 2022 figures correspond to water consumption calculated as the difference between intake and discharge, while the previous model used for 2020 measured water intake.

6. BETTER LIFE

6.1. Employee health and safety

GRI DISCLOSURES 2-25 3-3 403-1 403-2 403-3 403-4 403-5 403-6 403-7 403-8 403-9 403-10
MATERIALITY: PRIORITY
SDG 3

6.1.1. Definitions

Employee health and safety management encompasses occupational safety, industrial hygiene and occupational health.

Occupational safety is about preventing work-related injuries. Accidents are mostly linked to falls at the same level, human energy, such as pushing, pulling or striking an object, and exposure while opening a line or system. Industrial hygiene management encompasses the assessment, monitoring and management of workers' potential exposures to ergonomic, chemical and physical hazards. Occupational health includes all the preventive actions undertaken in order to protect and promote physical and psychological health at work, both collectively and for each individual Solvay employee.

In mid-2020, Solvay began using the OSHA definitions of occupational accidents in order to comply with GRI and enable comparisons outside Solvay. These are as follows:

- Occupational accident: a work-related unexpected and undesirable event resulting in damage or harm, namely injury or illness. Accidents on the way to or from home are not considered as work-related unless the worker was traveling for Solvay at the time of the accident.
- Lost Time Injury or Illness (LTII): a work-related injury or illness that results in a work interruption of one or more days, not including the day of the accident.
- Lost Time Injury and Illness Rate (LTIIR): the number of LTIIs resulting from an accident per 200,000 work hours.
- Reportable Injury and Illness (RII): work-related injury or illness resulting from an accident with severity above first aid, according to US OSHA 29 CFR 1904.
- Reportable Injury and Illness rate (RIIR): the number of reportable injuries or illnesses per 200,000 work hours.

6.1.2. Management approach

Solvay requirements for implementing management systems on our sites are covered under section 3.3. Health, safety and environment management. The occupational health and safety management systems cover all Solvay employees, while external visitors, parcel delivery people and transport drivers not performing loading or unloading onsite fall outside the scope. In addition, our safety management system applies to contractors.

Hazard identification and risk assessments are performed according to Group procedures, which define minimum requirements for methods and the hierarchy of controls. They cover the following topics or activities:

- chemical hazard communication;
- chemical risk assessment and management;
- hearing conservation (noise exposure management);
- prevention of legionellosis;
- managing asbestos in buildings and facilities;
- respiratory protection equipment;
- group requirements for occupational health;
- minimum safety requirements for lifting;
- working at height;
- working on powered systems;
- line breaking;
- working in confined spaces;
- working in an explosive atmosphere;
- lifting;
- excavation;
- traffic;
- personal protective equipment (PPE);
- work permits;
- management of change (MOC);
- contractor management.

All procedures contain training requirements, guidelines and on-boarding presentations for use in implementation on our sites. Quality, evaluations and process improvements are ensured through the sites' management systems. Site reporting processes identify unsafe situations, near-misses, incidents or accidents, as well as those cases with potentially high severity, and also set guidelines for investigating incidents and taking corrective actions.

Industrial hygiene (IH) ensures hazards are identified and eliminated. Risk assessments are performed in collaboration with occupational health experts. Occupational physicians perform risk-based medical surveillance, provide advice on improving and adapting working conditions, and promote physical and mental health. All these processes contribute to managing and minimizing risks at work.

On the shop floor, workers collaborate with industrial hygienists on risk assessments using SOCRATES (Solvay Occupational Risk Assessment Tool for Employees). This tool gives widespread, easy access to IH methods, tools and databases, consistently performs and documents IH risk assessments and enhances traceability of an individual's potential exposures throughout their working life. Workers are informed of their work-related risks by supervisors, industrial hygienists and occupational physicians or nurses.

Formal joint management–worker health and safety committees are established on our sites according to country legislation. Solvay also contributes to complementary health insurance, for which the terms vary according to the country.

Initiatives to promote health are taken at site level, in collaboration with local physicians and nurses. Examples of such initiatives include nutritional advice, cardiovascular prevention programs, general check-ups and fitness sessions led by trainers. During 2021, multilingual communication campaigns strongly promoted Covid-19 vaccination at Group level.

6.1.3. Indicators

Improvements in occupational health and safety indicators result from the safety culture approach implemented to protect everyone working at Solvay. This approach is explained in the Risk Management chapter of this Annual Integrated Report.

Solvay started recording reportable injuries and illnesses on July 1, 2020.

The reporting scope covers all sites under Solvay's operational control for which the Group manages and monitors safety performance. This includes our manufacturing, research and innovation and administrative sites, as well as a series of closed sites with limited activities, and covers Solvay employees and contractors working on these sites.

NUMBER OF ACCIDENTS

	Units	2022	2021	2020
Fatal accidents - Employees	Number	0	0	0
Fatal accidents - Contractors	Number	1	0	0
H-RII - Employees	Number	11	8	6
H-RII - Contractors	Number	5	19	3
H-RII - Employees and contractors	Number	16	27	9
RII - Employees	Number	73	90	-
RII - Contractors	Number	34	41	-
RII - Employees and Contractors	Number	107	131	-
LTII - Employees	Number	33	44	26
LTII - Contractors	Number	23	24	16
LTII - Employees and contractors	Number	56	68	42

Note: RII was introduced in mid-2020. In previous years, definitions of reportables were specific to Solvay and therefore cannot be compared.

HOURS WORKED

	Units	2022	2021	2020
Work hours - Employees	1,000 hours	42,362	42,967	45,359
Work hours - Contractors	1,000 hours	20,493	18,622	16,577
Work hours - Employees and contractors	1,000 hours	62,855	61,589	61,936

Employees' work hours are based on the sum of the full time equivalents per country multiplied by the respective country coefficients. These coefficients are an average of worked hours per employee per year calculated in 2018 in several countries. For the countries where no coefficient value was calculated, as no accurate data was available, the same coefficient of 2,000 hours is applied. Contractors' work hours are reported monthly by all sites.

ACCIDENT FREQUENCY RATES

	Units	2022	2021	2020
H-RIIR - Employees	Accidents per 200,000 hours worked	0.05	0.04	0.03
H-RIIR - Contractors	Accidents per 200,000 hours worked	0.05	0.2	0.04
H-RIIR - Employees and contractors	Accidents per 200,000 hours worked	0.05	0.09	0.03
RIIR - Employees		0.34	0.42	-
RIIR - Contractors		0.33	0.44	-
RIIR - Employees and Contractors		0.34	0.43	-
LTIIR - Employees	Accidents per 200,000 hours worked	0.16	0.20	0.11
LTIIR - Contractors	Accidents per 200,000 hours worked	0.22	0.26	0.19
LTIIR - Employees and contractors	Accidents per 200,000 hours worked	0.18	0.22	0.14

Note: RIIR was introduced during 2020, making 2021 the first full year of application of the OSHA metrics.

One fatal accident occurred in 2022 in a laboratory at the Piedmont, South Carolina site in the US, when an operator was engulfed in a fire generated by a flammable material ignited by a heat gun. The number of high severity accidents, however, decreased significantly in 2022, with a rate of 0.05 compared to 0.09 in 2021.

The Group objective of an RIIR below or equal to 0.34 for 2022 was achieved. This marks good progress, improving on the 2021 result of 0.43 despite higher production demand.

This performance is the result of the following actions implemented in 2022:
- ensuring that not only site but also Group safety results were communicated to front-line workers, in order to increase awareness of the shift in performance;
- site leadership, including front-line leaders, spending more time in the field;
- providing support, through physical presence, on selected sites, to help identify risks and provide coaching;
- re-energizing campaigns relating to the Solvay Life Saving Rules;
- implementing Competency and Complacency training;
- sites must share their HSE performance and commitment at Solvay's Executive Leadership Team meetings.

Industrial hygiene (IH)

A key aspect of our approach to protecting health is the systematic assessment and management of workers' potential exposure to ergonomic, chemical and physical hazards. Global industrial hygiene (IH) procedures define minimum requirements for Solvay's IH risk assessments and management strategies, including the hierarchy of controls. The IH program encompasses:
- Comprehensive chemical inventories established and reviewed at site level, with screening and priority ranking of substances that carry potential health impacts.
- Solvay Acceptable Exposure Limits (SAELs) developed internally for insufficient or outdated established Occupational Exposure Limits (OELs).
- Occupational Exposure Banding (OEB) in cases where no established OEL exists or there is limited toxicological data. Solvay's OEB approach provides a simple, quick and easy-to-understand hazard ranking.
- Implementation of SOCRATES, a new global tool, at identified sites. We expect to complete this process by the end of 2022, ensuring:
    - widespread and easy access to IH methods, tools, and databases;
    - consistent performance and documentation of IH risk assessments;
    - enhanced traceability of an individual's potential exposures throughout their working life.
- Established KPIs that allow for identification and tracking of the completion of site chemical and noise risk assessments.

Occupational Health

Key indicators for occupational health are:
- Occupational diseases: the incidence rate and causes of disease are used to define preventive and corrective actions.
- Advanced risk-based medical surveillance rate: used to assess that our medical surveillance is effective.
- Human biomonitoring indicators: used where applicable to assess chemical exposure and suggest preventive actions.
- Stress prevention and well-being at work (see chapter 6.2.2 of this Annual Integrated Report): used to identify main causal factors and launch action plans at site and Group levels.
- Health promotion: promoting a healthy lifestyle at work and beyond.

RECOGNIZED OCCUPATIONAL ILLNESSES

	Units	2022	2021	2020
Occupational illness frequency rate (OIFR)	per million hours worked	0.17	0.23	0.49

OIFR is the total number of recognized occupational illnesses recorded per million hours worked. It covers Solvay workers who are active, retired or have left the company and takes into account all recognized occupational diseases, not only short- or mid-latency diseases as reported in previous years. In 2022, six of the seven recognized occupational diseases were in retired workers, related to past asbestos exposure. One case of musculoskeletal disease was found in an active worker.

RECORDABLE OCCUPATIONAL ILLNESSES BY TYPE

	Units	2022	2021	2020
Hearing disorders	Number	2	0	3
Musculoskeletal diseases	Number	2	2	5
Other non-carcinogenic diseases	Number	1	1	9
Asbestos-related diseases and cancers	Number	29	17	25
Other cancers	Number	1	1	5
Not specified/Unknown	Number	0	0	0
Total	Number	35	21	47

The figures in the table above relate to recordable work-related illnesses contracted by Solvay employees who are active, retired or have left the company.

Advanced Risk-Based Medical Surveillance

A site is considered as performing Advanced Risk-Based Medical Surveillance if all the following criteria are fulfilled:

- The Chemical Risk Assessment completion rate is at least 30%. This is the ratio of the total number of Chemical Risk Assessments, both inhalation and dermal, completed by the site within the last five years, to the total number of Chemical Risk Assessments to be conducted based on the Chemical Risk Assessment List established by the site.
- The site regularly communicates identified potential occupational risks to the Medical Service provider.
- At least 70% of the employees scheduled for Risk-Based Medical Surveillance during the year have completed their medical visit.

In 2022, 57.5% of our manufacturing and research and innovation sites fulfilled all the above criteria, while 49.2% of sites went a step further by fulfilling this criteria and achieving Chemical Risk Assessment completion rate of at least 50%.

Human biomonitoring of exposure

Human biomonitoring (HBM) of exposure involves measuring the concentration of a substance or its metabolites in human fluids, such as blood or urine. It can be used to assess exposure to specific chemicals and helps to verify whether protective measures are effective.

In 2022, 19 sites performed HBM of exposure, for 36 different chemicals (substances or groups of substances).

HUMAN BIOMONITORING (HBM) OF EXPOSURE

	Units	2022	2021	2020
Sites performing HBM of exposure	Number	19	19	25
Sites with at least one result above the Biological Limit Value (BLV)	Number	0	0	1

For sites that had results above the biological limit values, action plans were put in place to reduce the exposure levels.

Health promotion

In 2022, communication material on health promotion was deployed to all our sites. Topics included healthy nutrition, physical activity, sleep and recovery, alcohol abuse and tobacco cessation. At 89% of our sites, health and well-being topics were covered during our Health and Safety Days events. In addition, survey results show that 90% of our sites report active promotion and support for the health and well-being activities listed in the following table:

Health and well-being topics during the Health and Safety Days	89%
Permanent multidisciplinary committee that sets and follows actions on Well-being at Work	57%
Training sessions on Well-being at Work for employees	62%
Training sessions on Well-being at Work for leaders	48%
Promotion of physical activity	48%
Promotion of balanced nutrition	42%
Promotion of good sleep and recovery	31%
Prevention of cardiovascular risk	34%
Prevention of tobacco consumption	23%
Prevention of addictions	26%
Prevention and screening for cancer	25%
Seasonal flu annual campaign	64%

6.1.4. Key achievements

Well-being at work training has been provided to employees on resilience, and to managers on leading with a well-being mindset (see details in chapter 6.2.2 of this Annual Integrated Report).

New standards on ergonomics have been set by a multidisciplinary working group that included representatives from Industrial Hygiene and Occupational Health.

6.2. Employee engagement and well-being

GRI DISCLOSURES 2-30 3-3 401-2 403-4 407-1
MATERIALITY: HIGH
SDG 3 8

6.2.1. Definitions

Employee engagement is the level of commitment, passion and loyalty an employee has toward their work, team and company. Solvay believes that engagement increases performance through higher productivity and employee retention and that engagement is fostered by fair labor practices and well-being at work.

A constructive relationship with employees and their representatives, built on trust, is considered the basis of fair labor practices at Solvay. This relationship reflects the Group's commitment to respect employees' fundamental human rights and guarantee their social rights.

Well-being at work is a holistic concept which relates to all aspects of the quality of working life that ensure workers are safe, physically and mentally healthy, satisfied, engaged and efficient. It addresses recognition and support, work-life balance, employee growth and development, and good communication and collaboration, based on International Labor Organization and World Health Organization definitions.

6.2.2. Management approach

ONE Pulse

Employee engagement is measured through confidential surveys open to all employees. This includes global surveys as well as local initiatives, such as "Voice of the People'' surveys. The results of our surveys enable the Group, local management and all operational managers to identify strengths and areas where the working environment and employee experience can be improved.

In 2022, we continued our series of short quarterly surveys, known as One Pulse surveys. Available in 14 languages, the One Pulse surveys enable us to listen to the feedback and opinions of Solvay employees around the world. This not only promotes a feedback culture, where everyone can safely share their opinions and have open conversations with their team and leaders, but also helps to improve employee experience at work. Our objective was to equip leaders at all levels in the organization with insights about the well-being and experience of their team, foster open dialogue and ensure continuous improvement throughout the year.

We also ran the second edition of our anonymous inclusion survey, which we combined for the first time with an extensive group-wide well-being diagnosis, based on HERO (HEalthy and Resilient Organizations). HERO is a scientifically-validated model from the positive organizational psychology approach developed by the University of Jaume I, Spain. It was well received, with a response rate of more than 64%.

Better Life at Work

Since October 2016, a multidisciplinary Committee on Better Life at Work (BLAW) has been in place to define and promote a well-being at work (WBAW) program. It includes occupational physicians and psychologists, human resources experts, health, safety and environment experts, Global Business Unit representatives, and sustainable development experts, representing all regions.

In 2021, a new Better Life at Work program was launched, focused on three pillars:

- Governance: a multidisciplinary Better Life at Work Steering Committee, including representatives from our Human Resources (HR), Occupational Medicine, Health, Safety and Environment (HSE) and Sustainable Development Functions, and an employee representative. Solvay's Chief People Officer serves as the Sponsor.
- Observatory: the Better Life at Work Observatory includes indicators gathered from HR and HSE data, the Pulse surveys, and from diagnosis and assessment (see below). Managers can consult the indicators in the dashboard.
- Positive actions: These are defined using the information gathered through the Observatory. In 2022, training sessions on well-being at work were provided to employees and managers (see below).

For diagnosis and assessment, we have carried out pilots at three Solvay sites, one each in Europe, the Americas and Asia, in collaboration with the University of Jaume I in Spain. In 2022, we completed our diagnosis of the three pilots and applied what we had learnt to the whole Group by carrying out a HERODEI survey, which includes wellbeing at work (HERO model) and DEI (Diversity, Equity and Inclusion). This was conducted in November 2022, with a participation rate of 64.7% and will help us to assess which risk factors we need to address for well-being at work, as well as the positive factors that we can build on to create a sustainable Better Life at Work. A similar approach is being developed in the European H-Work Project, which aims to promote mental health in small and medium-sized enterprises and public workplaces, drawing on funding from the European Union's Horizon 2020 research and innovation program.

Managers can easily consult the indicators, which include hard data such as absenteeism, accidentability, turnover and diversity, through the Better Life at work dashboard. Made available from the beginning of 2022, this new dashboard complements an existing dashboard that includes all Pulse and Survey results existing from March 2021. In 2022, 752 leaders accessed the Better Life dashboard and 102 subscribed to training sessions on how to use it.

In 2022, well-being at work training was provided to employees on resilience, and to managers on leading with a well-being mindset, in collaboration with Empreinte Humaine. Around 1,150 employees attended the live webinars or workshops on resilience, which were available in ten languages, and 83% found them useful or very useful. All employees now also have access to this content on our intranet. Between October 2022 and the end of March 2023, workshops on leading with a well-being mindset are provided to leaders in all countries in 13 languages. In 2022, 275 leaders were trained in 30 sessions, covering topics such as healthy work, healthy leadership and providing healthy support to collaborators. More than 86% of leaders rated the workshop very useful. The remaining managers will be trained in 2023.

Regarding labor relations, discussions and activities are held at four levels: site, country, european and Group.

Solvay Global Forum

In 2015, Solvay created a global employee representative body, the Solvay Global Forum, composed of nine employee representatives from the main areas where Solvay operates, namely Europe, the US, China, Brazil, India and South Korea. Video conferences are held quarterly, bringing together the Solvay Global Forum and the Group's top management to comment on and discuss the Group's quarterly results and to keep everyone informed of the main new projects. Two agreements have been signed with the Solvay Global Forum: Global Performance Sharing 2022 and Solvay Cares, the latter of which extended maternity and co-parent leave to 16 weeks. In December 2021, the Group launched a Global employee shareholding initiative, that the Solvay Global forum wished to be an inclusive, simple and meaningful way to create sustainable shared value for all.

The Solvay Shares program is now open to employees around the world, irrespective of their position or grading. Employees get one free share and one additional free share for every two shares they own after a lock-in period. By mid-2023, 95% of our employees from 22 countries will be offered the possibility to buy shares, and get the same rights as every other shareholder. This program should increase employees' understanding of the Group's performance, as well as their sense of belonging.

European Works Council

We have been in permanent dialogue with our European Works Council (EWC) for more than 20 years. In 2022, the EWC met physically on three occasions and the EWC Secretariat met eleven times, either virtually or physically, with senior Group management, to help steer Solvay's evolution. The main topics discussed were reorganizations, actions taken by the Group to face the consequences of the Ukraine war, the support given to employees to cope with high inflation, the evolution of working conditions with the extension of mobile working, the Group Sustainable Development strategy and Solvay's financial results.

Solvay Cares

In February 2017 Solvay signed a global agreement guaranteeing a minimum level of welfare and healthcare protection for all Solvay Group employees worldwide. Solvay Cares was fully deployed in 2019 and aims to provide four major benefits:

- full income protection during parental leave, with 16 weeks for both parents;
- a minimum coverage of 75% of medical fees in the event of hospitalization or severe illness;
- disability insurance in the event of lasting incapacity;
- life insurance, including coverage for the family or partner.

An addendum to the agreement was signed in December 2021, introducing more flexibility for parents to enjoy parental leave according to family needs, and adding the Employee Wellbeing Support program, through which we committed to giving all employees access to confidential mental health support as from December 2021. From January 2023, globally-aligned standards of the Employee Wellbeing Support Program will apply, ensuring coverage not only for the employee, but also for all members of the employee's household.

The IndustriALL Global Union Framework Agreement

On December 17, 2013, Solvay signed a Corporate Social and Environmental Agreement for the whole Group with IndustriALL Global Union. This agreement is based on International Labor Organization standards and the principles of the United Nations Global Compact. It is a tangible expression of Solvay's determination to ensure that basic labor rights and the Group's social standards in the areas of health, safety and environmental protection are respected at all of our sites.

In March 2022, we renewed our Global Framework Agreement with IndustriALL. We strengthened the content of the agreement in several important areas, including teleworking rights, EU due diligence and UN binding treaty relating to the supply chain, just transition, skills transfer, and workers' rights to health and safety.

With this renewed and strengthened agreement, Solvay commits to respecting the international social standards defined by the International Labor Organization and the principles of the UN Global Compact, including in countries that have not ratified it, as well as the OECD Guidelines for Multinational Enterprises.

The four-year agreement includes serious commitments on due diligence along the supply chain. The agreement establishes a new working group of workers and management to investigate suppliers' respect for core labor rights and seek remediation where problems are found. Solvay commits to suspend contracts with suppliers that fail to remedy human rights and environmental abuses following warnings.

In 2022, IndustriALL representatives, together with Solvay management, visited three of our US subsidiaries in order to assess labor relations. It was an opportunity to confirm the positive working atmosphere, safety situation and industrial relations, and to identify areas for improvement.

6.2.3. Indicators

With regard to engagement and well-being at work, three recurring surveys and one special edition on diversity, equity, inclusion (DEI) and well-being were launched worldwide between March and November 2022, collecting an average of 13,000 responses or a response rate of around 60%.

Each survey is made up of between ten to 12 questions measuring well-being, safety and other dimensions related to employee experience, such as relationships with managers, remote working, Solvay behaviors and workload.

In the four surveys, employees were asked how they were feeling. The percentage of respondents feeling "OK or better" was over 70% on average, remaining relatively stable as compared to last year. In addition to our Employee Assistance Program, Solvay has put together a guide for managers to help them better support their teams and a flyer for all employees, available in multiple languages. These provide guidance and suggestions about where to turn for help and encouragement, in order to better support those employees who have reported feeling "less than OK".

DURING THE LAST FOUR WEEKS, IN GENERAL, HOW HAVE YOU BEEN FEELING?

	Units	Sep. 2021	Mar. 2022	Apr. 2022	Sep. 2022
OK or better	%	76	73	72	79
Less than OK	%	24	27	28	21

We also include three engagement questions in our One Pulse survey annually. This revealed that about 75% of employees were satisfied and proud to be working at Solvay and that about 70% would recommend the company as a great place to work.

Employee Representation Indicator

All Solvay employees are covered by a collective agreement. This is the Solvay Cares collective agreement with global employee representative body the Solvay Global Forum.

Trade unions are present at a majority of Solvay sites around the world. Union membership is estimated at 20% in Europe, 25% in South America, 30% in North America and 70% in Asia.

6.2.4. Key achievements

First Employee Share Purchase Plan launched with high level of subscription

For the first time in Solvay's history, the Group offered to employees the opportunity to become a Solvay shareholder by purchasing Solvay shares on preferential terms.

The Employee Share Purchase Plan is part of Solvay's employee engagement process. It recorded an exceptional participation rate of close to 28%, well above the best in class of 25%, clearly demonstrating the high level of engagement among Solvay employees and their commitment to our future. In total, 6,105 employees participated, ranging from operators to managers, with an average monthly investment of 180€. Like any other shareholder, Solvay's employees will now have the opportunity to better appreciate the Group's performance, and experience the risks and rewards of share ownership.

Our response to the Covid-19 crisis showed that people could work collaboratively from outside the office. As a result, we successfully launched a global mobile working policy, which has been deployed across 35 of our administrative sites in 19 countries. More than 7,500 employees are now working in a hybrid mode with both remote and onsite work.

During this period we continued to develop the framework used for meeting with our representatives in a hybrid mode. This involved face-to-face meetings where possible, but also making use of the flexibility offered by remote communication, especially in cases where a topic justified a shorter discussion or needed to be held at shorter notice.

6.3. Diversity and inclusion

GRI DISCLOSURES 3-3 405-1 405-2
MATERIALITY: PRIORITY
SDG 8

6.3.1. Definitions

Solvay defines diversity, equity and inclusion in the following way:

- Diversity: the representation of various identities and differences of individuals in a group.
- Equity: creating equal access to opportunity by recognizing the existence of advantages for some and barriers for others; promoting justice, impartiality and fairness within procedures, processes and distribution of resources by institutions and systems.
- Inclusion: actively and intentionally engaging people with different identities and enabling them to feel valued, able to fully contribute and be welcomed within a given setting.

Management categories are defined on the basis of the Hay Job Evaluation Methodology:

- Senior management: Hay points 924 and above.
- Middle management: Hay points from 531 to 923.
- Junior management: Hay points from 304 to 530.

6.3.2. Management approach

We have identified nine action plans to foster diversity, equity and inclusion by 2025:

Diversity:

- Accelerate gender parity at all mid and senior levels.
- Make our workplace more appropriate for people with disabilities.
- Develop Resource Groups to encourage employees to bring their "whole self" to work.

Equity:

- Assess if there are undesired pay gaps and close them.
- Ensure fair recruitment: all mid and senior level job openings to have a shortlist comprising 50% of under-represented groups, including women.
- Ensure equitable access to career opportunities and development: set up mentor/mentee programs starting with under-represented groups.

Inclusion:

- Build an inclusive employee experience: set up an Inclusion Index and improve our score.
- Assessment and development program for Solvay leaders to grow and nurture an inclusive mindset.
- Build a culture in which individuals feel empowered to speak out or speak up when they experience or witness non-inclusive behaviors.

6.3.3. Indicators

At Group level, we have identified five areas of focus for diversity, which receive specific attention and monitoring to ensure consistent improvement across the organization:

1. improving the gender mix at all levels of the organization;
2. leveraging the generational mix to optimize learning, knowledge and experience;
3. developing national and cultural talent that mirrors growth opportunities;
4. enriching the team mix by leveraging experiences and backgrounds;
5. measuring the ratio of base salary of women to men by management categories in our largest countries of operation.

Country- and site-specific actions are also crafted in response to the local context, through Solvay's sustainability network and best practices.

WOMEN IN SENIOR + MIDDLE MANAGEMENT

	Unit	2022	2021	2020
Senior and Middle management	%	26.5	25.0	24.7

GENDER DIVERSITY BY EMPLOYEE CATEGORY

	Units	2022	2021	2020
Women in senior management	%	17	16	15
Women in middle management	%	27	26	26
Women in junior management	%	35	35	34
Women in non-managerial positions	%	19	19	20
Total women in Solvay	%	24	23	24

AGE GROUP BY EMPLOYEE CATEGORY

	Units	2022	2021	2020
Senior management	headcount	303	328	364
Percentage under 30 years old	%	0	0	0
Percentage between 30–49 years old	%	28	29	27
Percentage 50 years old and older	%	72	71	73
Middle management	headcount	2,757	2,697	2,819
Percentage under 30 years old	%	0	0	0
Percentage between 30–49 years old	%	50	48	47
Percentage 50 years old and older	%	50	52	53
Junior management	headcount	5,015	4,743	4,993
Percentage under 30 years old	%	9	8	8
Percentage between 30–49 years old	%	66	65	65
Percentage 50 years old and older	%	25	27	27
Non-managerial	headcount	13,972	13,838	15,487
Percentage under 30 years old	%	13	11	16
Percentage between 30–49 years old	%	54	55	50
Percentage 50 years old and older	%	33	33	34

SOLVAY'S WORKFORCE BY AGE

	Units	2022	2021	2020
Under 30 years old	Number	2,230	1,976	2,928
Between 30–49 years old	Number	12,347	12,127	12,425
50 years old and older	Number	7,470	7,503	8,310
Total headcount	Number	22,047	21,606	23,663

According to the above table, the age structure is currently:
- 34% older than 50;
- 56% between the ages of 30 and 49;
- 10% younger than 30.

Solvay performs regular employee surveys, to take the pulse of its workforce. Once per year the survey is dedicated to measuring the feeling of inclusion and well-being. We also introduced questions allowing employees to self-identify, so that we could measure if there were any inclusion experience gaps. Based on the 2022 survey, which was answered by 64.6% of Solvay's workforce:
- 4% of respondents self identified as having a disability (visible or invisible, such as mental health challenges);
- 2% of respondents self identified as LGBTQ+;
- 8% of respondents self identified as a member of an ethnically under-represented group in the country that they live in.

RATIO OF BASIC SALARY OF WOMEN TO MEN BY MANAGEMENT CATEGORY

The table below represents the ratio of unadjusted (without correction for seniority) average pay between male and female employees where the average pay of male employees is 1.00:

Country	Junior management	Middle management	Senior management
Belgium	0.96	0.95	1.05
Brazil	0.90	0.94	ND**
China	0.94	1.08	ND**
France	0.95	0.95	0.97
Italy	0.95	0.90	0.87
US	0.94	0.98	0.97

***ND: not disclosed: too few data points in one or two measurement groups to make a statistically meaningful measurement.*

We created a statistically-sound model for computing an "expected salary" by country and job class, against which we measured pay gaps. On that basis a pay gap review was conducted for 951 employees that were identified as priority for manual analysis. When the pay gap could not be objectively justified by performance, seniority or another objective reason, it led to an off-cycle salary increase, performed in January 2023. This exercise was conducted in a gender neutral manner.

6.3.4. Key achievements

We set ourselves five priorities in 2022, which all showed very concrete results.

Root DEI in our organization

Our focus was on increasing the sense of accountability in the organization. We achieved this through the creation of an "homogeneity index", a new quarterly measure of the diversity of Solvay entities based on three dimensions: gender, age and nationality. In addition, we included the DEI roadmap in the Solvay One Planet part of the Short Term Incentive.

Our DEI and non-discriminatory policy was also updated and published.

Empower Employee Resource Groups (ERGs) to become change agents

There were a lot of activities in this area in 2022, with the launch of the European chapter of X Factor, our ERG empowering women, the launch of ADAPT, a brand new ERG for employees with disability, their caregivers and all their allies, and the creation of the Voice of Asia ERG, aimed at establishing mutual understanding between Asian and Western cultures.

All of the ERGs also came together during our first virtual ERG Convention, with 300 participants.

The critical role of the ERGs was recognized when our Senior Leadership Team signed a pledge in September 2022, committing, among other things, to take part in two ERG-organized events per year.

Offer impactful mentoring and training opportunities

Started in 2021, we continued our significant commitment to send 450 women through "the A Effect", an external development program designed for women. With 300 women participating in 2022, 22% of the targeted population – junior female managers – have now completed the program. We are now designing our first survey to measure the impact 18 months after the first cohort started.

External programs are not enough, so we complemented them with a structured mentoring offer, recruiting high level mentors that could serve as sponsors. Our focus is on mentees from under-represented groups, starting with women. In 2022, 128 mentees benefited from the formal program, on top of more informal mentoring already happening at Solvay.

Finally a custom, four-hour long, inclusive leadership workshop was designed for our leaders, and 38 internal facilitators were certified to provide it. In 2022, 200 people received this training, and the goal is to reach 500 people by June 2023.

Bring DEI to the shop floor

DEI was the topic of our fourth annual Citizen Day event, providing the perfect opportunity to bring the conversation on DEI to a maximum number of employees on the shop floor. It was a tremendous success, with close to 8,900 individuals from 103 sites participating in 320 global or site activities, amounting to a total of 14,700 participations, compared to 13,300 for last year's edition. Employee participation was converted into a €50,000 donation, which will be distributed among local charities in the 14 countries with the highest participation.

Reinventing progress

True to our heritage we aim to raise the bar when it comes to the positive social impact of our company. This year, our work on equitable pay has been particularly innovative, including voluntary disclosure of our gender pay gaps in our main country of non-hourly population, reporting of pay scales in the US on a national level and not only in the states that mandate it; and an internal pay equity exercise, complementing the external exercises already done based on comparatio.

Our CEO, Ilham Kadri, has been elected chair of the Business Commission Tackling Inequality group within the WBCSD and the Business 4 Inclusive Growth in order to combine the efforts of both groups and maximize their impact.

6.4. Recruitment, development, and retention

GRI DISCLOSURES 2-7 2-8 3-3 401-1 401-2 404-1 404-2 404-3
MATERIALITY: MODERATE
SDG 8

6.4.1. Definitions

Recruitment, development and retention provide data linked to talent management. This relates to how Solvay is attracting, retaining and developing talent and includes details on career management and access to training, coaching and mentoring that enables each employee to take the lead in developing their career and reaching their full potential.

Headcount refers to employees that have a contract with Solvay and are classified as active, as they have a position in the organizational chart. Full-Time Equivalent (FTE) corresponds to the working time capacity of active employees. Apprentices, trainees and students are excluded from our figures.

6.4.2. Management approach

Recruitment and retention

Of the 2,460 positions recruited externally in 2022, 864 were filled by employees aged below 30. The Group also welcomed 269 apprentices, 53 trainees and 226 students.

Onboarding newcomers

Of all newcomers who joined Solvay in 2022, 94.2% were satisfied with the hiring process and 98% of newcomers were satisfied with their decision to join the Group.

Learning and Development

AVERAGE HOURS OF TRAINING PER EMPLOYEE

By management level	Units	2022	2021	2020
Senior manager	hours	10.4	11.6	7.02
Middle manager	hours	12.8	13.3	5.29
Junior manager	hours	13.3	14.8	8.75
Non managerial	hours	12.7	15	14.27

AVERAGE TRAINING HOURS

By gender	Units	2022	2021	2020
Women	hours	11.5	15.2	11.87
Men	hours	14.3	14.5	11.92
Total		12.1		

Performance and development cycle

The performance and development cycle applies to the entire managerial population. It is also used by about 4,270 non-managerial employees, representing 27% of the non-managerial population. Local performance and development tools and processes are available for the population not covered by the performance and development cycle online tool.

6.4.3. Indicators

In 2022, Solvay's total headcount was 22,047 active employees. The number of Full-Time Equivalent (FTE) employees was 21,930. Apprentices, trainees and students are excluded from this figure.

SOLVAY'S WORKFORCE BY REGION

	Units	2022	2021	2020
Europe	Number	10,352	10,318	11,428
Women	%	25	25	26
Permanent staff	%	97	96	89
Asia-Pacific and rest of the world	Number	3,985	4,088	4,336
Women	%	26	25	25
Permanent staff	%	78	78	77
North America	Number	5,749	5,129	5,553
Women	%	20	20	21
Permanent staff	%	100	100	100
Latin America	Number	1,961	2,071	2,346
Women	%	20	19	20
Permanent staff	%	94	89	93
Total headcount	Number	2,2047	21,606	23,663
Women	%	24	23	24
Permanent staff	%	94	92	90

SOLVAY'S WORKFORCE

	Units	2022	2021	2020
By contract and by gender				
Permanent contract	Number	20,826	20,288	22,925
of which women	%	23	23	24
Temporary contract	Number	1,221	1,320	738
of which women	%	29	29	22
By employment type				
Full-time contract	Number	21,592	20,981	22,621
of which women	%	23	22	23
Part-time contract	Number	455	417	524
of which women	%	66	54	70
By employment category				
Senior manager	Number	303	328	364
Middle managers	Number	2,757	2,697	2,819
Junior manager	Number	5,015	4,743	4,993
Non managerial	Number	13,972	13,838	15,487
Total headcount	Number	22,047	21,606	23,663

HIRINGS

	Units	2022	2021	2020
By region				
Asia and rest of the world	Number	259	203	238
Europe	Number	996	749	847
North America	Number	189	488	273
Latin America	Number	893	151	342
By gender				
Male	Number	1,639	1,103	1,081
Female	Number	695	488	532
By age				
<30	Number	864	591	959
30–49	Number	1,265	845	597
>49	Number	208	155	129
Total hirings	Number	2,337	1,591	1,700

ALL LEAVES

	Units	2022	2021	2020
By region				
Asia and rest of the world	Number	270	475	365
Europe	Number	872	771	1,571
North America	Number	694	865	989
Latin America	Number	237	309	652
By gender				
Male	Number	1,472	1,724	2,450
Female	Number	600	695	1,123
By age				
<30	Number	361	392	1,253
30–49	Number	972	1,064	1,070
>49	Number	740	964	1,253
Total leaves	Number	2,073	2,420	3,577

VOLUNTARY LEAVES

	Units	2022	2021	2020
By region				
Asia and rest of the world	Number	162	236	207
Europe	Number	362	304	591
North America	Number	363	318	205
Latin America	Number	80	57	322
By gender				
Male	Number	688	628	828
Female	Number	278	287	497
By age				
<30	Number	220	213	594
30–49	Number	601	539	455
>49	Number	146	163	275
Total voluntary leaves	Number	967	915	1,325

6.4.4. Key achievements

In 2022, the Solvay Academy focused on accelerating development of the skills needed by Solvay both now and in the future. We also focused on expanding the use of learning technologies to offer learning opportunities to all Solvay employees. Some examples include:

Developing key capabilities through our Academies:
- The Solvay Leadership Academy was launched in 2022 to develop adaptable, collaborative and human-centered leaders to support Solvay's growth and transformation. Through the Leadership Academy, we offer learning journeys for all levels of leaders, in eight different languages. It is future-focused and utilizes innovative learning technology to support learning applications. In 2022, 1,215 leaders began their Leadership Academy journey. We also developed and leveraged 80 internal Solvay facilitators globally, who helped to facilitate learning through our Performance Accelerator Program.
- The Solvay Sales Academy helps our sales teams to strengthen their skills. Our efforts to continue developing our commercial offensive in 2022 included rolling out 20 different courses, both e-learning and instructor-led sessions, to more than 900 sales people.
- Functional Academies supported the development of technical and functional skills, through e-learning and instructor-led courses.

Helping employees to own and drive their development and career:
- Solvay offers all employees the opportunity for guided self-reflection and practical resources to accelerate their career through the Career Catalyst Program. The program, which was available during 2022, helps employees to shape their career vision and skilling strategies through digital learning content and live sessions.
- Employees have access to a pool of internal coaches and mentors, and can also develop by contributing to a project.

Leveraging digital learning technology:
- In 2022, Solvay employees spent a total of 17,004 hours on developing their skills using the digital learning platform ELearn More. This equates to an average of 2.4 hours per person.
- Language development remains available to all employees, as well as to their families, through the digital tool Rosetta Stone, which offers 14 languages. In 2022, 1,209 employees and their family members made use of this resource.

6.5. Customer welfare

GRI DISCLOSURES 3-3
MATERIALITY: HIGH
SDG 3

6.5.1. Definitions

The Net Promoter Score (NPS) is the indicator used to measure customer loyalty for each of Solvay's Global Business Units. The metric was developed by, and is a registered trademark of, Fred Reichfeld, Bain & Company and Satmetrix. GBU scores are consolidated at the Group level through a revenue-based weighted average.

The Net Promoter Score is calculated based on customer responses to a single question: "How likely is it that you would recommend our company to a friend or colleague?" Answers can range from 0 to 10. Those who respond 9 or 10 are called Promoters and considered likely to exhibit value-creating behaviors, making positive referrals to other potential customers. Those who respond with a score from 0 to 6 are labeled Detractors and are not supportive. Those who give a response of 7 or 8 are labeled Passives. The Net Promoter Score is calculated by subtracting the percentage of Detractors from the percentage of Promoters.

Solvay uses the Net Promoter System[SM] methodology to boost customer loyalty by promoting a culture of customer feedback and by developing active listening skills at every single touchpoint in the customer journey. The objective is to go far beyond "just a score", toward a deep transformation of the Group by fostering a more customer-centric culture.

The Net Promoter System[SM] is structured around two pillars, allowing us to gather insights at both the strategic and operational levels. The objective of the first and more strategic stage is to identify and further reinforce the areas where the Group truly stands out against the competition in order to raise customer loyalty and accelerate growth. The second, more operational, stage captures how customers perceive our offer from a day-to-day perspective. These key insights trigger tangible action plans – both account-specific and at the GBU level – to bring Solvay closer to our customers and better serve them by delivering more suitable and efficient services.

6.5.2. Management approach

Since 2014, each GBU has conducted a customer satisfaction survey at least once every two years to check their strategic alignment with the trends in their business environment. The aim is to identify and select the right areas for each GBU to focus on, as well as to foster differentiation and accelerate growth.

The Net Promoter Score has been selected as the key indicator of customer loyalty for the Group. It is measured at the Global Business Unit level, consolidated at the Group level and published annually.

In 2018, Solvay decided to take this approach to the next level by launching the Net Promoter SystemSM, aimed at transforming the work practices of the entire frontline population across all GBUs and geographies. This ensures that a customer feedback culture is embedded in our DNA.

The insights gathered from our customers trigger action plans, allowing us to continuously adapt our value proposition to better serve our customers and increase our share of wallet.

6.5.3. Indicators

In 2022, Solvay focused on getting feedback from our key customers, ensuring their customer experience could be improved at all levels of the organization.

Additionally, 2,300 surveys were sent to Materials customers. For Speciality Polymers, the score was stable compared to 2019, while Composite Materials recorded a decrease, mainly due to disruptions in the commercial aviation supply chain as a result of the rebound following the Covid crisis.

The Materials GBU is conducting a root cause analysis and defining an action plan in order to address customers' key areas of concern and reinforce key recommendations.

	Units	2022	2021	2020
Solvay's Net Promoter Score (NPS)	%	26	32	NA

ECOVADIS ASSESSMENT

About 150 customers, representing more than 25% of Solvay's sales, use EcoVadis to assess Solvay's performance as a supplier. The EcoVadis sustainability assessment methodology is an evaluation of how well a company has integrated the principles of sustainability and Corporate Social Responsibility (CSR) into their business and management system.

Solvay is in the top 2% of companies rated by EcoVadis in the manufacture of basic chemicals, fertilizers and nitrogen compounds, plastics and synthetic rubber in primary forms industry.

SOLVAY'S ECOVADIS SCORE

	Units	2022	2021	2020
Environment	%	70	70	70
Labor and Human Rights	%	80	80	80
Ethics	%	80	70	70
Sustainable Procurement	%	70	80	80
Overall score	%	75	75	75

6.6. Corporate citizenship

GRI DISCLOSURES 3-3 413-1
MATERIALITY: HIGH
SDG 17

Solvay's Corporate Citizenship program is our guide to making a positive impact on society at large, and our stakeholders: partners; employees; investors; local communities; customers; and others. The contributions we make are derived from our technologies, solutions, and innovations, as well as our spirit of service and giving. Disclosure of Solvay's indirect economic impact is provided in this section.

6.6.1. Definitions

Solvay remains deeply committed to philanthropic endeavors through our contributions to worldwide societal challenges, supporting projects in three distinct areas: Protecting the Planet; Nurturing Innovation; and Fostering Education. Our initiatives in each of these three categories are closely aligned with our business, including our active involvement in several flagship endeavors that truly reflect the way we partner with our stakeholders.

6.6.2. Management approach

The Corporate Citizenship Steering Committee is composed of five members and chaired by Solvay's Chief Executive Officer. The Committee gathers three times a year, approves budgets and decides on projects costing €50,000 or more.

Business Programs for Social Needs are programs that generate business value through addressing social needs. These programs fall under the governance of the relevant GBU. Examples include the Sustainable Guar Initiative, managed by Novecare, and the Sustainable Vanilla Initiative, managed by Aroma.

Site directors are accountable for developing and implementing each site's societal actions plan. This involves assembling a dedicated working group including the site director, HR manager, communication manager,local sustainability correspondent and employee representatives. Employee initiatives are encouraged and supported. An example of this is our Citizen Day actions: the concept is proposed by the Corporate Citizenship committee, but implemented by the individual sites.

6.6.3. Indicators

Citizen Day 2022

Citizen Day gives Solvay employees around the world the opportunity to engage in actions with local communities. The event was created by our CEO, Ilham Kadri, in 2019 to reinforce our purpose – we bond people, ideas, and elements to reinvent progress – and encourage employees to act as one team for one planet.

Diversity, equity and inclusion (DEI) was the theme of our Citizen Day in 2022. The event provided a unique opportunity for Solvay employees to reconnect, raise awareness on this topic and take actions to create more inclusive workplaces and communities.

Key figures from Citizen Day 2022 include:
- 14,700 participations;
- 320 activities;
- 105 participating sites;
- €50,000 raised and donated to DEI-related NGOs.

Citizen Day activities took place at global, site, team and individual levels, and in both virtual and in-person formats, with many involving partners and NGOs. We also encouraged employees to get involved with the local community and speak up against non-inclusive behaviors.

Local societal actions in 2022

Solvay defines societal actions as “a volunteer activity developed by a site, a business unit, or at corporate level, having a positive societal impact on at least one of the United Nations Sustainable Development Goals”.

In 2022, on the basis of voluntary reporting, 84 sites reported that more than 6,000 participants had participated in societal actions, while noting that an employee may have participated in several actions.

The total amount donated through societal actions is around €235,000, on the basis of a voluntary reporting.

	number of sites reporting participation	number of participations	donation (k€)
APAC	14	489	30
EMEA	35	3956	61
LATAM	7	645	80
NAM	28	1053	60

In the Asia Pacific (APAC) zone, in addition to financial support, several actions were dedicated to education, mentoring and training students and children.

In the Europe, Middle East and Africa (EMEA) zone, various actions supported homeless people, through food donation, collection of equipment to furnish rooms and apartments, clothing donations and donations of primary needs goods.

In the Latin America (LATAM) zone, several actions were focused on providing various donations and gifts at Christmas time.

In the North America (NAM) zone, some plants opened their doors to the local community and students were offered training programmes.

Stop Office Waste Programme

As part of Solvay One Planet, we launched the Stop Office Waste project. The project aims to ensure that Solvay becomes a paperless, single-use plastic free and zero food waste company by 2030.

In 2022, 34% of printers were eliminated from offices allowing €462,000 in cost savings. Fifteen sites are now single-use plastic free and 23 sites are recycling biodegradable waste.

GirLS are leading the way!

Girls Leading in Science (GirLS) is the name of a special competition initiated by women scientists from Solvay Research and Innovation in Belgium. It aims to inspire young people, and more specifically girls, to pursue higher education in a scientific or technological field.

Conducted in two stages, the competition consists of a pre-selection phase and a final. During pre-selection, 35 students were chosen based on their short video submissions, in which they discussed the scientific or technical subject of their choice. Projects were submitted by a total of 12 applications (in-group), representing the three regions of Belgium.

For the final, the 2022 contestants had to demonstrate their creativity and scientific skills while, in groups, brainstorming on a fascinating theme: “What if the earth let go of its spin around the sun?". The winning team received the prize of having their first-year tuition paid for scientific or technical studies at university.

6.6.4. Major projects

Solvay Solidarity Fund support

In 2022, Solvay continued to support employees and local communities in need through the Solvay Solidarity Fund (SSF), assisting more than 50 projects in 14 different countries. Originally set up to help employees cope with hardship caused by the Covid-19 pandemic, the Fund now also addresses other kinds of hardship. Our major focus in 2022 was on supporting those affected by the war in Ukraine. We donated around €1.5 million to a number of initiatives organized at global and site levels:

- The SSF supported the Ukraine crisis operation led by the **Belgian Red Cross** with €1 million, making it possible to strengthen Red Cross international operations on Ukrainian soil and logistical support activities in Belgium to benefit people fleeing Ukraine.
- **BEforUkraine,** a Belgian nonprofit, brings humanitarian, material and logistics aid to Ukrainians, both in Ukraine and in Belgium. Money from the Fund and employee donations paid for two ambulances with specialized medical equipment.
- In **Hospital No. 6 in Kiev,** money from the Fund supported the launch of a training program for medical teams dealing with the treatment of war rapes.
- **Solvay sites** around the globe were encouraged to translate corporate actions into local initiatives using money made available through the SSF. Sites worked with their local communities to provide much-needed aid and assistance for relief efforts or to provide more direct support for Ukrainian refugees in the local area. Some examples include:
  - In Rheinberg, Germany, Solvay employees converted apartments located at the site into housing for refugees.
  - In Poland, employees worked with the local city hall to identify and collect the items most needed by refugees in the area.
  - Employees in Lyon, France, joined the effort, collecting vital aid that was transported to our site in Poland.

Solvay was named as one of the winners of the 2022 CEFIC European Responsible Care Awards in the category of Humanitarian Aid, in recognition of all our efforts to help those most affected by the conflict.

The Science For the Future Solvay Prize

The Science for the Future Solvay Prize recognizes major scientific discoveries with the potential to shape chemistry in the future and advance human progress. Created in 2013, this prize perpetuates Ernest Solvay's lifelong support of, and passion for, scientific research. Our objective is to endorse key research and highlight the essential role of chemistry, both as a science and an industry, in helping to solve some of the world's most pressing issues.

The 2022 Science for the Future Solvay Prize was awarded to Katalin Karikó, Adjunct Professor at the University of Pennsylvania, in the US, and Professor at the University of Szeged, in Hungary, for her work on the biochemical modification of synthetically produced messenger RNA (mRNA), which has enabled the rapid development of vaccines. Her research was most notably used by Pfizer/BioNTech and Moderna to build Covid-19 mRNA vaccines, which have saved many lives. It could also help fight other diseases like cancer, or infection from influenza, malaria or HIV in the future. Professor Karikó has dedicated her 40-year career to using RNA as a therapeutic, with chemistry as a key element to modify the mRNA to avoid the risk of rejection by the immune system.

CommonLit: making literacy education in the US accessible for everyone

CommonLit is an American nonprofit EdTech organization dedicated to ensuring that all students, regardless of background and socioeconomic status, graduate with the reading, writing, communication and problem-solving skills they need to be successful in university and later life. To accomplish this goal, CommonLit has developed an innovative digital literacy program that helps teachers advance their students' literacy through a high-quality digital curriculum, analytic dashboards that track student growth and personalized support for students.

Solvay supports CommonLit's work with financial commitments made through the Epic Foundation, a global organization connecting nonprofits creating solutions to today's pressing challenges with individuals and businesses who want to drive positive change. This important three-year investment will support schools in 55 zip codes in the US, going hand-in-hand with our broader commitment to invest in local communities and support science careers.

CERN: fostering interest in STEM and STEM careers

The CERN-Solvay Education Program was launched in January 2022. Designed to foster interest in science, technology, engineering and mathematics (STEM) and STEM careers, the program combines both online and onsite learning at CERN, starting with education content aimed at a global online audience and progressing to an opportunity for students to engage more deeply with research at CERN.

The program is part of the education portfolio of Science Gateway, CERN's new flagship project for science education and outreach. The program has three levels:

- Level 1: Online social media education content.
- Level 2: Online courses for high school students.
- Level 3: Onsite international Solvay camp.

SPARKOH!: promoting jobs in STEM fields for high school students

As part of our efforts to encourage younger generations to get involved in STEM subjects, Solvay is supporting SPARKOH!, a science adventure park near Mons in Belgium, with the mission to arouse curiosity and get people asking questions about scientific and technological topics relevant to society.

The main focus of Solvay's support is the museum's You Tomorrow: the jobs of the future exhibition. Aimed primarily at high school students, this exhibition profiles hundreds of jobs in the STEM field and allows visitors to discover the skills needed for these professions in an interactive and engaging space.

RAHS Green Energy Team, a solar car project based STEM initiative

Raisbeck Aviation High School (RAHS) is a nationally ranked public high school in the US, with a STEM curriculum focused on aviation and aerospace. The school's Green Energy Team is an extracurricular immersive experience, in which students use advanced materials and batteries to create a high-performing solar car to compete in a national-level high school race: the Solar Car Challenge. For the students involved, the Challenge is a unique opportunity to gain experience in many different areas, including technical, electrical, mechanical and computer skills, and knowledge of business and communication.

Accompanying the RAHS Green Energy Team as they collaborate on this renewable energy engineering project is fully aligned with our Purpose. The team finished first in their category for the third year in a row and with new records to show for it.

Ellen MacArthur Foundation

In January 2018, Solvay and the Ellen MacArthur Foundation signed a three-year Global Partner agreement that gives the Group an opportunity to make a difference in accelerating the transition to a circular economy in the chemicals sector.

Sustainable Guar Initiative

Solvay is the world's leading producer of guar derivatives. Guar is a drought-resistant legume grown in semi-arid areas, predominantly in India. Rajasthan accounts for approximately 70% of the country's production.

Since 2015, Solvay has been spearheading a large-scale development initiative to make guar cultivation more sustainable, while boosting the incomes of the farmers who produce it. In collaboration with L'Oreal and Henkel, two of our strategic customers active in personal care, and with the support of the NGO TechnoServe, the Sustainable Guar Initiative (SGI) has trained more than 7,000 farmers in Bikaner over four years, and developed more than 971 kitchen gardens in 36 villages.

The initiative's primary objective is to encourage sustainable and climate-smart agriculture, increasing farmers' revenues through good guar cultivation practices for seed selection, seed treatment, sowing and pest management. The initiative also empowers women through specific training on hygiene, health and nutrition, which enables us to:

- encourage better nutritional practices by growing vegetables in kitchen gardens in a region where the traditional diet is very limited;
- improve health and hygiene practices for the women and their children.

The initiative also focuses on agroforestry, with more than 66,000 trees planted to fight sand movement and soil erosion in the fields. In addition to this, trees are planted in communities and technical advice is provided, making 12 different types of fruit available to these communities.

As water is a rare resource in Rajasthan, a village pond with a capacity of 15.89 million liters was created, helping 150 households gain increased access to drinking water. Rooftop rainwater harvesting systems were also installed, collecting 8,000 liters of water used for the kitchen gardens.

We have also taken additional steps to advance this initiative by embedding blockchain in the SGI program. The roll-out has started and is already showing progress. With over 2,000 farmers now registered, blockchain is helping to strengthen the value chain by providing transactional transparency and provenance tracking:

1. Transactional transparency: validating each payment made to the farmer with transactional records such as quantity, cost, date, payout, date of payment and receipt of payment. The farmer – who is in fact the building block of the SGI – is now officially enfranchised into the supply chain.

   FIGURES [October 2021 to January 2023]

   Total transactions = 1,322

   Total volume of guar seed purchased = 17,600 Qunitals

   Total amount paid to farmers = 103,297,123 INR ($1,291,214)

2. Provenance: the blockchain immutability and provenance engine enables us to prove the "origin" of guar seed for every purchase made. It also enables us to maintain tamper-resistant traceability of guar seed right back to each farmer. The guaranteed inclusion of farmers in the process grants them the ability to negotiate, proof of sale, proof of payment and bankability.

   Farmers lack a recorded account of their finances, which is a barrier to gaining fiscal credibility. A complete history of the transactions conducted with a global supply chain on blockchain will significantly improve farmers credit scores over time. It represents a vital first step to achieving a banking identity, with easy access to microfinance and access to a favorable credit line with Agro-Input companies.

6.7. Hazardous materials

GRI DISCLOSURES 2-23 3-3 403-7 416-1
MATERIALITY: HIGH
SDG 3 6 12 14 15

6.7.1. Definitions

Product stewardship means managing risks throughout a product's entire life cycle, from the design stage to end of life. Risks include the possibility of injury or impact on health for a third party or damage to third party property arising from the misuse of Solvay products in a customer's plant or use in an application for which the product is not designed. Risk management is particularly important for products used in healthcare, food and feed applications.

6.7.2. Management approach

Solvay's Responsible Care policy requires the Group to:

- Maintain a comprehensive understanding of each product's hazards, risks and impacts related to all life-cycle steps and intended applications.
- Manage product knowledge so as to comply with local requirements on product information, while ensuring worldwide consistency.
- Keep records of all necessary and required product safety information to ensure availability throughout the full life cycle, beyond the commercialization period.
- Send standardized product safety data sheets to customers along with the first delivery and when required by local regulations. This key information is consistently maintained and distributed worldwide for all products to all customers, in compliance with local regulations and in the local languages.

In line with our Responsible Care commitment, we are constantly improving our knowledge of how Solvay products are used and the associated risks. The extensive knowledge this represents allows Solvay to characterize and manage risks related to product handling and to prioritize mitigation actions related to potential inappropriate use. The management of Safety Data Sheets reflects this commitment to ensuring the information on hazards associated with our products is readily available to our employees and customers.

Solvay ensures that our product portfolio complies with all the relevant regional and national chemical regulations such as REACH (Registration, Evaluation, Authorization and Restriction of Chemical Substances) in the European Union, UK REACH in the United Kingdom, K-REACH in South Korea, KKDIK in Turkey and TSCA in the USA.

In addition, Solvay has a strategy to decrease the use of Substances of Very High Concern (SVHC) in marketed products and more broadly throughout the entire value chain. We focus on the SVHC on the EU REACH authorization list (annex XIV) and EU REACH candidate list, but we also go beyond this, following an internal process in our operations worldwide. Specifically, we have set up our own reference list of SVHCs, the Solvay-SVHC and Substance Requiring Attention (SRA). This was established in 2015 and includes three categories:

- Black list Solvay-SVHCs: already undergoing a regulatory phase out process with a known deadline in at least one country or zone, or a restriction for uses relevant to Solvay.
- Red list Solvay-SVHCs: currently included in regulatory lists of substances that could enter into a process of special authorization or restriction in the medium term.
- Yellow list S-SRAs: substances requiring specific attention, such as substances under scrutiny by authorities, NGOs, scientists and industries due to their known hazardous properties or potential effects.

Risk studies and Analysis of Safer Alternatives (ASA) for red and black Solvay-SVHCs placed on the market are underway, and substances are replaced with safer alternatives where feasible.

New ASA covering newly-identified listed SVHC are being performed within three years. All current Analysis of Safer Alternatives are being reviewed every three years.

6.7.3. Indicators

SAFETY DATA SHEETS

Solvay currently places over 15,800 products on the market and produces safety data sheets (SDS) in 39 languages, as well as specific SDS for 63 countries. Product Stewardship programs give adequate information and technical assistance to customers, ensuring a good understanding of products and how to safely use and handle them. Each of our Global Business Units are responsible for ensuring that SDS are revised at least once every three years, or every time a substance undergoes significant modifications. Solvay manages product information centrally and as legislation continues to evolve the Group learns more about the conditions under which products are used, so as to record and assess any associated risks.

To make sure that customers are receiving new and updated Safety Data Sheets, and to limit the quantity of paper printed, Solvay uses an automatic system to send SDS by email. In 2022, this automated shipping function was activated for 99.8% of Solvay sales. This automatic delivery of the SDS was successful for 90.5% of shipments, where SDS were available for the delivery country and the customer's email address was also available. When errors occurred, SDS were emailed manually.

PRODUCT REGISTRATION

REACH is an advanced European framework regulation requiring companies to have detailed knowledge of substances, their hazards and risks during use. This knowledge must be collected and organized into reliable and systematic safety information that includes all uses and risks incurred along the value chain. Solvay fully complies with the extensive REACH requirements for product registrations. We have registered 812 dossiers and are the lead or sole registrant for 292 substances. In accordance with the Cefic Action Plan program, we are also dedicated to improving the quality of REACH dossiers.

Regular updates of dossiers are performed according to REACH obligations, either as new information becomes available or at the request of the European Chemical Agency (ECHA). In total, we have carried out 751 REACH updates on dossiers, with 91 in 2018, 152 in 2019, 142 in 2020, 236 in 2021 and 130 in 2022.

In addition, Solvay continues to adapt to new product regulations in many countries, notably to cope with emerging, REACH-like regulations in non-European countries. More specifically we have:

- registered 13 dossiers in 2019 and 23 in 2021 in the framework of Korean REACH and identified 22 potential lead dossiers for the next registration deadline in 2024;
- reported 381 substances or polymers to be registered in the framework of KKDIK Reach Turkey by December 31, 2022 and registered 11 lead dossiers;
- reported 5,222 substances in the framework of "existing chemicals" in the Eurasian inventory in 2020-2022;
- reported 275 substances in the framework of the National Chemical Inventory (NCI) of Vietnam;
- submitted 10 substances in the framework of the new Chinese MEE order N°12 in 2022;
- for UK REACH, Solvay successfully completed 136 grandfathering registrations, four new registrations and 2,003 Downstream User Import Notifications ('DUIN') within the relevant regulatory deadlines.

SAFER ALTERNATIVES FOR MARKETED PRODUCTS: BEYOND LEGISLATIVE REQUIREMENTS

Solvay is closely monitoring the SVHC on the EU REACH Candidate list and EU REACH Authorization list (annex XIV) by identifying all marketed products containing a concentration above 0.1% of those substances, sold not only in the EU but worldwide

We go beyond what is required by regulation, screening our own broader internal reference list of substances of very high concern (Solvay-SVHCs, as described above) for our products marketed worldwide.

	Units	2022	2021	2020
All Solvay-SVHCs[(1)] present in marketed products above 0.1% on a worldwide scope	Number	121	133	97
Analysis of safer alternatives required [(2)]	Number	142	152	130
Of which completed	%	63	45	51
Of which effective replacement achieved	%	36	30	31

(1) According to the black and red Solvay-SVHC lists. SVHCs manufactured by, or forming part of, the composition of products sold by Solvay worldwide.
(2) Analysis of Safer Alternatives for potential substitution for an SVHC. A substance may be present in more than one product.

Analysis of safer alternatives is required and planned for a total of 142 combinations of products and applications. Of the 89 analyses of safer alternatives completed as of December 31, 2022, since the start of the program:

- 32 have led to effective replacement, either through SVHC substitution or reduction below required threshold, or through stopping production.
- 28 are ongoing, meaning that an alternative has been identified and discussed with customers for implementation. For example:
    - strontium chromate and barium chromate: non-chromated alternative products proposed to customers and progressive switch ongoing for some identified applications;
    - sulfolane: reduction below required threshold for some grades.
- 29 have resulted in no available alternatives, either because no substitute is available, there are regulatory obligations to use SVHC for some applications, or because an alternative has not been requested due to the application in the final product. For example:
    - 4.4-Methylenedianiline: for some uses there is no possible substitution as these products are qualified for specific aerospace uses.

SOLVAY'S COMMITMENT TO PHASE OUT SUBSTANCES OF VERY HIGH CONCERN

Solvay has a target to phase out all substances of very high concern present in marketed products at a quantity of more than 0.1% by 2030, whenever feasible.

In 2022, Solvay announced the next step in our commitment to voluntarily phase out the use of fluorosurfactants globally: by 2026 we will manufacture nearly 100% of our fluoropolymers without fluorosurfactants, at our Spinetta Marengo site in Italy. One small product line, critical for the semiconductor and energy industries and representing less than 1% of production volume, will require further research and development to completely phase out the use of fluorosurfactants. A tightly-controlled, closed-loop and zero liquid discharge production process will be used for this production line.

The use of fluorosurfactants as process aids in the manufacturing of some fluoropolymers represents a global challenge for the industry. However, since 2019, Solvay has quadrupled our investment in research and innovation to develop new non-fluorosurfactant technologies. In July 2021, Solvay successfully discontinued the use of fluorosurfactants in the United States, where different products were able to be converted and qualified by customers.

As the phase-out of fluorosurfactants is being implemented, Solvay continues to introduce state-of-the-art technologies with the objective of eliminating fluorosurfactant emissions from our manufacturing. Solvay recently announced an investment of an additional €40 million in new technology at our Spinetta Marengo site to enhance our water treatment systems to ensure the removal of fluorosurfactant emissions to close to 100%, a level known as "technical zero".

6.8. Critical incident risk management

GRI DISCLOSURE 2-27 3-3
MATERIALITY: HIGH
SDG 3 12 13

6.8.1. Definitions

Solvay's reporting of Process Safety Incidents is aligned with the globally harmonized metrics from the ICCA (International Council of Chemical Associations) and Cefic (European Chemical Industry Council). The Process Safety Incident rate (PSI rate) corresponds to the number of Process Safety Incidents per 100 Full Time Equivalent employees, including employees and contractors and assuming 2,000 working hours per worker, per year. This rate is monitored and enables benchmarking with peers.

Transport Safety Incidents are incidents occurring during the movement of a chemical product such as:
- loading or unloading at a Solvay site;
- circulating inside a Solvay site in a vehicle, on the way in or out of the site;
- circulating on public roads, rail, air, inland waterways or sea;
- loading or unloading at an off-site location, if Solvay or a logistics provider contracted by Solvay is performing the loading or unloading.

6.8.2. Management approach

Process safety

Process Safety Management is a management system for designing and operating industrial processes that handle large quantities of hazardous chemicals. For preventing and controlling incidents in industrial processes, Solvay applies the Process Safety Management Principles on all industrial sites, regardless of whether the site is covered by regulatory requirements.

Key elements are:
- Completion of Process Hazard Analyses to identify high-risk situations. These are performed on each unit with a unique risk matrix to quantify the risk level of every potential accidental scenario, combining severity and probability factors.
- Activation of an Emergency Response Plan in case of severe incidents on site. Relevant internal and external parties are informed through the application of Solvay's crisis management procedure. If needed, the Corporate Crisis Cell (crisis alert duty 24/7) is also activated.
- Systematic analysis of each incident is carried out as soon as possible, in order to identify root causes and implement preventive actions to avoid similar incidents in the future.
- Central reporting of Process Safety Incidents. The incident severity – medium, high or catastrophic – is assessed by applying internal criteria, including consequences onsite or off-site, damage to the immediate vicinity and quantity of spilled material.
- Publication of process safety bulletins for significant incidents, distributed to all sites. These bulletins are used by the sites as support materials for safety talks to increase the process safety knowledge of employees.

Transport safety

The major goal of the Transport Safety Management system is a reduction in incidents that could lead to catastrophic consequences. The main elements are :
- regulatory watch and compliance with applicable transport regulations;
- training;
- selection process for Logistics Service Providers, based on hazard and risk assessment;
- operational management of day-to-day transport operations, including loading and unloading;
- emergency preparedness and response for levels 1, 2 and 3;
- incident reporting and investigation;
- auditing.

6.8.3. Indicators

Process safety

Solvay's target is to avoid any high or catastrophic severity incidents and to reduce the Process Safety Incident rate.

	Units	2022	2021	2020
Process Safety Incident rate	Medium or higher severity incidents per 200,000 hours worked	0.79	0.9	0.9
Process Safety Incidents with high or catastrophic severity [1]	Number	1	0	0

High or catastrophic severity: reversible injuries off-site, or irreversible injuries onsite, or reversible environmental damage off-site, or damage to equipment with direct cost above €2 million. Medium severity incident : first aid injuries off-site, reversible injuries onsite, or operating permit limits exceedance, fire, explosion, rupture of a piece of equipment with damage above €2,500, or chemical release with amount above the ICCA thresholds.

Employees' work hours are based on the sum of the full time equivalents per country multiplied by respective country coefficients. These coefficients are an average of worked hours per employee per year calculated in 2018 in several countries. For the countries where no coefficient value was calculated, as no accurate data was available, a coefficient of 2,000 hours is applied. Contractors' work hours are reported monthly by all sites.

In 2022, a Process Safety Incident with high severity (direct cost above €2 million) occurred at our site in Green River, in the US. A fire broke out during the night. No one was injured, but significant equipment damage occurred on three centrifuge pumps. The equipment is currently being assessed to understand the causes of this incident and the associated prevention actions that must be implemented.

	Units	2022	2021	2020
Process Safety Incidents with release to the environment	Number	25	30	26
of which with operating permit exceedance	Number	11	17	14
of which without permit exceedance	Number	14	13	12

This consolidated data is aligned with the scope for headcount for all operational sites, including research and innovation centers with significant chemical process risks, but excluding mines, quarries and laboratories without pilot plants.

In 2022, 25 process incidents with release to the environment were reported. Among those, eleven generated reportable cases of having exceeded an operating permit limit.

One significant incident with impact on the environment occurred on our site in Bernburg, Germany. A leak of ammoniated brine occurred in a pipe connecting two units. The liquid spread on the ground and was collected by the rainwater sewer. The ammoniated brine was discharged into the river Saale and about 300 fish died. Immediate and preventive actions have been implemented by the site to prevent this type of event from occurring again.

Transport safety

All medium, high and catastrophic transport safety incidents must be reported in the corporate reporting tool, with a detailed description and classification. Root cause analysis, including actions to prevent recurrence and lessons-learned bulletins are mandatory for all high and catastrophic severity incidents, and for medium severity incidents resulting in a fire or an explosion, as well as for HSPos (High Severity Potential) Incidents. These are low or medium severity incidents or near misses that might have been worse (high or catastrophic) if the circumstances had been slightly different.

TRANSPORT SAFETY INCIDENTS

	Units	2022	2021
Medium severity	Number	8	7
High severity	Number	0	0
Catastrophic	Number	1	1

The most severe incident reported in 2022 was:

- Catastrophic: during a delivery of a Solvay product, a truck driver had an accident with a pick-up which did not yield right of way to the truck. The tractor cab burned and the truck driver died.

7. GRI CONTENT INDEX

7.1. Statement of use and GRI 1 used

Solvay has reported in accordance with the GRI Standards for the period January 1, 2022 to December 31, 2022.

GRI 1 used: GRI 1 Foundation 2021.

Applicable GRI Sector Standards: not applicable.

For the Content Index - Essentials Service, GRI Services reviewed that the GRI content index is clearly presented, in a manner consistent with the Standards, and that the references for disclosures 2-1 to 2-5, 3-1 and 3-2 are aligned with the appropriate sections in the body of the report.

GRI CONTENT INDEX ESSENTIALS SERVICE 2023

7.2. GRI 2: general disclosures 2021

THE ORGANIZATION AND ITS REPORTING PRACTICES

Disclosure	Location	Omission
2-1 Organizational details	Financial statements: Note F1 Revenue and segment information, page 275 Note F43 List of companies included in the consolidation scope, page 367	
2-2 Entities included in the organization's sustainability reporting	Extra-financial statements: 2.1. Reporting frameworks, page 177 Financial statements: Note F43 List of companies included in the consolidation scope, page 367	
2.3 Reporting period, frequency and contact point	Reporting period: from January 1, 2022 to December 31, 2022 Frequency: yearly and aligned on financial reporting Contact point: investor.relations@solvay.com Publication date: April 4, 2022	
2.4 Restatements of information	Financial Statements: Consolidated Financial Statements: Main events and changes in consolidation scope during the year, page 260 Extra-financial statements: 2.1. Reporting frameworks, page 177	
2-5 External assurance	Auditor's report for the extra-financial statements, page 384	

ACTIVITIES AND WORKERS

Disclosure	Location	Omission
2-6 Activities, value chain and other business relationships	Sustainable Value creation: Value chain Performance: segments overview, page 102	
2-7 Employees	Extra-financial statements: 2.1. Reporting frameworks Extra-financial statements: 6.4. Recruitment, development and retention, page 238	
2-8 Workers who are not employees	Extra-financial statements: 6.4. Recruitment, development and retention, page 238	

GOVERNANCE

Disclosure	Location	Omission
2-9 Governance structure and composition	Corporate Governance Statement: Board of Directors and Board Committees, page 116	
2-10 Nomination and selection of the highest governance body	Corporate Governance Statement: Board of Directors and Board Committees, page 116 Charter of Corporate Governance, https://www.solvay.com/en/investors/corporate-governance	
2-11 Chair of the highest governance body	Corporate Governance Statement: Board of Directors and Board Committees, page 116	
2-12 Role of the highest governance body in overseeing the management of impacts	Charter of Corporate Governance https://www.solvay.com/en/investors/corporate-governance	
2-13 Delegation of responsibility for managing impacts	Corporate Governance Statement, page 110	
2-14 Role of the highest governance body in sustainability reporting	At a glance: about this report, page 2 Declaration by the persons responsible, page 392	
2-15 Conflicts of interest	Corporate Governance Statement: Functioning of the Board of Directors, page 121 Corporate Governance Statement: Introduction, page 112 Charter of Corporate Governance https://www.solvay.com/en/investors/corporate-governance	
2-16 Communication of critical concerns	Corporate Governance Statement: Functioning of the Board of Directors, page 121	
2-17 Collective knowledge of the highest governance body	Corporate Governance Statement: Induction and continuous Board training, page 124	
2-18 Evaluation of the performance of the highest governance body	Corporate Governance Statement: Evaluation, page 123	
2-19 Remuneration policies	Corporate Governance Statement: Compensation report, page 130	
2-20 Process to determine remuneration	Corporate Governance Statement: Compensation report, page 130	
2-21 Annual total compensation ratio	Corporate Governance Statement: Compensation report, page 130	

STRATEGY, POLICIES AND PRACTICES

Disclosure	Location	Omission
2-22 Statement on sustainable development strategy	For generations to come: Editorial, page 5	
2-23 Policy commitments	Extra-financial statements: 3.2. Management of the legal, ethics and regulatory framework, page 191 Extra-financial statements: 6.7. Hazardous materials, page 247	
2-24 Embedding policy commitments	Extra-financial statements: 6.8. Critical incident risk management, page 249 Extra-financial statements: 3.1 Solvay One Planet Guide, page 190	
2-25 Processes to remediate negative impacts	Extra-financial statements: 6.1. Health, safety and environment management, page 227	
2-26 Mechanisms for seeking advice and raising concerns	Extra-financial statements: 3.2. Management of the legal, ethics and regulatory framework, page 191	
2-27 Compliance with laws and regulations	Extra-financial statements: 3.2. Management of the legal, ethics and regulatory framework, page 191 Extra-financial statements: 6.8. Critical incident risk management, page 249	
2-28 Membership associations	Extra-financial statements: 3.7. Membership of associations, page 202	

STAKEHOLDER ENGAGEMENT

Disclosure	Location	Omission
2-29 Approach to stakeholder engagement	For generations to come: Editorial, page 5	
2-30 Collective bargaining agreements	Extra-financial statements: 6.2. Employee engagement and well-being, page 232	

7.3. GRI 3: material topics 2021

Disclosure	Location	Omission
3-1 Process to determine material topics	Extra-financial statements: 2.3. Materiality analysis, page 178	
3-2 List of material topics	Extra-financial statements: 2.3. Materiality analysis, page 178	

MANAGEMENT OF THE LEGAL, ETHICS AND REGULATORY FRAMEWORK (HIGH MATERIALITY)

Source	Disclosure	Location	Omission
GRI 3: Material Topics 2021	3-3 Management of material topics	Extra-financial statements: 3.2. Management of the legal, ethics and regulatory framework, page 191	
GRI 205: Anti-corruption 2016	205-1 Operations assessed for risks related to corruption	Risk management: Compliance and business integrity, page 161	
GRI 205: Anti-corruption 2016	205-2 Communication and training about anti-corruption policies and procedures	Extra-financial statements: 3.2. Management of the legal, ethics and regulatory framework, page 191	
GRI 205: Anti-corruption 2016	205-3 Confirmed incidents of corruption and actions taken	Risk management: Litigation, page 172 Extra-financial statements: 3.2. Management of the legal, ethics and regulatory framework, page 191	
GRI 206: Anti-competitive behavior 2016	206-1 Legal actions for anti-competitive behavior, antitrust, and monopoly practices	Risk management: Litigation, page 172	
GRI 406: Non-discrimination 2016	406-1 Incidents of discrimination and corrective actions taken	Extra-financial statements: 3.2. Management of the legal, ethics and regulatory framework, page 191	
GRI 415: Public policy 2016	415-1 Political contributions	Extra-financial statements: 3.2. Management of the legal, ethics and regulatory framework, page 191	

GREENHOUSE GAS EMISSIONS (PRIORITY)

Source	Disclosure	Location	Omission
GRI 3: Material Topics 2021	3-3 Management of material topics	Extra-financial statements: 4.1. Greenhouse gas emissions, page 207	
GRI 305: Emissions 2016	305-1 Direct (Scope 1) GHG emissions	Extra-financial statements: 4.1. Greenhouse gas emissions, page 207	
GRI 305: Emissions 2016	305-2 Energy indirect (Scope 2) GHG emissions	Extra-financial statements: 4.1. Greenhouse gas emissions, page 207	
GRI 305: Emissions 2016	305-3 Other indirect (Scope 3) GHG emissions	Extra-financial statements: 4.1. Greenhouse gas emissions, page 207	
GRI 305: Emissions 2016	305-4 GHG emissions intensity	Extra-financial statements: 4.1. Greenhouse gas emissions, page 207	
GRI 305: Emissions 2016	305-5 Reduction of GHG emissions	Extra-financial statements: 4.1. Greenhouse gas emissions, page 207	

ENERGY (PRIORITY)

Source	Disclosure	Location	Omission
GRI 3: Material Topics 2021	3-3 Management of material topics	Extra-financial statements: 4.2. Energy, page 210	
GRI 302: Energy 2016	302-1 Energy consumption within the organization	Extra-financial statements: 4.2. Energy, page 210	
GRI 302: Energy 2016	302-2 Energy consumption outside of the organization	Extra-financial statements: 4.2. Energy, page 210	
GRI 302: Energy 2016	302-3 Energy intensity	Extra-financial statements: 4.2. Energy, page 210	
GRI 302: Energy 2016	302-4 Reduction of energy consumption	Extra-financial statements: 4.2. Energy, page 210	

BIODIVERSITY (PRIORITY)

Source	Disclosure	Location	Omission
GRI 3: Material Topics 2021	3-3 Management of material topics	Extra-financial statements: 4.3. Biodiversity, page 212	
GRI 304: Biodiversity 2016	304-1 Operational sites owned, leased, managed in, or adjacent to, protected areas and areas of high biodiversity value outside protected areas	Extra-financial statements: 4.3. Biodiversity, page 212	
GRI 304: Biodiversity 2016	304-2 Significant impacts of activities, products and services on biodiversity	Extra-financial statements: 4.3. Biodiversity, page 212	
GRI 304: Biodiversity 2016	304-3 Habitats protected or restored	Extra-financial statements: 4.3. Biodiversity, page 212	
GRI 304: Biodiversity 2016	304-4 IUCN Red List species and national conservation list species with habitats in areas affected by operations	Extra-financial statements: 4.3. Biodiversity, page 212	

PRODUCT DESIGN & LIFECYCLE MANAGEMENT (PRIORITY)

Source	Disclosure	Location	Omission
GRI 3: Material Topics 2021	3-3 Management of material topics	Extra-financial statements: 5.1. Product design and life cycle management, page 216	
GRI 416: Customer health and safety 2016	416-1 Assessment of the health and safety impacts of product and service categories	Extra-financial statements: 5.1. Product design and life cycle management, page 216 Extra-financial statements: 5.5. Waste, page 224 Extra-financial statements: 6.7. Hazardous materials, page 247	
GRI 416: Customer health and safety 2016	416-2 Incidents of non-compliance concerning the health and safety impacts of products and services	Risk management: Environmental impacts and controversies, page 160	
Solvay	Products based on a circular sourcing	Extra-financial statements: 5.3. Circular Economy, page 222	

AIR QUALITY (HIGH MATERIALITY)

Source	Disclosure	Location	Omission
GRI 3: Material Topics 2021	3-3 Management of material topics	Extra-financial statements: 5.4. Air quality, page 223	
GRI 305: Emissions 2016	Disclosure 305-6 Emissions of ozone-depleting substances (ODS)	Extra-financial statements: 5.4. Air quality, page 223	
GRI 305: Emissions 2016	305-7 Nitrogen oxides (NOx), sulfur oxides (SOx) and other significant air emissions	Extra-financial statements: 5.4. Air quality, page 223	Requirement omitted: Hazardous air pollutants, Particulate matter Reason: Information unavailable/incomplete Explanation: sites report data according to national requirements; this does not allow consolidation. There is no internationally recognized reference list or methodology. We are working on a global list to report on and expect to be able to report in 2024.

WATER AND WASTEWATER (PRIORITY)

Source	Disclosure	Location	Omission
GRI 3: Material Topics 2021	3-3 Management of material topics	Extra-financial statements: 5.6. Water and wastewater, page 225	
GRI 303: Water and effluents 2018	303-1 Interactions with water as a shared resource	Extra-financial statements: 5.6. Water and wastewater, page 225	
GRI 303: Water and effluents 2018	303-2 Management of water discharge-related impacts	Extra-financial statements: 5.6. Water and wastewater, page 225	
GRI 303: Water and effluents 2018	303-3 Water withdrawal	Extra-financial statements: 5.6. Water and wastewater, page 225	
GRI 303: Water and effluents 2018	303-4 Water discharge	Extra-financial statements: 5.6. Water and wastewater, page 225	
GRI 303: Water and effluents 2018	303-5 Water consumption	Extra-financial statements: 5.6 Water and wastewater, page 225	

WASTE (PRIORITY)

Source	Disclosure	Location	Omission
GRI 3: Material Topics 2021	3-3 Management of material topics	Extra-financial statements: 5.6. Water and wastewater, page 225	
GRI 306: Waste 2020	306-1 Waste generation and significant waste-related impacts	Extra-financial statements: 5.5. Waste, page 224	
GRI 306: Waste 2020	306-2 Management of significant waste-related impacts	Extra-financial statements: 5.5. Waste, page 224	
GRI 306: Waste 2020	306-3 Waste generated	Extra-financial statements: 5.5. Waste, page 224	
GRI 306: Waste 2020	306-4 Waste diverted from disposal	Extra-financial statements: 5.5. Waste, page 224	
GRI 306: Waste 2020	306-5 Waste directed to disposal	Extra-financial statements: 5.5. Waste, page 224	

EMPLOYEE HEALTH AND SAFETY (PRIORITY)

Source	Disclosure	Location	Omission
GRI 3: Material Topics 2021	3-3 Management of material topics	Extra-financial statements: 6.1. Employee health and safety, page 227	
GRI 403: Occupational health and safety 2018	403-1 Occupational health and safety management system	Extra-financial statements: 6.1. Employee health and safety, page 227	
GRI 403: Occupational health and safety 2018	403-2 Hazard identification, risk assessment and incident investigation	Extra-financial statements: 6.1. Employee health and safety, page 227	
GRI 403: Occupational health and safety 2018	403-3 Occupational health services	Extra-financial statements: 6.1. Employee health and safety, page 227	
GRI 403: Occupational health and safety 2018	403-4 Worker participation, consultation and communication on occupational health and safety	Extra-financial statements: 6.1. Employee health and safety, page 227 Extra-financial statements: 6.2. Employee engagement and well-being, page 232	
GRI 403: Occupational health and safety 2018	403-5 Worker training on occupational health and safety	Extra-financial statements: 6.1. Employee health and safety, page 227	
GRI 403: Occupational health and safety 2018	403-6 Promotion of worker health	Extra-financial statements: 6.1. Employee health and safety, page 227	
GRI 403: Occupational health and safety 2018	403-7 Prevention and mitigation of occupational health and safety impacts directly linked by business relationships	Extra-financial statements: 6.1. Employee health and safety, page 227	
GRI 403: Occupational health and safety 2018	403-8 Workers covered by an occupational health and safety management system	Extra-financial statements: 6.1. Employee health and safety, page 227	
GRI 403: Occupational health and safety 2018	403-9 Work-related injuries	Extra-financial statements: 6.1. Employee health and safety, page 227	
GRI 403: Occupational health and safety 2018	403-10 Work-related ill health	Extra-financial statements: 6.1. Employee health and safety, page 227	

EMPLOYEE ENGAGEMENT AND WELL-BEING (HIGH MATERIALITY)

Source	Disclosure	Location	Omission
GRI 3: Material Topics 2021	3-3 Management of material topics	Extra-financial statements: 6.2. Employee engagement and well-being, page 232	
GRI 401: Employment 2016	401-2 Benefits provided to full-time employees that are not provided to temporary or part-time employees	Extra-financial statements: 6.2. Employee engagement and well-being, page 232 Extra-financial statements: 6.4. Recruitment, development and retention, page 238	
GRI 402: Labor/Management Relations 2016	402-1 Minimum notice periods regarding operational changes		Not applicable: the minimum notice periods are based on local legislations and local collective agreements.
GRI 407: Freedom of association and collective bargaining 2016	407-1 Operations and suppliers in which the right to freedom of association and collective bargaining may be at risk	Extra-financial statements: 6.2. Employee engagement and well-being, page 232	

DIVERSITY AND INCLUSION (PRIORITY)

Source	Disclosure	Location	Omission
GRI 3: Material Topics 2021	3-3 Management of material topics	Extra-financial statements: 6.3. Diversity and inclusion, page 234	
GRI 405: Diversity and equal opportunity 2016	405-1 Diversity of governance bodies and employees	Extra-financial statements: 6.3. Diversity and inclusion, page 234	
GRI 405: Diversity and equal opportunity 2016	405-2 Ratio of basic salary and remuneration of women to men	Extra-financial statements: 6.3. Diversity and inclusion, page 234	

CUSTOMER WELFARE (HIGH MATERIALITY)

Source	Disclosure	Location	Omission
GRI 3: Material Topics 2021	3-3 Management of material topics	Extra-financial statements: 6.5. Customer welfare, page 242	
Net Promoter System	Net Promoter Score	Extra-financial statements: 6.5. Customer welfare, page 242	

CORPORATE CITIZENSHIP (HIGH MATERIALITY)

Source	Disclosure	Location	Omission
GRI 3: Material Topics 2021	3-3 Management of material topics	Extra-financial statements: 6.6. Corporate citizenship, page 243	
GRI 413: Local communities 2016	413-1 Operations with local community engagement, impact assessments and development programs	Extra-financial statements: 6.6. Corporate citizenship, page 243	
GRI 413: Local communities 2016	413-2 Operations with significant actual and potential negative impacts on local communities	Risk management: Environmental impacts and controversies, page 160	

HAZARDOUS MATERIALS (HIGH MATERIALITY)

Source	Disclosure	Location	Omission
GRI 3: Material Topics 2021	3-3 Management of material topics	Extra-financial statements: 6.7. Hazardous materials, page 247	
GRI 403: Occupational health and safety 2018	403-7 Prevention and mitigation of occupational health and safety impacts directly linked by business relationships	Extra-financial statements: 6.7. Hazardous materials, page 247 Extra-financial statements: 6.1. Employee health and safety, page 247	
Solvay	Safer alternatives for marketed products	Extra-financial statements: 6.7. Hazardous materials, page 247	

CRITICAL INCIDENT RISK MANAGEMENT (HIGH MATERIALITY)

Source	Disclosure	Location	Omission
GRI 3: Material Topics 2021	3-3 Management of material topics	Extra-financial statements: 6.8. Critical incident risk management, page 249	

7.4. Moderate materiality topics also included in this report

RECRUITMENT, DEVELOPMENT AND RETENTION (MODERATE MATERIALITY)

Source	Disclosure	Location	Omission
GRI 3: Material Topics 2021	3-3 Management of material topics	Extra-financial statements: 6.4. Recruitment, development and retention, page 238	
GRI 401: Employment 2016	401-1 New employee hires and employee turnover	Extra-financial statements: 6.4. Recruitment, development and retention, page 238	
GRI 401: Employment 2016	401-2 Benefits provided to full-time employees that are not provided to temporary or part- time employees	Extra-financial statements: 6.4. Recruitment, development and retention, page 238	
GRI 404: Training and education 2016	404-1 Average hours of training per year per employee	Extra-financial statements: 6.4. Recruitment, development and retention, page 238	
GRI 404: Training and education 2016	404-2 Programs for upgrading employee skills and transition assistance programs	Extra-financial statements: 6.4. Recruitment, development and retention, page 238	
GRI 404: Training and education 2016	404-3 Percentage of employees receiving regular performance and career development reviews	Extra-financial statements: 6.4. Recruitment, development and retention, page 238	

SUPPLY CHAIN AND PROCUREMENT (MODERATE MATERIALITY)

Source	Disclosure	Location	Omission
GRI 3: Material Topics 2021	3-3 Management of material topics	Extra-financial statements: 3.5. Supply chain and procurement, page 199	
GRI 308: Supplier Environmental Assessment 2016	308-1 New suppliers that were screened using environmental criteria	Extra-financial statements: 3.5. Supply chain and procurement, page 199	
GRI 308: Supplier Environmental Assessment 2016	308-2 Negative environmental impacts in the supply chain and actions taken	Extra-financial statements: 3.5. Supply chain and procurement, page 199	
GRI 407: Freedom of Association and Collective Bargaining 2016	407-1 Operations and suppliers in which the right to freedom of association and collective bargaining may be at risk	Extra-financial statements: 3.5. Supply chain and procurement, page 199	
GRI 414: Supplier social assessment 2016	414-1 New suppliers that were screened using social criteria	Extra-financial statements: 3.5. Supply chain and procurement, page 199	

Financial statements

Financial statements

1. CONSOLIDATED FINANCIAL STATEMENTS

Solvay (the "Company") is a public limited liability company governed by Belgian law and listed on Euronext Brussels and Euronext Paris. The principal activities of the Company, its subsidiaries, joint operations, joint ventures and associates (jointly the "Group") are described in note F1 *Revenue and Segment Information.*

On February 22, 2023, the Board of Directors authorized the consolidated financial statements for issuance.

MAIN EVENTS AND CHANGES IN THE CONSOLIDATION SCOPE

Separation plan

On March 15, 2022, the Group announced its plans to separate into two independent publicly traded companies:

- Essential Co would comprise leading mono-technology businesses including Soda Ash, Peroxides, Silica and Coatis, which are reported as the Company's Chemicals segment, as well as the Special Chem business. These businesses generated approximately €6 billion in net sales in 2022.
- Specialty Co would comprise the Company's currently reported Materials segment, including its high-growth, high-margin Specialty Polymers, its high-performance Composites business, as well as the majority of its Solutions segment, including Novecare, Technology Solutions, Aroma Performance, and Oil & Gas. These businesses combined generated approximately €8 billion in net sales in 2022.

Each company would have a tailored capital structure that best supports its value creation objectives. Specialty Co would be committed to a strong investment-grade rating. The company would have full financial flexibility at the time of separation to fund its growth plan. Essential Co would maintain a prudent financial policy to support cash generation. The current investment grade rating of Solvay SA is intended to be preserved until the separation. Solvay SA is committed to offer current USD and EUR senior and hybrid bondholders the option to be transferred to Specialty Co in due time. The dividend at the outset is intended to be aligned with Solvay's current level.

Under the separation plan, Solvay's shareholders would retain their current shares of Solvay stock, which will continue to be listed on Euronext Brussels and Euronext Paris. The separation would be effected by means of a partial demerger of Solvay whereby the specialty businesses will be spun off to Specialty Co. Solvay shareholders at the time of separation would receive shares in Specialty Co pro rata to their shareholding in Solvay SA. We expect the shares of SpecialtyCo to be listed on Euronext Brussels and Euronext Paris. The Company expects to structure the separation in a manner that would be tax efficient for a significant majority of shareholders in key jurisdictions.

The composition of the Boards and management teams, as well as naming for each company, will be provided at a later date.

The transaction is subject to general market conditions and customary closing conditions, including final approval by Solvay's Board of Directors, consent of certain financing providers and shareholder approval at an extraordinary general meeting, and is expected to be completed in December 2023. The Board of Directors of Solvac, Solvay's long-standing reference shareholder, has confirmed its support of Solvay's transaction. Refer to Critical Accounting Judgments on the accounting treatment of the separation plan.

Financial implication of energy price volatility

The volatility in gas and electricity prices experienced by the Group can largely be attributed to the conflict in Ukraine, which has impacted the financial statements of Solvay in several ways including:

- Increased non-core trading revenues (See note F3 Revenue from non-core activities).
- Substantial fluctuations in the fair value adjustments of energy-related financial assets and liabilities due to the price volatility in gas and electricity. As the fair value adjustments are on sale and purchase contracts of energy, they impact both assets and liabilities (See note F32 Financial instruments).
- Increased raw material and logistics costs (See note F2 Consolidated income statement by nature).

The Group will continue to monitor the inflationary pressure and manage the impacts on the financial statements.

Portfolio management

On May 4, 2022, Solvay announced the acquisition of the 20% minority stake of AGC in the Soda Ash Joint Venture operated in Green River, WY, USA, building on its leadership position in trona-based soda ash production. At a cash purchase price of US$ 120 million, this transaction will be significantly value accretive to Solvay, with a post-tax cash return on capital in excess of 15%. The transaction was completed on May 4, 2022.

Senior Bonds

On September 1, 2022, Solvay decided to exercise its residual maturity call option on the 2022 €-senior bonds 1.625%, ISIN BE6282459609 (outstanding of €377.5 million out of the initial amount of €750 million). The exercise was implemented in accordance with the terms and conditions of the related prospectus.

On November 22, 2022, Solvay delivered a notice of early redemption in full to holders of Cytec's US$ 3.50% senior notes due 2023 guaranteed by Solvay with ISIN / CUSIP US23282AJ97 / 232820AJ9 in an outstanding principal amount of US$ 196 million. The redemption was implemented in accordance with the terms and conditions of the bonds. The redemption date was January 1, 2023, however, Solvay was discharged from its liability by the paying agent on December 30, 2022, when the paying agent received the funds.

CO_2 emission rights

Management practices related to hedging of CO_2 exposure were changed in the period, in view of both increased volatility in energy and CO_2 markets and the plan to separate Solvay SA into two independent groups. Consequently, the Group has reconsidered the conditions of the own use exemption and accordingly the related portfolio of CO_2 emission rights has been accounted for in accordance with the general requirements of IFRS 9 *Financial Instruments* (IFRS 9) at fair value through profit or loss, and a profit of €322 million was recognized in "other operating gains and losses". As of July 1, 2022, the related portfolio of CO_2 emission rights has been designated as hedging instruments in a cash flow hedge relationship. (See note F4 Other Operating Gains and Losses and F32.B Financial Instruments)

CONSOLIDATED INCOME STATEMENT

In € million	Notes	2022	2021
Sales	*(F1)*	**16,071**	**11,434**
of which revenue from non-core activities	*(F3)*	2,645	1,330
of which net sales		13,426	10,105
Cost of goods sold		-12,042	-8,508
Gross margin		**4,029**	**2,926**
Commercial costs		-317	-287
Administrative costs		-1,088	-946
Research and development costs		-357	-325
Other operating gains and (losses)	*(F4)*	171	-80
Earnings from associates and joint ventures	*(F23)*	171	158
Results from portfolio management and major restructuring	*(F5)*	-105	-133
Results from legacy remediation and major litigations	*(F5)*	-283	-123
EBIT		**2,221**	**1,190**
Cost of borrowings	*(F6)*	-118	-107
Interest on loans and short term deposits	*(F6)*	17	9
Other gains and (losses) on net indebtedness	*(F6)*	3	-4
Cost of discounting provisions	*(F6)*	40	1
Result from equity instruments measured at fair value		-13	6
Profit/(loss) for the year before taxes		**2,151**	**1,094**
Income taxes	*(F7)*	-217	-110
Profit/(loss) for the year from continuing operations		**1,934**	**985**
Profit for the year from discontinued operations	*(F8)*	0	5
Profit/(loss) for the year		**1,934**	**989**
attributable to:			
- Solvay share		1,905	948
- non-controlling interests		29	41
Basic earnings per share from continuing operations (€)		18.36	9.11
Basic earnings per share from discontinued operations (€)		0.00	0.04
Basic earnings per share (€)	*(F9)*	18.37	9.15
Diluted earnings per share from continuing operations (€)		18.29	9.09
Diluted earnings per share from discontinued operations (€)		0.00	0.04
Diluted earnings per share (€)	*(F9)*	18.30	9.13

CONSOLIDATED STATEMENT OF COMPREHENSIVE INCOME

In € million	Notes	2022	2021
Profit/(loss) for the year		**1,934**	**989**
Other comprehensive income			
Gains and (losses) on hedging instruments in a cash flow hedge	*(F10)*	80	-16
Currency translation differences - Subsidiaries and joint operations	*(F10)*	284	487
Share of other comprehensive income of associates and joint ventures	*(F10)*	21	29
Recyclable components		**384**	**500**
Gains and (losses) on equity instruments measured at fair value through other comprehensive income	*(F10)*	-25	33
Remeasurements of the net defined benefit liability	*(F10)*	155	562
Share of other comprehensive income of associates and joint ventures	*(F10)*	0	0
Non-recyclable components		**130**	**594**
Income tax relating to recyclable and non-recyclable components	*(F10)*	-67	-78
Other comprehensive income/(loss), net of related tax effects	*(F10)*	**447**	**1,017**
Comprehensive income/(loss) for the year		**2,382**	**2,006**
attributable to:			
- Solvay share		2,351	1,956
- non-controlling interests		30	50

CONSOLIDATED STATEMENT OF CASH FLOWS

The amounts below include both continuing and discontinued operations.

In € million	Notes	2022	2021
Profit/(loss) for the year		**1,934**	989
Adjustments to profit / (loss) for the year			
- Depreciation, amortization and impairments	*(F11)*	923	849
- Earnings from associates and joint ventures	*(F23)*	-171	-158
- Other non-operating and non-cash items	*(F12)*	43	-113
- Additions and reversals of provisions	*(F15)*	336	464
- Net financial charges		69	94
- Income tax expense/income	*(F13)*	217	110
Changes in working capital	*(F14)*	-576	-92
Use of provisions	*(F15)*	-328	-303
Use of provisions for additional voluntary contributions (pension plans)	*(F15)*	-155	-236
Dividends received from associates and joint ventures	*(F23)*	19	129
Income taxes paid (excluding income taxes paid on sale of investments)	*(F13)*	-305	-233
Cash flow from operating activities		**2,006**	1,499
of which cash flow related to internal portfolio management and excluded from Free Cash Flow		-67	-7
Acquisition (-) of subsidiaries	*(F16)*	0	-22
Acquisition (-) of investments - Other	*(F16)*	-14	-22
Loans to associates and non-consolidated companies		-23	4
Sale (+) of subsidiaries and investments	*(F16)*	94	169
Acquisition (-) of property, plant and equipment	*(F16)*	-815	-561
Acquisition (-) of intangible assets	*(F16)*	-94	-75
Sale (+) of property, plant and equipment and intangible assets	*(F16)*	21	30
of which cash flow related to the sale of real estate in the context of restructuring/dismantling/remediation		*11*	15
Dividends from equity instruments measured at fair value		2	5
Changes in non-current financial assets		0	2
Cash flow from investing activities		**-831**	-470
Acquisition (-) / sale (+) of treasury shares	*(F30)*	7	42
Increase in borrowings	*(F33)*	248	248
Repayment of borrowings	*(F33)*	-796	-614
Changes in other financial assets	*(F33)*	27	-130
Payment of lease liabilities	*(F33)*	-113	-99
Net interests paid		-62	-95
Coupons paid on perpetual hybrid bonds	*(F28)*	-82	-75
Dividends paid		-417	-431
Acquisition of non controlling interests		-117	0
Other	*(F17)*	112	50
Cash flow from financing activities		**-1,191**	-1,104
of which increase/decrease of borrowings related to environmental remediation		0	0
Net change in cash and cash equivalents		**-15**	-76
Currency translation differences		7	7
Opening cash balance		941	1,009
Closing cash balance	*(F33)*	932	941

CONSOLIDATED CASH FLOWS FROM DISCONTINUED OPERATIONS

In € million	2022	2021
Cash flow from operating activities	0	-12
Net change in cash and cash equivalents	0	-12

See Note F18 Cash flow from Discontinued Operations

CONSOLIDATED STATEMENT OF FINANCIAL POSITION

In € million	Notes	December 31, 2022	December 31, 2021
ASSETS			
Intangible assets	*(F19)*	2,048	2,103
Goodwill	*(F20, F24)*	3,472	3,379
Property, plant and equipment	*(F21)*	5,311	4,943
Right-of-use assets	*(F22)*	474	466
Equity instruments measured at fair value	*(F32)*	71	114
Investments in associates and joint ventures	*(F23)*	809	637
Other investments		37	42
Deferred tax assets	*(F7)*	932	779
Loans and other assets	*(F32)*	466	724
Other financial instruments	*(F33)*	30	30
Non-current assets		**13,651**	**13,216**
Inventories	*(F25)*	2,109	1,745
Trade receivables	*(F32)*	2,026	1,805
Income tax receivables		108	109
Other financial instruments	*(F33)*	206	229
Other receivables	*(F26)*	1,629	2,004
Cash and cash equivalents	*(F33)*	932	941
Current assets		**7,010**	**6,833**
Total assets		**20,661**	**20,049**
EQUITY & LIABILITIES			
Share capital	*(F28)*	1,588	1,588
Share premiums		1,170	1,170
Other reserves		7,846	5,982
Non-controlling interests	*(F29)*	61	112
Total equity		**10,664**	**8,851**
Provisions for employee benefits	*(F31)*	1,057	1,574
Other provisions	*(F31)*	743	724
Deferred tax liabilities	*(F7)*	558	462
Financial debt	*(F33)*	2,450	2,576
Other liabilities		303	331
Non-current liabilities		**5,111**	**5,666**
Other provisions	*(F31)*	297	302
Financial debt	*(F33)*	510	773
Trade payables	*(F32)*	2,296	2,131
Income tax payables		119	115
Dividends payables		165	160
Other liabilities	*(F34)*	1,499	2,051
Current liabilities		**4,885**	**5,531**
Total equity and liabilities		**20,661**	**20,049**

CONSOLIDATED STATEMENT OF CHANGES IN EQUITY

		Equity attributable to equity holders of the parent			
In € million	Notes	Share capital	Share premiums	Treasury shares	Perpetual hybrid bonds
December 31, 2020		**1,588**	**1,170**	**-286**	**1,786**
Profit for the year					
Items of other comprehensive income	*(F10)*				
Comprehensive income					
Cost of share based payment plans					
Dividends					
Coupons of perpetual hybrid bonds					
Acquisition (-) / sale (+) of treasury shares				54	
Other					
December 31, 2021		**1,588**	**1,170**	**-232**	**1,786**
Profit for the year					
Items of other comprehensive income	*(F10)*				
Comprehensive income					
Cost of share based payment plans					
Dividends					
Coupons of perpetual hybrid bonds					
Acquisition (-) / sale (+) of treasury shares				7	
Other					
December 31, 2022		**1,588**	**1,170**	**-225**	**1,786**

Equity attributable to equity holders of the parent							
		Revaluation reserve (fair value)					
Retained earnings	**Currency translation differences**	**Equity instruments measured at fair value through other comprehensive income**	**Cash flow hedges**	**Defined benefit pension plan**	**Total other reserves**	**Non-controlling interests**	**Total equity**
4,985	**-1,153**	**12**	**14**	**-919**	**4,439**	**106**	**7,304**
948					948	41	989
	508	25	-11	486	1,008	9	1,017
948	**508**	**25**	**-11**	**486**	**1,956**	**50**	**2,006**
8					8		8
-389					-389	-43	-432
-75					-75		-75
-12					42		42
2	0	-14	0	12	1	-2	-1
5,467	**-645**	**23**	**3**	**-421**	**5,982**	**112**	**8,851**
1,905					**1,905**	29	**1,934**
	304	-19	73	88	**446**	2	**447**
1,905	**304**	**-19**	**73**	**88**	**2,351**	**30**	**2,382**
14					**14**		**14**
-403					**-403**	-18	**-421**
-82					**-82**		**-82**
					7		**7**
-48	23	0	0	1	**-24**	-63	**-87**
6,854	**-318**	**4**	**76**	**-332**	**7,846**	**61**	**10,664**

2. NOTES TO THE CONSOLIDATED FINANCIAL STATEMENTS

IFRS GENERAL ACCOUNTING POLICIES

1. Basis of preparation

This information was prepared in accordance with European Regulation (EC) 1606/2002 on the application of international accounting standards dated July 19, 2002. The Group's consolidated financial statements for the year ended December 31, 2022 were prepared in accordance with IFRS (International Financial Reporting Standards) as published by the International Accounting Standards Board (IASB), and endorsed by the European Union.

The accounting standards applied in the consolidated financial statements for the year ended December 31, 2022 are consistent with those used to prepare the consolidated financial statements for the year ended December 31, 2021. The Group has not early adopted any other standards, interpretations or amendments that have been issued but is not yet effective.

Standards, interpretations and amendments applicable for the first time in 2022

Below are the standards, interpretations and amendments that became effective as of January 1, 2022 and which are relevant to the Group.

Onerous Contracts – Costs of Fulfilling a Contract – Amendments to IAS 37

The amendments specify that when assessing whether a contract is onerous or loss-making, an entity needs to include costs that relate directly to a contract to provide goods or services including both incremental costs (e.g., the costs of direct labor and materials) and an allocation of costs directly related to contract activities (e.g., depreciation of equipment used to fulfill the contract and costs of contract management and supervision). General and administrative costs do not relate directly to a contract and are excluded unless they are explicitly chargeable to the counterparty under the contract. The application of the amendment did not have more than an insignificant impact on the Group's consolidated financial statements.

Property, Plant and Equipment: Proceeds before Intended Use – Amendments to IAS 16

The amendment prohibits entities from deducting from the cost of an item of property, plant and equipment, any proceeds of the sale of items produced while bringing that asset to the location and condition necessary for it to be capable of operating in the manner intended by management. Instead, an entity recognizes the proceeds from selling such items, and the costs of producing those items, in profit or loss. The application of the amendment did not have more than an insignificant impact on the Group's consolidated financial statements.

IFRS 9 Financial Instruments – Fees in the '10 per cent' test for derecognition of financial liabilities

The amendment clarifies the fees that an entity includes when assessing whether the terms of a new or modified financial liability are substantially different from the terms of the original financial liability. These fees include only those paid or received between the borrower and the lender, including fees paid or received by either the borrower or lender on the other's behalf. The application of the amendment did not have more than an insignificant impact on the Group's consolidated financial statements.

In addition to the standards, interpretations and amendments mentioned above, no other standards, interpretations, or amendments applicable for the first time in 2022 had more than an insignificant impact on the Group's consolidated financial statements.

Standards, interpretations and amendments applicable for the first time in 2023

Deferred Tax related to Assets and Liabilities arising from a Single Transaction - Amendments to IAS 12 (the "Amendment"). In May 2021, the IASB issued the Amendment, which narrowed the scope of the initial recognition exception under IAS 12, so that it no longer applies to transactions that give rise to equal taxable and deductible temporary differences. The Amendment should be applied to transactions that occur on or after the beginning of the earliest comparative period presented. In addition, at the beginning of the earliest comparative period presented, a deferred tax asset (provided that sufficient taxable profit is available) and a deferred tax liability are also recognized for all deductible and taxable temporary differences associated with leases and decommissioning obligations. The application of the Amendment is not expected to have more than an insignificant impact on the Group's consolidated financial statements.

Standards, interpretations and amendments applicable for the first time after 2023

The new and amended standards and interpretations that are issued, but not yet effective, up to the date of issuance of the Group's financial statements and which may have an impact on the Group are disclosed below. The Group intends to adopt these new and amended standards and interpretations, if applicable, when they become effective.

On September 22, 2022, the IASB issued *Lease Liability in a Sale and Leaseback (Amendments to IFRS 16)* with amendments that clarify how a seller-lessee subsequently measures sale and leaseback transactions that satisfy the requirements in IFRS 15 to be accounted for as a sale. The amendments are effective for annual periods beginning on or after January 1, 2024, but are not yet endorsed in the EU. The Group is currently assessing the impact the amendments will have on the current accounting practices.

On January 23, 2020, the IASB issued *Classification of Liabilities as Current or Non-current (Amendments to IAS 1)* providing a more general approach to the classification of liabilities under IAS 1 based on the contractual arrangements in place at the reporting date. The amendments aim to promote consistency in applying the requirements by helping companies determine whether, in the statement of financial position, debt and other liabilities with an uncertain settlement date should be classified as current (due or potentially due to be settled within one year) or non-current. The amendments were originally effective for annual reporting periods beginning on or after January 1, 2022, however, their effective date has been delayed to January 1, 2024 or later, but is not yet endorsed in the EU. The Group is currently assessing the impact the amendments will have on current practice and whether existing loan agreements may require reclassification.

2. Basis of measurement and presentation

The consolidated financial statements are presented in millions of euros, which is also the functional currency of the parent company.

The preparation of the consolidated financial statements requires the use of estimates and assumptions that have an impact on the application of accounting policies and the measurement of amounts recognized in the consolidated financial statements. The areas for which the estimates and assumptions are material with respect to the consolidated financial statements are presented in the section Critical accounting judgments and Key sources of estimation uncertainty.

3. Principles of consolidation

3.1. Consolidation scope

3.1.1. General

The consolidated financial statements incorporate the financial statements of the Company, and:
- entities controlled by the Company (including through its subsidiaries) and that hence qualify as subsidiaries (see 3.1.2. below);
- arrangements over which the Company (including through its subsidiaries) exercises joint control, and that qualify as joint operations (see 3.1.3. below);
- arrangements over which the Company (including through its subsidiaries) exercises joint control, and that qualify as joint ventures (see 3.1.4. below);
- entities over which the Company (including through its subsidiaries) has significant influence and that hence qualify as associates (see 3.1.4. below).

Where necessary, adjustments are made to the financial statements of the investees so as to align their accounting policies with those of the Group.

In accordance with the principle of materiality, certain companies, which are not of a significant size, have not been included in the consolidation scope. Companies are deemed not to be significant when, during two consecutive years, they do not exceed any of the three following thresholds in terms of their contribution to the Group's accounts:
- sales of € 30 million;
- total assets of € 15 million;
- headcount of 150 persons.

Companies that do not meet these criteria are, nevertheless, consolidated where the Group believes that they have a potential for rapid development, or where they hold shares in other companies that are consolidated based on the above criteria.

In the aggregate, the non-consolidated companies have an immaterial impact on the consolidated financial statements of the Group.

The full list of companies can be obtained at the Company's head office.

3.1.2. Investments in subsidiaries

A subsidiary is an entity over which the Group has control. Control is achieved when the Group has (a) power over an investee, (b) exposure, or rights, to variable returns from its involvement with the investee, and (c) the ability to use its power over the investee to affect the amount of the investor's returns. To assess whether the Group has control, potential voting rights are taken into account. Subsidiaries are fully consolidated. The results of subsidiaries acquired or disposed of during the year are included in the consolidated income statement from the effective date of acquisition and up to the effective date of disposal.

Intra-group transactions, balances, income and expenses are eliminated on consolidation.

Non-controlling interests in subsidiaries are presented separately from the Group's equity. Non-controlling interests are initially measured, either at fair value (full goodwill method), or at the non-controlling interests' proportionate share in the recognized amounts of the acquiree's identifiable net assets (proportionate goodwill method). The choice of measurement is made on an acquisition-by-acquisition basis. Subsequent to the acquisition, the carrying amount of non-controlling interests is the amount of those interests at initial recognition plus the non-controlling interests' share of subsequent changes in equity. Total comprehensive income is attributed to non-controlling interests even if this results in the non-controlling interests having a deficit balance.

Changes in the Group's equity interest in a subsidiary that do not result in a loss of control are accounted for as equity transactions. The carrying amounts of the Group's interests and the non-controlling interests are adjusted to reflect the changes in their relative interests in the subsidiary. Any difference between the amount by which the non-controlling interests are adjusted and the fair value of the consideration paid or received is recognized directly in equity.

When the Group loses control of a subsidiary, the profit or loss on disposal is calculated as the difference between (i) the aggregate of the fair value of the consideration received and the fair value of any retained interest, and (ii) the previous carrying amount of the assets (including goodwill) and liabilities of the subsidiary and any non-controlling interests. Amounts previously recognized in other comprehensive income in relation to the subsidiary are accounted for (i.e. Reclassified to profit or loss or transferred directly to retained earnings) in the same manner as would be required if the relevant assets or liabilities were disposed of. The fair value of any investment retained in the former subsidiary at the date when control is lost is considered to be the fair value on initial recognition for subsequent accounting in accordance with IFRS 9 or, when applicable, the cost on initial recognition of an investment in an associate or joint venture in accordance with IAS 28 *Investments in Associates and Joint Ventures*.

3.1.3. Investments in joint operations

A joint operation is a joint arrangement whereby the parties that have joint control of the arrangement have rights to the assets, and obligations for the liabilities, relating to the arrangement. Joint control is the contractually agreed sharing of control of an arrangement, which exists only when decisions about relevant activities require the unanimous consent of the parties sharing control. In its consolidated financial statements, the Group recognizes its contractual share of the joint operations' assets, liabilities, revenue and expenses, which is generally aligned with the ownership interest in the joint operations.

3.1.4. Investments in associates and joint ventures

An associate is an entity over which the Group has significant influence and that is neither a subsidiary, nor an interest in a joint arrangement. Significant influence is the power to participate in the financial and operating policy decisions of the investee but is not control or joint control over those policies.

A joint venture is a joint arrangement whereby the parties that have joint control of the arrangement have rights to the net assets of the arrangement. Joint control is the contractually agreed sharing of control of an arrangement, which exists only when decisions about relevant activities require the unanimous consent of the parties sharing control.

The results, assets and liabilities of associates and joint ventures are incorporated in the consolidated financial statements using the equity method of accounting, except when the investment is classified as held for sale, in which case it is accounted for in accordance with IFRS 5 *Non-current Assets Held for Sale and Discontinued Operations*. Under the equity method, on initial recognition, investments in associates and joint ventures are recognized in the consolidated statement of financial position at cost, and the carrying amount is adjusted for post-acquisition changes in the Group's share of the net assets of the associate or joint venture, less any impairment of the value of individual investments. Losses of an associate or joint venture in excess of the Group's interest in that associate or joint venture (which includes any long-term interests that, in substance, form part of the Group's net investment in the associate or joint venture) are recognized only to the extent that the Group has incurred legal or constructive obligations or made payments on behalf of the associate or joint venture.

Any excess of the cost of acquisition over the Group's share of the net fair value of the identifiable assets and (contingent) liabilities of the associate or joint venture recognized at the date of acquisition is goodwill. The goodwill is included within the carrying amount of the investment and is assessed for impairment as part of that investment.

Where a Group entity transacts with an associate or joint venture of the Group, profits and losses are eliminated to the extent of the Group's interest in the relevant associate or joint venture.

After application of the equity method, the Group reviews its investments in associates and joint ventures for impairment. At each reporting date, the Group determines whether there is objective evidence that the investment in the associate or joint venture is impaired. If there is such evidence, the Group performs its analysis and calculates any impairment as the difference between the recoverable amount of the associate or joint venture and its carrying value, and then recognizes the loss in the consolidated income statement.

4. Foreign currencies

The individual financial statements of each Group entity are prepared in the currency of the primary economic environment in which the entity operates (its functional currency). For the purpose of the consolidated financial statements, the results and financial position of each Group entity are expressed in euros (EUR), which is the presentation currency of the Group's consolidated financial statements.

In preparing the financial statements of the individual entities, transactions in currencies other than the entities' functional currency are recognized at the exchange rates prevailing at the dates of the transactions. At the end of each reporting period, monetary items denominated in foreign currencies are translated at the closing rate. Non-monetary items carried at fair value that are denominated in foreign currencies are translated at the rate when the fair value was measured. Non-monetary items that are measured in terms of historical cost in a foreign currency are translated using the exchange rates at the date of the initial transactions.

Exchange differences are recognized in profit or loss in the period in which they arise except for:

- exchange differences on monetary items receivable from or payable to a foreign operation for which settlement is neither planned nor likely to occur in the foreseeable future (therefore forming part of the net investment in the foreign operation), which are recognized initially in other comprehensive income under "currency translation differences"; and
- exchange differences on transactions entered into in order to hedge certain foreign currency risks (see note F32 Financial instruments and financial risk management for hedge accounting policies).

The main exchange rates used are:

		Year-end rate		Average rate	
1 Euro =		**December 31, 2022**	**December 31, 2021**	**2022**	2021
Brazilian Real	BRL	5.6354	6.3089	5.4391	6.3778
Yuan Renminbi	CNY	7.4199	7.2188	7.0781	7.6275
Pound Sterling	GBP	0.8870	0.8401	0.8526	0.8596
Indian Rupee	INR	88.3019	84.1963	82.6910	87.4271
Japanese Yen	JPY	140.7248	130.4077	138.0176	129.8783
Korean Won	KRW	1,349.6641	1,346.4377	1,357.2278	1,353.6608
Mexican Peso	MXN	20.8811	23.1537	21.1921	23.9889
Russian Ruble	RUB	77.9167	85.3452	73.7161	87.1511
US Dollar	USD	1.0674	1.1327	1.0531	1.1827

5. Government grants

Government grants are not recognized until there is reasonable assurance that the Group will comply with the conditions attaching to them and that the grants will be received.

Government grants relating to the purchase of property, plant and equipment are deducted from the cost of those assets. They are recognized in the consolidated statement of financial position at their expected value at the moment of initial recognition. The grant is recognized in profit or loss over the depreciation period of the underlying assets as a reduction of depreciation expense.

Other government grants are recognized as income on a systematic basis over the periods in which the related costs, which they are intended to compensate, are recognized. Government grants that are receivable as compensation for expenses or losses already incurred or for the purpose of giving immediate financial support to the Group with no future related costs are recognized in profit or loss in the period in which they become receivable.

6. Climate Change

In preparing the consolidated financial statements, management has considered the impacts of climate change, particularly in the context of the disclosures included in the Risk Report and Extra-financial Statements and the Group's progression towards the ambitious 2030 goals to reduce scope 1 and 2 greenhouse gas emissions from our operations by 30%, an annual pace aligned with the Paris Agreement objectives, and to phase-out the use of coal for energy where renewable alternatives exist.

In October 2021, the Group also published its ambitions to become carbon neutral by 2040 for all businesses except Soda Ash, which is targeted to be carbon neutral by 2050.

Solvay plans to invest up to €1 billion to reach carbon neutrality by 2040 for all its businesses other than Soda Ash with an additional investment of approximately €1 billion identified for Soda Ash to pave its path towards full carbon neutrality for the Group before 2050. These investments will be partially supported by non-recourse financing and government subsidies, enabling Solvay to also continue to invest in its growth initiatives. Further studies on technology innovation will determine the future investment needs beyond 2040.

Since 2015 the Group has adopted an internal carbon price and it has imputed that as an input cost into all investment decisions, irrespective of prevailing market prices. The internal cost was originally set at €25 per metric ton in 2015, and was doubled to €50 in 2019. In 2021 it was then decided to be raised to €100 per metric ton of CO_2 with implementation in 2022. This approach ensures that all investments contribute positively to the resilience of the Group in the face of climate change risk and are also oriented towards achieving carbon neutrality.

In addition to the strategic direction, policies and commitments, it is important to note that Solvay is taking concrete actions aligned with its climate change commitments. These are extensively developed in the Sustainability Report. As an example of the Group's commitment to phase out of coal in the Soda Ash business, several projects were initiated comprising:

- The construction of two waste-wood boilers accounted for as finance leases in Rheinberg, Germany; the first of the two boilers was commissioned in 2021..
- In Devnya, Bulgaria, a variety of renewable sources including sunflower husk pellets will be used to power production processes at our largest soda ash European site and reduce emissions related to energy production by 20%.
- Already equipped with a waste to energy power plant since 2006, we recently invested a further €48 million to modernize our gas cogeneration unit in Bernburg, Germany, to maintain our low CO_2 footprint at the site.
- In Italy an energy-efficient gas turbine was built at our Rosignano site. By implementing a cogeneration system that combines heat and power generation processes, we were able to keep up standard production capacity with less energy required, lowering the site's CO_2 emissions by 40%.
- In Green River, Wyoming, USA, our calciners and boilers are switching from coal to gas, a readily-available local resource, which saves 280 kilotons of CO_2 per year. This is in addition to the new project Solvay launched to deploy a new breakthrough technology that will abate greenhouse gas emissions originating from Trona mining operations. This will reduce the site's greenhouse gas emissions by 28% while growing its capacity. It will also make Solvay the first company to implement regenerative thermal oxidation technology to cut emissions from a trona mine.
- An equity investment at the Dombasle, France, site of which Solvay has a 10% share. The project is valued at approximately €225 million and is financed largely through non-recourse debt executed in February 2022 and government subsidies. Included in the investment are two refuse derived fuel boilers.

When such investments are made, the Group verifies the useful life of the assets that are replaced and adjusts the estimated useful life if necessary. For 2022, no material revisions were needed and there is no indication that any material amounts of existing assets would be impaired as a result of the investment plans in other fuel types in the future.

The Group is also actively working on sourcing its energy needs from more environmentally friendly resources including long-term renewable energy generation solutions both onsite and offsite at certain facilities. These include long-term solar and wind power purchase agreements generally accounted for as executory own use contracts. In addition, the Group has entered into long-term contracts to purchase Renewable Energy Certificates, which will cover almost one quarter of the electricity purchased and consumed in the United States. The latter are recorded in operating expenses.

Management has also considered the impact of climate change in making some key estimates within the consolidated financial statements, including the execution of the Solvay One Planet strategy, which is included in the budgets, mid-term plan and long-term forecasts, which are used to:

- estimate future cash flows used in impairment assessments of the carrying value of non-current assets (such as intangible assets and goodwill) (see Note F24 Impairment);
- estimate future profitability used in the assessment of the recoverability of deferred tax assets (see Note F7.C. Deferred taxes in the consolidated statement of financial position), provisions, etc.;
- estimate the long-term accounting assumptions, including CO_2 emission rights and energy prices for the energy intensive Soda Ash GBU.

The Group's CO_2 emission rights and energy prices (gas/electricity/coal) are an important element of the cost structure, especially for the Soda Ash business. The Group has hedged a significant portion of its expected use through 2030. The hedges were taken into consideration in the goodwill impairment test performed and the long-term assumptions considered the higher capex required by the energy transition of the business after the hedged period. Considering the significant headroom on the Soda Ash CGU, no sensitivity is provided. See Note F24 Impairment.

The same exercise was done for the other cash generating units and management believes there are no realistic scenarios regarding climate change today, which would lead to an impairment of these assets.

In summary, the Group's climate change considerations mentioned above did not have a material impact on the financial reporting judgments and estimates during the year. Further, the Group concludes that the climate change risk does not impact the going concern assessment for December 2022. Additional information can be found in Notes F21 Property, Plant and Equipment, F22 Right-of Use Assets and Lease Obligations and F25 Inventories.

CRITICAL ACCOUNTING JUDGMENTS AND KEY SOURCES OF ESTIMATION UNCERTAINTY

1. Critical accounting judgments

On March 15, 2022, the Group announced its plan to separate into two independent publicly traded companies, Essential Co and Specialty Co. The separation would be effected by means of a partial demerger of Solvay whereby the specialty businesses will be spun off to Specialty Co.

While the Group is actively taking steps to prepare for the partial demerger and anticipates that the transaction will be completed in December 2023, the Group considers the specialty businesses to not meet the criteria under IFRS 5 *Non-current Assets Held for Sale and Discontinued Operations* (IFRS 5) to be classified as discontinued operations at December 31, 2022.

This judgment is taken on the basis that the consent of certain financing providers and the approval of the shareholders has not yet been obtained. These approvals are anticipated to occur in the course of 2023. Management will further assess the criteria at each reporting period.

No other critical accounting judgments have been identified for the year ended December 31, 2022.

2. Key sources of estimation uncertainty

Impairment

The Group performs annual impairment tests on (groups of) CGUs to which goodwill has been allocated, and each time there are indicators that their carrying amount might be higher than their recoverable amount. This analysis requires management to estimate the future cash flows expected to be generated by the CGUs and a suitable discount rate in order to calculate present value. The recoverable amount is highly sensitive to discount and growth rates.

Further details are provided in note F20 Goodwill and Business Combinations and F24 Impairment.

Deferred tax assets

Deferred tax assets are recognized for unused tax losses to the extent that it is probable that taxable profits will be available against which the losses can be utilized. Significant management judgment is required to determine the amount of deferred tax assets that can be recognized, based upon the likely timing and the level of future taxable profits.

The Group has €5,203 million (2021: €6,050 million) of tax losses carried forward for which no deferred tax assets were recognized. These losses relate to subsidiaries that have a history of losses, do not expire, and may not be used to offset taxable income elsewhere in the Group. The subsidiaries do not have any taxable temporary differences that could partly support the recognition of these losses as deferred tax assets. On this basis, the Group has determined that it cannot recognize deferred tax assets on these tax losses carried forward.

Further details are provided in Note F7.C. Deferred taxes in the consolidated statement of financial position and F7.D Other Information.

Defined benefit obligations - General

The actuarial assumptions used in determining the defined benefit obligations at December 31 as well as the annual cost can be found in note F31.A. Provisions for employee benefits. All main employee benefits plans are assessed annually by independent actuaries. Discount rates and inflation rates are defined centrally by management. The other assumptions (such as future salary increases and expected rates of medical care cost increases) are defined at a local level. All plans are supervised by the Group's central Human Resources department with the help of a central actuary to check the reasonableness of the results and ensure consistency in reporting. All assumptions are reviewed at each reporting date.

Further details are provided in note F31.A. Provisions for employee benefits.

Environmental provisions

Environmental provisions are managed and coordinated jointly by the Environmental Rehabilitation department and the Finance department. In case of environmental impacts stemming from historical production activities, generally, no provision is recognized for remediation works beyond the 20 years due to the inherent high level of uncertainty as to the timing and amount.

The forecasts of expenses are discounted to their present value. The discount rates fixed by geographical area correspond to the average risk-free rate on 10-year government bonds or the inflation rate if higher. These rates are set annually by the Finance Department and can be revised based on the evolution of economic parameters of the country involved. To reflect the passage of time, the provisions are increased each year at the discount rates described above.

Further details are provided in note F31.B. Provisions other than for employee benefits.

Provisions for litigations

Any significant litigations (post M&A and other, including threat of litigation) are reviewed by Solvay's in-house lawyers with the support, when appropriate, of external counsels at least every quarter together with the Finance and Insurance Departments. This review includes an assessment of the need to recognize provisions, disclose contingent liabilities and/or contingent assets.

Further details are provided in note F31.B. Provisions other than for employee benefits and F36 Contingent assets, liabilities and financial guarantees.

Leases – Identifying whether a contract includes a lease

The Group enters into various contracts to obtain goods and services. Determining whether those contracts include a lease requires judgment. Elements that are considered include assessing whether or not there is an identified asset. To make the determination the Group considers whether or not it has the right to obtain substantially all of the economic benefit of the asset(s) throughout the period of use. Additionally, the Group assesses the extent of its decision-making rights and the existence of any substantive substitution rights. All facts and circumstances relevant to the assessment are considered and the identification of a lease is determined with the support of the departments that have the relevant knowledge, and which mainly includes the GBU management. Refer to note F22 Right-of-use assets and lease obligations for the leases that were identified by the Group and accounted for in accordance with IFRS 16 *Leases*.

Leases – Assessment of lease term

Determining the lease term requires judgment. Elements that are considered include assessing the probability that early termination options or extension options will be exercised. All facts and circumstances relevant to the assessment are considered, and the main ones have been described in note F22 Right-of-use assets and lease obligations. Lease terms are determined with the support of the departments that have the relevant knowledge, and that mainly includes the Purchasing department, and the Facilities department.

NON-IFRS (UNDERLYING) METRICS

In addition to IFRS accounts, Solvay also presents alternative performance indicators to provide a more consistent and comparable indication of the Group's underlying financial performance and financial position, as well as cash flows. These indicators provide a balanced view of the Group's operations and are considered useful to investors, analysts and credit rating agencies as these measures provide relevant information on the Group's past or future performance, position or cash flows. These indicators are generally used in the sector it operates in and therefore serve as a useful aid for investors to compare the Group's performance with its peers.See Glossary for definitions of adjustments (IFRS vs Underlying metrics) and Business Review for more information and reconciliation with IFRS figures.

NOTES TO THE CONSOLIDATED INCOME STATEMENT

Preliminary comment: consistent with the presentation in the consolidated income statement, the notes to the consolidated income statement as presented hereafter do not include the consolidated income statement impacts from discontinued operations that are presented on a separate line. Those are disclosed in note F8 Discontinued operations.

NOTE F1
REVENUE AND SEGMENT INFORMATION

Accounting policy

IFRS 15 establishes a five-step model to account for revenue arising from contracts with customers:
- Identify the contract,
- Identify the performance obligations,
- Determine the transaction price,
- Allocate the transaction price to the performance obligations in the contract, and
- Recognize revenue when or as the Group satisfies a performance obligation.

Under IFRS 15, revenue is recognized at an amount that reflects the consideration to which the Group expects to be entitled in exchange for transferring goods or services to a customer.

Sale of goods: Contracts can be short term (including based only on a purchase order) or long term, some have minimum off-take requirements. As the Group is in the business of selling advanced materials and specialty chemicals, contracts with customers generally concern the sale of goods. As a result, revenue recognition generally occurs at a point in time when control of the chemicals is transferred to the customer, generally on delivery of the goods.

Distinct elements: a good or service that is promised to a customer is distinct if both of the following criteria are met: (a) the customer can benefit from the good or service either on its own or together with other resources that are readily available to the customer (i.e. The good or service is capable of being distinct); and (b) the Group's promise to transfer the good or service to the customer is separately identifiable from other promises in the contract (i.e. The promise to transfer the good or service is distinct within the context of the contract).

The revenue of the Group consists mainly of sales of chemicals, which qualify as separate performance obligations. Value-added services – mainly customer assistance services – corresponding to Solvay's know-how are rendered predominantly over the period that the corresponding goods are sold to the customer.

Variable consideration: some contracts with customers provide trade discounts or volume rebates. Trade discounts and volume rebates give rise to variable consideration under IFRS 15, and are required to be estimated at contract inception and subsequently at each reporting date. IFRS 15 requires the estimated variable consideration to be constrained to prevent overstatement of revenue.

Moment of recognition of revenue: revenue is recognized when (or as) the Group satisfies a performance obligation by transferring a promised good or service (i.e. an asset) to a customer. An asset is transferred when (or as) the customer obtains control of that asset. Substantially all revenue stems from performance obligations satisfied at a point in time, i.e. The sale of goods. Revenue recognition for those takes into account the following:
- The Group has a present right to payment for the asset;
- The customer has legal title to the asset;
- The Group has transferred physical possession of the asset;
- The customer has the significant risks and rewards of ownership of the asset (in this respect, incoterms are considered); and
- The customer has accepted the asset.

Products sold to customers generally cannot be returned, other than for performance deficiencies. Customer acceptance clauses are in many cases a formality that would not affect the Group's determination of when the customer has obtained control of the goods. Revenue from services is recognized in the period those services have been rendered.

The Group sells its chemicals to its customers, (a) directly, (b) through distributors, and (c) with the assistance of agents. When the Group delivers a product to distributors for sale to end customers, the Group evaluates whether that distributor has obtained control of the product at that point in time. No revenue is recognized upon delivery of a product to a customer or distributor if the delivered product is held on consignment. Indicators of consignment inventory include:
- The product is controlled by the Group until a specified event occurs, such as the sale of the product to a customer of the distributor or until a specified period expires;
- The Group is able to require the return of the product or transfer the product to a third party (such as another distributor); and

- The distributor does not have an unconditional obligation to pay for the product (although he might be required to pay a deposit).
- Agents facilitate sales and do not purchase and resell the goods to the end customer.

Warranties: warranties provide a customer with assurance that the related product will function as the parties intended because it complies with agreed-upon specifications. Substantially all warranties do not provide the customer with a service in addition to the assurance that the product complies with agreed-upon specifications, and are hence accounted for in accordance with IAS 37 *Provisions, Contingent Liabilities and Contingent Assets*.

Licensing: In case of performance obligations relation to licensing intellectual property (IP), the Group assesses if it grants a right to access the IP as it exists throughout the license period or a right to use the IP as it exists at the point in time at which the license is granted. If the performance obligation is to grant a right to access, then the related revenue is recognized over the license period; otherwise, it is recognized at a point in time, i.e. when the license period starts or when the customer starts using the IP. The Group assesses if the license provided can be considered as being distinct in the context of the contract. If not, the license will have to be bundled with other goods or services provided in the contract. Currently the Group grants a right to use IP, which means that revenue recognition occurs at a point in time.

An Operating Segment is a component of the Group that engages in business activities from which it may earn revenues and incur expenses, whose operating results are regularly reviewed by the entity's chief operating decision maker and for which discrete financial information is available. Solvay's chief operating decision maker is the Chief Executive Officer.

General

Solvay is organized into four Operating Segments:

- Materials offer a unique portfolio of high-performance polymers and composite technologies used primarily in sustainable mobility applications. Its solutions enable weight reduction and enhance performance while improving CO_2 and energy efficiency. Major markets served include next-generation mobility in automotive and aerospace, healthcare and electronics.
- Chemicals host chemical intermediate businesses focused on mature and resilient markets. Solvay is a world leader in soda ash and peroxides and major markets served include building and construction, consumer goods and food. Its Silica, Coatis and Rusvinyl businesses are also high quality assets with strong positions in their markets.
- Solutions offer a unique formulation & application expertise through customized specialty formulations for surface chemistry & liquid behavior, maximizing yield and efficiency of the processes they are used in while minimizing the eco-impact. Novecare, Technology Solutions, Aroma, Special Chem and Oil & Gas focus on specific areas such as resources (improving the extraction yield of metals, minerals and oil), industrial applications (such as coatings) or consumer goods and healthcare (including vanillin and guar for home and personal care).
- Corporate & Business Services includes corporate and other business services, such as Group research & innovation or energy services, whose mission is to optimize energy consumption and reduce CO_2 emissions.

External net sales by cluster

The Oil & Gas GBU was created on July 1, 2021, regrouping activities that were previously included in Novecare and Technology Solutions. The following table presents restated figures for these GBUs since the beginning of 2021.

In € million	2022	2021
Materials	**4,075**	2,903
Specialty Polymers	3,121	2,173
Composite Materials	954	730
Chemicals	**4,496**	3,357
Soda Ash & Derivatives	2,221	1,509
Peroxides	773	636
Silica	631	467
Coatis	870	745
Solutions	**4,846**	3,838
Novecare	1,905	1,547
Special Chem	1,040	840
Technology Solutions	740	560
Aroma Performance	575	473
Oil and Gas	586	418
Corporate & Business Services	**9**	**7**
CBS and NBD	9	7
Total	**13,426**	**10,105**

There are no individual customers that contribute 10% or more to the Group's revenue or any individual segment's revenue in either 2022 or 2021.

Sales by market

Sales by market are presented in the Business Review, see note B1.

Net sales by country and region

The sales disclosed below are allocated based on the customers' location.

In € million	2022	%	2021	%
Belgium	230	2%	170	2%
Germany	940	7%	737	7%
Italy	546	4%	431	4%
France	479	4%	363	4%
Netherlands	104	1%	88	1%
Spain	191	1%	144	1%
European Union - Other	706	5%	491	5%
European Union	**3,198**	**24%**	**2,423**	**24%**
Europe - Other	**431**	**3%**	**352**	**3%**
United States	3,362	24%	2,496	25%
Canada	170	2%	134	1%
North America	**3,532**	**26%**	**2,630**	**26%**
Brazil	1,156	9%	813	8%
Mexico	288	2%	215	2%
Latin America - Other	421	3%	280	3%
Latin America	**1,865**	**14%**	**1,308**	**13%**
Australia	121	1%	90	1%
China	1,533	11%	1,203	12%
Hong Kong	65	0%	42	0%
India	272	2%	240	2%
Indonesia	165	1%	115	1%
Japan	460	3%	340	3%
Russia	14	0%	66	1%
Saudi Arabia	134	1%	128	1%
South Korea	367	3%	301	3%
Thailand	214	2%	175	2%
Turkey	97	1%	74	1%
Other	958	7%	617	6%
Asia and rest of the world	**4,400**	**33%**	**3,391**	**34%**
Total	**13,426**	**100%**	**10,105**	**100%**

Information per segment

2022 - In € million	Materials	Chemicals	Solutions	Corporate & Business Services	Group Total
Income statement items					
Net sales (including inter-segment sales)	4,078	4,552	4,857	9	13,496
- Inter-segment sales	-3	-56	-10	0	-70
Net sales	4,075	4,496	4,846	9	13,426
Revenue from non-core activities	109	948	42	1,546	2,645
Gross margin	1,561	1,085	1,303	80	4,029
Depreciation and amortization	363	261	207	93	923
Earnings from associates and joint ventures	9	153	7	2	171
Underlying EBITDA(1)	*1,290*	*1,188*	*944*	*-194*	*3,229*
EBIT					**2,221**
Net financial charges					-70
Income taxes					-217
Profit for the year from discontinued operations					0
Profit/(loss) for the year					**1,934**

December 31, 2022 - In € million	Materials	Chemicals	Solutions	Corporate & Business Services	Group Total
Statement of financial position and other items					
Capital expenditures	400	284	242	96	1,022
Investments	0	2	0	12	15
Working capital					
Inventories	853	541	693	21	2,108
Trade receivables	513	677	607	229	2,026
Trade payables	510	757	514	515	2,296

(1) Underlying EBITDA is a key performance indicator followed by management and includes other elements than those presented above (see Business Review section for reconciliation of Underlying with IFRS figures).

2021 - In € million	Materials	Chemicals	Solutions	Corporate & Business Services	Group Total
Income statement items					
Net sales (including inter-segment sales)	2,912	3,395	3,844	7	10,157
Inter-segment sales	-9	-38	-6	0	-53
Net sales	2,903	3,357	3,838	7	10,105
Revenue from non-core activities	19	433	30	848	1,330
Gross margin	1,102	838	986	0	2,926
Depreciation and amortization	313	174	266	95	848
Earnings from associates and joint ventures	8	141	7	2	158
Underlying EBITDA(1)	*879*	*1,009*	*701*	*-232*	*2,356*
EBIT					**1,190**
Net financial charges					-96
Income taxes					-110
Profit for the year from discontinued operations					5
Profit/(loss) for the year					**989**

December 31, 2021 - In € million	Materials	Chemicals	Solutions	Corporate & Business Services	Group Total
Statement of financial position and other items					
Capital expenditures	250	212	172	101	736
Investments	1	1	32	11	44
Working capital					
Inventories	684	425	607	28	1,745
Trade receivables	382	563	577	283	1,805
Trade payables	379	676	515	560	2,131

(1) Underlying EBITDA is a key performance indicator followed by management and includes other elements than those presented above (see Business Review section for reconciliation of Underlying with IFRS figures).

NON-CURRENT ASSETS, CAPITAL EXPENDITURES AND INVESTMENTS BY COUNTRY AND REGION

In € million	Non-current assets				Capital expenditures and investments			
	December 31, 2022	%	December 31, 2021	%	**2022**	%	2021	%
Belgium	288	2%	272	2%	-32	3%	-22	3%
Germany	438	4%	400	3%	-55	5%	-44	6%
Italy	655	5%	626	5%	-125	12%	-111	14%
France	2,876	24%	2,764	24%	-242	23%	-178	23%
Spain	130	1%	134	1%	-13	1%	-16	2%
European Union - Other	314	3%	319	3%	-37	4%	-39	5%
European Union	**4,702**	**38%**	4,516	39%	**-504**	**49%**	-409	52%
Europe - Other	**150**	**1%**	159	1%	**-20**	**2%**	-17	2%
United States	5,273	43%	5,047	43%	-348	34%	-201	26%
Canada	175	1%	177	2%	-12	1%	-7	1%
North America	**5,448**	**45%**	5,225	45%	**-360**	**35%**	-208	27%
Brazil	277	2%	218	2%	-34	3%	-27	3%
Latin America - Other	22	0%	19	0%	-5	1%	-5	1%
Latin America	**299**	**2%**	238	2%	**-39**	**4%**	-32	4%
Russia	432	4%	293	3%	0	0%	0	0%
Thailand	91	1%	99	1%	-5	0%	-5	1%
China	588	5%	598	5%	-79	8%	-90	12%
South Korea	73	1%	77	1%	-7	1%	-4	1%
India	233	2%	240	2%	-8	1%	-5	1%
Singapore	3	0%	36	0%	-3	0%	-3	0%
Japan	19	0%	18	0%	-3	0%	-3	0%
Other	186	2%	185	2%	-6	1%	-3	0%
Asia and rest of the world	**1,624**	**13%**	1,547	13%	**-112**	**11%**	-113	15%
Total	**12,223**	**100%**	11,684	100%	**-1,036**	**100%**	-779	100%

Non-current assets are those other than deferred tax assets, loans and other assets, and other financial instruments. Capital expenditures and investments include acquisitions of property, plant and equipment, right-of-use assets, intangible assets and investments in subsidiaries and other investments (joint operations, joint ventures and associates). Both exclude discontinued operations.

NOTE F2
CONSOLIDATED INCOME STATEMENT BY NATURE

In € million	Notes	2022	2021
Net sales	*(F1)*	13,426	10,105
Revenue from non-core activities	*(F3)*	2,645	1,330
Raw materials, utilities and consumables used		-8,578	-5,910
Changes in inventories		300	424
Personnel expenses		-2,262	-2,002
Wages and direct social benefits		*-1,689*	-1,469
Employer's contribution for social insurance		*-399*	-286
Pensions and insurance benefits		*-121*	-98
Other personnel expenses		*-54*	-148
Amortization, depreciation and impairment	*(F11)*	-923	-849
Other variable logistics expenses		-1,057	-776
Other fixed expenses		-1,161	-1,017
Addition and reversal of provisions (excluding employee benefit provisions)	*(F31)*	-257	-323
Significant income related to prior years	*(F4)*	0	97
M&A costs and gains and losses on disposals	*(F5)*	-83	-47
Earnings from associates and joint ventures	*(F23)*	171	158
EBIT		**2,221**	**1,190**

In 2022 the Italian government provided approximately €78 million in indirect tax credits to minimize the impact of escalating energy costs on the Group. The indirect tax credits are intended to compensate up to a maximum of 40% of energy-related costs if such costs increased by 30% or more when compared to prior years. The tax credits were accounted for in accordance with IAS 20 *Government Grants* and recognized as a reduction of energy costs in the consolidated income statement. The majority of the credits were received in Q4, 2022.

M&A costs and gains and losses on disposals for 2021 exclude a portion of PIS/COFINs (see note F4 Other operating gains and losses).

NOTE F3
REVENUE FROM NON-CORE ACTIVITIES

This revenue primarily comprises commodity and utility third party transactions, non-core licensing transactions, and other revenue, considered to not correspond to Solvay's core business. The increase compared to 2021 is mainly related to higher gas and electricity prices.

NOTE F4
OTHER OPERATING GAINS AND LOSSES

In € million	2022	2021
Start-up and preliminary study costs	-24	-11
Capital gains/losses on sales of property, plant and equipment and intangible assets	5	12
Net foreign exchange gains and losses	0	1
Amortization of intangible assets resulting from PPA	-146	-147
PIS/COFINs credits recognition		61
Gain on CO2 hedge management	322	
Other	13	5
Other operating gains and losses	**171**	**-80**

In 2022, the gain of €322 million relates to the change in accounting treatment of the entire portfolio of CO_2 emission rights following the reconsideration of the IFRS 9 own use exemption (see note F32.B).

A Supreme Court ruling in Brazil issued in August 2021 conferred the right to recover Federal indirect tax on sales, so-called "PIS/COFINs", to a number of companies, including Solvay. As a result of that ruling, a total gain of €97 million related to operations from 2003 to the present date was quantified and assessed as recoverable before tax of €(26) million. Of that, €36 million were recognized under "Results from portfolio management and major restructuring" mainly as the relevant period pre-dated the Groups' acquisition of Rhodia in August 2011 (see note F5 Results from Portfolio Management and Major Restructurings, Legacy Remediation and Major Litigations – included in line "M&A costs and gains and losses on disposals"). The remaining €61 million were recorded as "Other operating gains & losses" as the period related to operations subsequent to August 2011 and still in Solvay's perimeter. This amount has been substantially recovered mainly through the offset of income tax payments in 2022.

NOTE F5
RESULTS FROM PORTFOLIO MANAGEMENT AND MAJOR RESTRUCTURINGS, LEGACY REMEDIATION AND MAJOR LITIGATIONS

Accounting policy

Results from portfolio management and major restructurings include:
- gains and losses on the sale of subsidiaries, joint operations, joint ventures, and associates that do not qualify as discontinued operations;
- acquisition costs of new businesses;
- one-off operating costs related to internal management of portfolio (carve-out of major lines of businesses);
- gains and losses on the sale of real estate not directly linked to an operating activity;
- restructuring charges driven by portfolio management and by major reorganizations of business activities, including impairment losses resulting from the shutdown of an activity or a plant;
- impairment losses (reversals) resulting from testing of CGUs.

Results from legacy remediation and major litigations include:
- the remediation costs not generated by on-going production facilities (shut-down of sites, discontinued productions, previous years' pollution); and
- the impact of significant litigations.

RESULTS FROM PORTFOLIO MANAGEMENT AND MAJOR RESTRUCTURING

In € million	2022	2021
Restructuring costs and impairment	-23	-122
Impairment	*16*	*58*
Restructuring costs	*-39*	*-181*
M&A costs and gains and losses on disposals	-83	-11
Results from portfolio management and major restructuring	**-105**	**-133**

In 2022, impairment includes the reversal of impairment losses in the Special Chem CGU for Fluor Gases in Europe for €37 million, impairment losses of other non-performing assets for €(9) million and impairment losses on other investments for €(11) million.

The 2022 increase in M&A costs is mainly explained by the costs incurred for the ongoing separation plan of the Solvay Group. For the movement in restructuring and remediation costs please refer to the note F31.B. Provisions other than for employee benefits.

In 2021, restructuring costs relate mainly to the new simplification program of the support functions for €157 million. The impairments include the impairment reversal of the joint venture Rusvinyl for €66 million and impairment losses of other non-performing assets for €(8) million.

In 2021, the M&A costs and gains and losses on disposals include a €36 million gain related to PIS/COFINs (see note F4 Other operating gains and losses).

RESULTS FROM LEGACY REMEDIATION AND MAJOR LITIGATIONS

In € million	2022	2021
Major litigations	-100	-26
Remediation costs and other costs related to non-ongoing activities	-183	-97
Results from legacy remediation and major litigations	**-283**	**-123**

For the movement in litigation costs please refer to the note F31.B. Provisions other than for employee benefits.

In 2022 remediation costs increased versus last year mainly due to a €93 million provision recorded in Q3, 2022 related to per- and polyfluoroalkyl substances (PFAS). See note F31.B Provisions other than for employee benefits.

NOTE F6
NET FINANCIAL CHARGES

Accounting policy

Interest on borrowings is recognized in costs of borrowings as incurred, with the exception of borrowing costs directly attributable to the acquisition, construction and production of qualifying assets (see note F21 Property, Plant and Equipment).

Net foreign exchange gains or losses on financial items and changes in fair value of derivative financial instruments related to net indebtedness are presented in "Other gains and losses on net indebtedness", with the exception of changes in fair value of derivative financial instruments that are hedging instruments in a cash flow hedge relationship, and which are recognized on the same line as the hedged item, when the latter affects profit or loss.

In € million	2022	2021
Cost of borrowings	-96	-89
Interest expense on lease liabilities	-21	-19
Interest on loans and short term deposits	17	9
Other gains and losses on net indebtedness	3	-4
Net cost of borrowings	**-98**	**-103**
Cost of discounting provisions	-19	-47
Impact of change of discount rate on provisions	59	48
Result from equity instruments measured at fair value	-13	6
Net financial charges	**-70**	**-96**

Details are included in note F33 Net indebtedness.

The net cost of borrowings variance is mainly explained by:

Higher cost of borrowings:
- €(11) million related to a fee to implement committed fully undrawn credit facilities of €2.9 billion as a back-up facility to ensure potential liquidity needs in the context of the separation plan.
- €(4) million due to the foreign exchange conversion effect of the cost of borrowings in USD transaction currency.
- €8 million savings related to the continuing efforts to repay debt, including the early repayment of € 377.5 million on the € 750 million senior bond in September 2022.

Higher interest income on loans and deposits (higher volumes and an increase in interest rates).

Other gains and losses on net indebtedness from €(4) million for 2021 to €3 million for 2022, largely attributable to currency swaps (interest element). In 2021, the loss of €(4) million was mainly linked to € (6) million related to the early repayment of €372.5 million on the €750 million senior bond in December 2021.

The cost of discounting provisions relates to post-employment benefits (€(2) million) and to environmental provisions (€(17) million) and its decrease is largely attributable to the evolution of the applicable discount rates (see also note F31 Provisions).

NOTE F7

INCOME TAXES IN THE INCOME STATEMENT AND THE STATEMENT OF FINANCIAL POSITION

Accounting policy

Current taxes

The current tax payable is based on taxable profit of the year. Taxable profit differs from profit as reported in the consolidated income statement because of items of income or expense that are taxable or deductible in other years and items that are never taxable or deductible. The Group's liability for current tax is calculated using tax rates that have been enacted or substantively enacted by the end of the reporting period.

Deferred taxes

Deferred taxes are recognized for temporary differences between the carrying amounts of assets and liabilities in the consolidated financial statements and their corresponding tax bases used in the computation of taxable profit.

Deferred tax assets are generally recognized for all deductible temporary differences to the extent that it is probable that taxable profits will be available against which those deductible temporary differences can be utilized.

Deferred tax liabilities are generally recognized for all taxable temporary differences.

No deferred tax liabilities are recognized following the initial recognition of goodwill. In addition, no deferred tax assets or liabilities are recognized with respect to the initial recognition of an asset or liability in a transaction which is not a business combination and affects neither accounting profit nor taxable profit.

Deferred tax liabilities are recognized for taxable temporary differences associated with investments in subsidiaries, joint operations, joint ventures, and associates, except where the Group is able to control the timing of the reversal of the temporary difference and it is probable that the temporary difference will not reverse in the foreseeable future.

The carrying amount of deferred tax assets is reviewed at each reporting date and reduced to the extent that it is no longer probable that sufficient taxable profit will be available to allow all or part of the deferred tax asset to be utilized. Unrecognized deferred tax assets are re-assessed at each reporting date and are recognized to the extent that it has become probable that future taxable profits will allow the deferred tax asset to be recovered. Deferred tax assets other than tax loss carryforwards are analyzed on a case by case basis, taking into account all relevant facts and circumstances. For example, a zero taxable profit, after deducting the amounts paid to retirees under a defined benefit plan and for which a deductible temporary difference existed, can justify the recognition of the underlying deferred tax assets. Recognition of deferred tax assets for tax loss carryforwards requires a positive taxable profit during the year that enables the utilization of tax losses that originated in the past. Because of uncertainties inherent to predicting such positive taxable profit, recognition of deferred tax assets from tax loss carryforwards is based on a case by case analysis, which is usually based on five-year profit forecasts, except with respect to any financial company for which ten-year financial profit forecasts are considered highly predictable and are consequently used.

The corporate tax reporting team, which monitors the Group deferred tax positions, is involved in assessing deferred tax assets.

Further details are provided in note F7.C.

Deferred tax assets and liabilities are measured at the tax rates that are expected to apply in the period in which the liability is settled or the asset is realized, based on tax rates (and tax laws) that have been enacted or substantively enacted by the end of the reporting period. The measurement of deferred tax liabilities and assets reflects the tax consequences that would follow from the manner in which the Group expects, at the end of the reporting period, to recover or settle the carrying amount of its assets and liabilities.

Current tax assets and liabilities are offset when there is a legally enforceable right to set off the recognized amounts and when the Group intends to settle its current tax assets and liabilities on a net basis.

Deferred tax assets and liabilities are offset when there is a legally enforceable right to set off current tax assets against current tax liabilities and when they relate to income taxes levied by the same taxation authority and the Group intends to settle its current tax assets and liabilities on a net basis.

Current and deferred taxes for the period

Current and deferred taxes for the period are recognized as an expense or income in profit or loss, except when they relate to items that are recognized outside profit or loss (whether in other comprehensive income or directly in equity), in which case the tax is also recognized outside profit or loss, or when they arise from the initial accounting for a business combination. In the case of a business combination, the tax effect is taken into account in the accounting for the business combination.

Exception to the above, as from January 1, 2019, the Group applies the amendments to IAS 12, that apply to the income tax consequences of dividends recognized on or after the beginning of the earliest comparative period, i.e. January 1, 2018. In 2018, the income tax consequences of the coupons on perpetual hybrid bonds classified as equity were recognized in equity. As a result of the adoption of the amendment, those income tax consequences are now recognized in profit or loss.

F7.A. Income taxes

The income taxes (net expense) recognized in the consolidated income statement increased by €(107) million in 2022 compared to 2021. The income taxes (net expense) recognized in other comprehensive income decreased by €10 million in 2022 compared to 2021, mainly due to the movement in employee benefit provisions (see note F31.A Provisions for employee benefits).

In € million	2022	2021
Current taxes related to current year	-360	-236
Provisions for tax litigations	21	-1
Other current taxes related to prior years (a)	-18	0
Current taxes	**-357**	**-237**
Changes in unrecognized deferred tax assets (b)	177	127
Deferred tax income on amortization of PPA step-ups	35	37
Deferred tax impact of changes in the nominal tax rates	0	-2
Deferred taxes related to prior years (a)	38	3
Changes in deferred tax assets O&G US (c)	105	15
Other deferred taxes (d)	-214	-52
Deferred taxes	**141**	**127**
Income taxes recognized in the consolidated income statement	**-217**	**-110**
Income taxes on items recognized in other comprehensive income	**-66**	**-77**

The current taxes (net expense) related to the current year increased by €(121) million due to higher taxable profits in countries with high effective tax rates slightly offset by the reversal of provisions for tax litigation in Spain and in the US.

(a) The current and deferred taxes related to prior years (€20 million) derive mainly from the changes in deferred taxes (primarily on foreign income book to tax basis) in the United States (€21 million).

(b) In 2022, the change in unrecognized deferred tax assets amounts to €177 million resulting mainly from a revision of the forecasts of utilization of tax losses carried forward in the holding companies (€170 million).

(c) The deferred tax assets on the goodwill and other tangible and intangible assets for Oil & Gas in the United States were written-down in the US tax unit in 2020. Based on a reassessment of recoverability of these deferred tax assets at the end of 2022, the write-down of the deferred tax assets was reversed (€15 million in 2021 and €105 million in 2022).

(d) Other deferred taxes:

In 2022, the other deferred income taxes (€(214) million) included:

- The utilization of tax losses carried forward for €(109) million;
- The tax impact of the recognition of the CO_2 forward purchase contracts for €(75) million (see note F32 Financial instruments and Financial risk management);
- The use of deferred taxes related to the Brazilian PIS/COFINs credits recognized in 2021 for €20 million;
- Other net increases and reversals of other temporary differences for €(50) million of which €(32) million in provisions other than employee benefits.

Developments in International Taxation

The Organization for Economic Co-operation and Development (OECD) initiative to combat base erosion and profit shifting (BEPS) has led to the development of a number of measures which countries plan to introduce. These include the Pillar Two initiative, focused on the introduction of a global minimum corporate tax rate, with the possibility of top-up taxes being introduced in cases where jurisdictions do not comply with the minimum tax rate. The Group is currently assessing the accounting implications and the jurisdictions that could give rise to additional taxation as a result of the implementation of the Pillar 2 Model Rules in national laws, which is not expected to be material for the Group.

F7.B. Reconciliation of the income tax expense

The effective income tax expense has been reconciled with the theoretical tax expense obtained by applying to the pre-tax profit of each Group entity the nominal tax rate prevailing in the country in which it operates.

In € million	2022	2021
Profit/(Loss) for the year before taxes	2,151	1,094
Earnings from associates and joint ventures	171	158
Profit/(Loss) for the year before taxes excluding earnings from associates and joint ventures	**1,980**	**936**
Reconciliation of the tax income/(expense)		
Total tax income/(expense) of the Group entities computed on the basis of the respective local nominal rates	-546	-284
Weighted average nominal rate	28%	30%
Tax effect of changes in nominal tax rates	0	-2
Changes in unrecognized deferred tax assets	177	127
Tax effect of permanent differences	26	37
Gain and losses with no tax expense and income	6	10
US taxes disconnected from profit for the year before taxes	-15	-9
Changes in deferred tax assets O&G US	105	15
Provisions for tax litigations	21	-1
Other tax effect of current and deferred tax adjustments related to prior years	19	3
Tax effect on distribution of dividends	-8	-6
Effective tax income/(expense)	**-217**	**-110**
Effective tax rate	**10%**	**10%**

The weighted average nominal rate slightly decreased from 2021 (30%) to 2022 (28%) mainly due to the decrease of the withholding taxes on dividends. The high nominal tax rate is mainly due to elevated earnings in countries with higher nominal tax rates (e.g. Brazil, Italy).

F7.C. Deferred taxes in the consolidated statement of financial position

2022 - In € million	Opening balance	Recognized in income statement	Recognized in other comprehensive income	Exchange rate effect	Other acquisition / disposal	Other	Closing balance
Temporary differences							
Employee benefits obligations	**289**	7	-68	5		1	**234**
Provisions other than employee benefits	**208**	-42		9	0	0	**175**
Property, plant and equipment	**-225**	7		-15	0	-1	**-234**
Intangible assets	**-274**	96		-17	0		**-196**
Right-of-use assets	**-74**	-4		-2	0	0	**-81**
Lease liabilities	**75**	4		3		0	**82**
Goodwill	**3**	56		-1			**58**
Other temporary differences	**20**	-84	1	-3	0	0	**-66**
Tax losses	**263**	109		3	0		**375**
Tax credits	**33**	-7		1			**27**
Total (net amount)	**318**	141	-66	-18	0	0	**374**

2021 - In € million	Opening balance	Recognized in income statement	Recognized in other comprehensive income	Exchange rate effect	Other acquisition / disposal	Transfer to assets held for sale	Closing balance
Temporary differences							
Employee benefits obligations	**403**	**-12**	**-104**	**2**	**-5**	**5**	**289**
Provisions other than employee benefits	**204**	-4		6	-1	2	**208**
Property, plant and equipment	**-262**	27	32	-19	2	-5	**-225**
Intangible assets	**-311**	65		-24	-4		**-274**
Right-of-use assets	**-74**	4		-3	1	-2	**-74**
Lease liabilities	**76**	-4		3	-1	1	**75**
Goodwill	**3**						**3**
Other temporary differences	**26**	-4	-4	2			**20**
Tax losses	**209**	50		5	-3	3	**263**
Tax credits	**27**	5		1			**33**
Total (net amount)	**301**	**127**	**-77**	**-27**	**-10**	**3**	**318**

The significant components of the deferred tax assets and deferred tax liabilities at the end of 2022 and 2021 are as follows:

In € million	2022				
	Deferred tax assets	Deferred tax liabilities	Net deferred taxes before write-down	Write-down of deferred tax assets (unrecognized portion)	Net deferred taxes
Employee benefits obligations	328	-94	234	0	234
Provisions other than employee benefits	241	-66	174	1	175
Property, plant and equipment	69	-275	-207	-28	-234
Intangible assets	261	-381	-120	-76	-196
Right-of-use assets	0	-82	-81	0	-81
Lease liabilities	80	2	82	0	82
Goodwill	58	0	58	0	58
Other	175	-238	-63	-3	-66
Temporary differences	**1,211**	**-1,133**	**76**	**-105**	**-29**
Operational losses	1,479	0	1,479	-1,187	292
Non-operational losses	308	0	308	-225	83
Tax losses	**1,787**	**0**	**1,787**	**-1,412**	**375**
Tax credits carried forward	**81**	**1**	**81**	**-55**	**27**
Netting deferred taxes	-575	575	0	0	0
Deferred taxes	**2,504**	**-557**	**1,945**	**-1,572**	**374**

In € million	2021				
	Deferred tax assets	Deferred tax liabilities	Net deferred taxes before write-down	Write-down of deferred tax assets (unrecognized portion)	Net deferred taxes
Employee benefits obligations	413	-123	290	-1	**289**
Provisions other than employee benefits	244	-38	206	1	**208**
Property, plant and equipment	118	-314	-195	-30	**-225**
Intangible assets	107	-385	-277	3	**-274**
Right-of-use assets	0	-74	-74		**-74**
Lease liabilities	77	-1	75		**75**
Goodwill	3		3		**3**
Other	105	-78	27	-7	**20**
Temporary differences	**1,068**	**-1,012**	**56**	**-34**	**22**
Operational losses	1,566		1,566	-1,398	**169**
Non-operational losses	331		331	-237	**95**
Tax losses	**1,898**		**1,898**	**-1,635**	**263**
Tax credits carried forward	**78**		**78**	**-45**	**33**
Netting deferred taxes	-551	551			
Deferred taxes	**2,492**	**-461**	**2,031**	**-1,713**	**318**

The total offset deferred taxes of €374 million at year-end 2022 are €56 million higher than in 2021. The main changes in 2022 are related to the following items:

- deferred tax assets on employee benefit obligations: €234 million at year-end 2022 - €55 million lower than in 2021, explained by the decrease of post-employment benefits obligations following an increase of the discount rates;
- deferred tax liabilities on provisions other than employee benefits: €176 million at year-end 2022 - €32 million lower than in 2021;
- deferred tax liabilities on intangible assets: €(196) million at year-end 2022 - €78 million lower than in 2021. The decrease in these liabilities in 2022 mainly reflects:
  - exchange rate impacts of €(18) million;
  - the tax impact of €35 million of amortization in the consolidated income statement of the step-up of intangible assets resulting from Purchase Price Allocation;
  - the reversal of the write-off of the deferred taxes on intangible assets for Oil & Gas in the United States for €49 million.
- deferred tax liabilities on goodwill: €58 million at year-end 2022 - €55 million higher than in 2021 due to the reversal of the write-off of the deferred taxes on goodwill for Oil & Gas in the United States;
- deferred taxes on operational and non-operational tax losses: €374 million at year-end 2022 - €112 million higher than in 2021 mainly due to:
  - the revision of the forecasts of utilization of tax losses carried forward in the holding companies (€170 million);
  - the newly created or utilized deferred tax on tax losses for €(109) million;
  - the recognition of deferred tax assets on losses up to €45 million in Luxembourg considering an increase of the taxable temporary differences in the same Tax Group.
- deferred tax assets on other temporary differences: €(66) million at year-end 2022 - €86 million lower than in 2021 mainly due to the recognition of the CO_2 emission rights contracts for €(75) million and the taxable temporary differences in Luxembourg for €(45) million offset by the use of deferred taxes related to the Brazilian PIS/COFINs credits recognized in 2021 for €20 million and the changes in deferred taxes (mainly on foreign income book to tax basis) in the United States for €21 million.

At year-end 2022, €(56) million for deferred tax liabilities on unremitted earnings were recognized in the Other Temporary differences. An amount of € 32 million was not recognized because the Group controls the timing of the reversal of the temporary differences and it is probable that they will not reverse in the foreseeable future.

Recognized deferred taxes for which utilization depends on future taxable profits in excess of the profit arising from the reversal of existing taxable temporary differences within entities that have suffered a tax loss in either current or preceding years in the related tax jurisdiction, amount to €134 million. This recognition is supported by favorable expectations of future taxable profits.

F7.D. Other information

For the majority of the Group's tax loss carryforwards, no deferred tax assets have been recognized. The unrecognized tax losses are mainly located in countries where they can be carried forward indefinitely.

The tax losses carried forward generating deferred tax assets are given below by expiration date.

In € million	2022	2021
Within 1 year	0	15
Within 2 years	1	16
Within 3 years	1	2
Within 4 years	0	2
Within 5 or more years	12	28
No time limit	1,402	974
Total of losses carried forward which have generated recognized deferred tax assets	**1,417**	**1,037**
Tax losses carried forward for which no deferred tax assets were recognized	5,203	6,050
Total of tax losses carried forward	**6,620**	**7,087**

The tax losses carried forward of € 1,417 million (€1,037 million in 2021) have generated deferred tax assets for € 374 million (€263 million in 2021).

The increase of tax losses carried forward which have generated deferred tax assets, is largely due to the revised forecast for the holding company in France.

NOTE F8
DISCONTINUED OPERATIONS

Accounting policy

A discontinued operation is a component of the Group which the Group has disposed of or which is classified as held for sale (see note F27 Assets held for sale), and which:

- represents a separate major line of business or geographical area of operations;
- is part of a single coordinated plan to dispose of a separate major line of business or geographical area of operations; or
- is a subsidiary acquired exclusively with a view to resale.

A component of the Group consists of operations and cash flows, which can be clearly distinguished operationally and for financial reporting purposes, from the rest of the Group.

In the consolidated statement of comprehensive income, the consolidated statement of cash flows, and disclosures, discontinued operations are re-presented for prior periods presented.

In 2021 the discontinued operation concerns post-closing warranties related to the disposal of the Pharma business.

NOTE F9
EARNINGS PER SHARE

Accounting policy

The basic earnings per share are obtained by dividing profit for the year by the weighted average number of ordinary shares outstanding during the reporting period. The weighted average number of ordinary shares excludes the treasury shares held by the Group over the reporting period.

The diluted earnings per share are obtained by dividing profit for the year, adjusted for the effects of dilutive potential ordinary shares, by the weighted average number of ordinary shares, also adjusted by the number of dilutive potential ordinary shares attached to the issuance of share options.

The number of dilutive potential ordinary shares is calculated for the weighted average number of share options outstanding during the reporting period as the difference between the average market price of ordinary shares during the reporting period and the exercise price of the share option. Share options have a dilutive effect only when the average market price is above the exercise price (share options are "in the money").

For the purpose of calculating diluted earnings per share, there were no adjusting elements to the profit for the year (Solvay share).

Basic and diluted amounts per share for discontinued operations are presented in the consolidated income statement.

Number of shares (in units)	2022	2021
Weighted average number of ordinary shares (basic)	103,744,461	103,527,423
Dilution effect	398,745	260,419
Weighted average number of ordinary shares (diluted)	104,143,206	103,787,842

	2022		2021	
	Basic	Diluted	Basic	Diluted
Profit/(loss) for the year (Solvay share) including discontinued operations (in € thousands)	1,905,416	1,905,416	947,738	947,738
Profit/(loss) for the year (Solvay share) excluding discontinued operations (in € thousands)	1,905,150	1,905,150	943,177	943,177
Earnings per share (including discontinued operations) (in €)	18.37	18.30	9.15	9.13
Earnings per share (excluding discontinued operations) (in €)	18.36	18.29	9.11	9.09

Full data per share, including dividend per share, can be found in the Business Review section.

The average market price during 2022 was € 91.15 per share (2021: € 106.01 per share). The following share options were out of the money, and therefore antidilutive for the period presented, but could potentially dilute basic earnings per share in the future (see note F30 Share-based payments):

Antidilutive share options per plans	Date granted	Exercise price (in €)	Number of share options granted	Number of share options outstanding
2015	February 25, 2015	114.51	346,617	332,409
2017	February 23, 2017	111.27	316,935	308,450
2018 - 1	February 27, 2018	113.11	400,704	391,280
2018 - 2	July 30, 2018	108.38	72,078	72,078
2019	February 27, 2019	97.05	438,107	429,103
2020	February 26, 2020	95.80	405,670	395,164
2021	February 24, 2021	95.58	265,433	259,001
Total			**2,245,544**	**2,187,485**

NOTES TO THE CONSOLIDATED STATEMENT OF COMPREHENSIVE INCOME

NOTE F10

CONSOLIDATED STATEMENT OF COMPREHENSIVE INCOME

Accounting policy

In accordance with IAS 1 Presentation of Financial Statements, the Group elected to present two statements, i.e. a consolidated income statement immediately followed by a consolidated statement of comprehensive income.

The components of other comprehensive income (OCI) are presented before related tax effects with one amount shown for the aggregate amount of income tax relating to those components. Tax impacts are further disclosed in this note.

Presentation of the tax effect relating to each item of other comprehensive income

Note: the below table presents the total other comprehensive income items for the aggregate of the shares of Solvay and the non-controlling interests.

	2022		
In € million	Before-tax amount	Tax expense (-)/income	Net of tax amount
Effective portion of gains and losses on hedging instruments in a cash flow hedge	*304*	*-7*	*297*
Recycling to the income statement	*-225*		*-225*
Gains and losses on hedging instruments in a cash flow hedge (see note F32)	79	-7	72
Currency translation differences arising during the year	*285*		*285*
Recycling of currency translations differences relating to foreign operations disposed of in the year	*-1*		*-1*
Other movement of currency translation differences (NCI) relating to foreign operations	0		0
Currency translation differences - Subsidiaries and joint operations	284		284
Share of other comprehensive income of associates and joint ventures	22		22
Recyclable components	***385***	***-7***	***377***
Gains and losses on equity instruments measured at fair value through other comprehensive income	-25	6	-19
Remeasurements of the net defined benefit liability (see notes F7 & F31)	155	-66	89
Non-recyclable components	***130***	***-60***	***70***
Other comprehensive income/(loss)	**515**	**-67**	**447**

	2021		
In € million	Before-tax amount	Tax expense (-)/income	Net of tax amount
Effective portion of gains and losses on hedging instruments in a cash flow hedge	*71*	*5*	*76*
Recycling to the income statement	*-87*		*-87*
Gains and losses on hedging instruments in a cash flow hedge (see note F32)	-17	5	-11
Currency translation differences arising during the year	*432*		*432*
Recycling of currency translations differences relating to foreign operations disposed of in the year	*47*		*47*
Other movement of currency translation differences (NCI) relating to foreign operations	8		8
Currency translation differences - Subsidiaries and joint operations	487		487
Share of other comprehensive income of associates and joint ventures	29		29
Recyclable components	***500***	***5***	***505***
Gains and losses on equity instruments measured at fair value through other comprehensive income	33	-8	25
Remeasurements of the net defined benefit liability (see notes F7 & F31)	562	-75	487
Non-recyclable components	***594***	***-83***	***512***
Other comprehensive income/(loss)	**1,094**	**-78**	**1,017**

The €33 million gain on equity instruments measured at fair value through other comprehensive income mainly relates to a Solvay Ventures investment that was listed in Q4 of 2021.

Currency translation differences

Accounting policy

For the purpose of presenting consolidated financial statements at the end of each reporting period, the assets and liabilities of the Group's foreign operations are expressed in euros using closing rates. Income and expense items are translated at the average exchange rates for the period except when the impact of applying the average rate is materially different from applying the spot rate at the respective transactions' dates, in which case the latter is applied. Exchange differences arising, if any, are recognized in other comprehensive income as "currency translation differences".

Currency translation differences are reclassified from equity to profit or loss, on:
- a disposal of the Group's entire interest in a foreign operation, or a partial disposal involving loss of control over a subsidiary that includes a foreign operation. In this case, all of the accumulated exchange differences in respect of that operation attributable to the Group are reclassified to profit or loss. Any exchange differences that have previously been attributed to non-controlling interests are derecognized, but they are not reclassified to profit or loss;
- a partial disposal of an interest in a joint arrangement or an associate that includes a foreign operation, when the retained interest is a financial asset. In this case, all of the accumulated exchange differences in respect of that operation attributable to the Group are reclassified to profit or loss;
- a partial disposal of an interest in a joint venture or an associate that includes a foreign operation and that continues to be accounted for as a joint venture or an associate. In this case, a proportionate share of the accumulated exchange differences is reclassified to profit or loss.

In case of a partial disposal of a subsidiary (i.e. No loss of control) that includes a foreign operation, the proportionate share of accumulated exchange differences is reattributed to non-controlling interests and is not recognized in profit or loss.

In case of (a) a capital decrease of a subsidiary without loss of control, or (b) a capital decrease of an equity method investee or a joint operation without modification of the share of equity interest held in that investee, then no accumulated exchange differences are reclassified from equity to profit or loss.

Goodwill and fair value adjustments arising on the acquisition of a foreign operation are treated as assets and liabilities of the foreign operation and translated into the Group's presentation currency at the closing rate.

The total currency translation gain amounts to € 304 million in 2022, and only relates to the Group's share (2021: gain of € 508 million). They are linked to the revaluation of the US dollar (€260 million) (2021: €331 million), Chinese Renminbi (€(40) million) (2021: €83 million), the Brazilian Real (€38 million) (2021: €11 million), the Russian ruble (€22 million) (2021: €21 million), compared to the Euro.

NOTES TO THE CONSOLIDATED STATEMENT OF CASH FLOWS

(CONTINUING AND DISCONTINUED OPERATIONS)

NOTE F11
DEPRECIATION, AMORTIZATION AND IMPAIRMENTS

In 2022 total depreciation, amortization and impairment losses (reversal) amount to €923 million (€849 million in 2021), of which:

Straight-line depreciation and amortization of € 948 million (€906 million in 2021) for continuing operations recorded in:
- Cost of goods sold € 604 million (€564 million in 2021),
- Administrative costs € 85 million (€82 million in 2021),
- Research and development costs € 96 million (€100 million in 2021),
- Other € 163 million (€160 million in 2021), including € 146 million (€147 million in 2021) for PPA amortization (see note F4 Other operating gains and losses);

In 2022, the impairments include the impairment reversal of Special Chem assets for €37 million (see note F24 Impairment) and impairment losses of other non-performing assets for €(9) million.

NOTE F12
OTHER NON OPERATING AND NON CASH ITEMS

The other non-operating and non-cash items for 2022 of €43 million (€(113) million in 2021) relate mainly to non-cash capital gains and other results for M&A deals.

NOTE F13
INCOME TAXES IN THE STATEMENT OF CASH FLOWS

Income tax expense in 2022 amounts to €217 million (€110 million in 2021), all of which was from continuing operations.

Income tax paid in 2022 amounts to €305 million (€233 million in 2021), all of which was from continuing operations. The income tax paid has increased compared to previous years due to increased profits mainly in China, the US and Italy.

The major components of Income taxes are discussed in note F7 Income taxes in income statement and statement of financial position.

NOTE F14
CHANGES IN WORKING CAPITAL

In € million	2022	2021
Inventories	-300	-427
Trade receivables	-193	-459
Trade payables	115	775
Other receivables/payables	-198	20
Changes in working capital	**-576**	**-92**
Of which discontinued operations	0	-5

Changes in working capital in 2022 result mainly from sales growth despite working capital disciplines and from the non-cash impact of the change in accounting treatment of the portfolio of CO_2 emission rights.

NOTE F15
ADDITIONS, REVERSALS AND USE OF PROVISIONS

Additions and reversals on provisions in 2022 amount to €336 million (€464 million in 2021) and concern mainly employee benefits €63 million (€ 46 million in 2021), restructuring €32 million (€184 million in 2021) and environment for €177 million (€90 million in 2021).

Use of provisions in 2022 amount to €(328) million (€(303) million in 2021) and concerns mainly employee benefits €(101) million (€(89) million in 2021), environment €(90) million (€(61) million in 2021) and restructuring €(106) million (€(118) million in 2021).

In 2022, use of provisions for additional voluntary contributions in pension plans relates to €(155) million in Germany.

See note F31 Provisions for more information.

NOTE F16

CASH FLOWS FROM INVESTING ACTIVITIES – ACQUISITION/DISPOSAL OF ASSETS AND INVESTMENTS

2022 - In € million	Acquisitions	Disposals	Total
Investments	**-14**	**95**	**81**
Subsidiaries		95	95
Other	-14		-14
Property, plant and equipment/Intangible assets	**-909**	**21**	**-888**
Total	**-923**	**116**	**-807**

2021 - In € million	Acquisitions	Disposals	Total
Total investments	**-44**	**169**	**125**
Subsidiaries	-22	169	147
Other	-22		-22
Property, plant and equipment/Intangible assets	**-637**	**30**	**-606**
Total	**-681**	**200**	**-481**

2022

The other acquisitions (€ (14) million) mainly relate to several investments of the Corporate Venturing portfolio (New Business Development).

The disposal of subsidiaries (€95 million) mainly relates to the proceeds after taxes related to the final price adjustments for the disposal of the Barium Strontium business and the joint venture with Chemicals Products Corporation, the Polyamide business and the disposal of the Novecare Alkoxylation plant in Singapore.

The acquisition of property, plant and equipment and intangible assets (€(909) million) includes the following main projects:
- Specialty Polymers: Polyvinylidene Fluoride (PVDF) capacity increase in Tavaux (France) and Changshu (PRC)
- Soda Ash & Derivatives: Soda ash capacity increase in Green River (USA)
- Novecare: internalization of IRIS intermediate chemical production in Melle (France)
- Technology Solutions: Aldoxime capacity increase in Mount Pleasant (USA)
- Aroma performance: internalization of natural vanillin purification in Saint Fons (France)
- Specialty Polymers: DCDPS monomer capacity increase in Augusta (USA)
- Specialty Polymers: Udel polysulfone capacity increase in Marietta (USA)
- Soda Ash & Derivatives: methane emissions abatement in Green River (USA)

2021

The acquisition of subsidiaries (€ (22) million) mainly relates to the acquisition of a seed coating business from Bayer.

Other acquisitions mainly relate to the investment in Shinsol Advanced Chemicals Corporation and in equity instruments measured at fair value.

The disposal of subsidiaries (€169 million) mainly relates to the proceeds after taxes from:
- the sodium chlorate business line and related assets in Povoa, Portugal;
- the fluorine chemicals assets in Onsan, South Korea;
- the sodium percarbonate business line and related assets in Bad Hönningen, Germany;
- the Barium Strontium business and the joint venture with Chemical Products Corporation (CPC);
- the Process Materials business;
- the amphoterics surfactants activities; and
- the surfactants and anti-oxidants business in Rasal, India.

The acquisition of property, plant and equipment and intangible assets (€(636) million) relates to various projects:
- Soda Ash: coal energy phase-out in Green River (USA);
- Aroma performance: internalization of natural vanillin purification in Saint Fons (France);
- Specialty Polymers: water treatment in Spinetta (Italy);
- Specialty Polymers: Tecnoflon capacity expansion in Spinetta (Italy);
- Specialty Polymers: Polyvinylidene Fluoride (PVDF) capacity increase in Changshu (PRC);
- Composite Materials: new production unit dedicated to thermoplastic composites in Piedmont, South Carolina (USA);
- Soda Ash & Derivatives: new production unit dedicated to Bicarbonate in Devnya (Bulgaria);
- Specialty Polymers: Polyvinylidene Fluoride (PVDF) capacity increase in Tavaux (France).

NOTE F17
OTHER CASH FLOWS FROM FINANCING ACTIVITIES

The €112 million of other cash flows from financing activities in 2022 mainly relate to margin calls on hedging instruments as part of Energy Services' activities for €128 million.

The €50 million of other cash flows from financing activities in 2021 mainly relate to margin calls on hedging instruments as part of Energy Services' activities for €108 million and to the payment of the EBRD option (€(52) million) to purchase the EBRD shares in the Solvay holding of the RusVinyl Joint Venture.

For trading in futures of different commodities (CO_2, power, gas, coal), Energy Services uses brokers. These deals are subject to margin calls. To cover the credit risk of the counterparty, brokers pay a margin call to Solvay in case the instrument is in the money for Solvay. If the instrument is out of the money for Solvay, Solvay pays a margin call to the brokers. The margin calls are presented as part of financial debt (see note F33 Net indebtedness). Cash flows from margin calls are recognized as financing cash flows that fluctuate with the fair value of the instrument. The actual settlement of these commodity derivatives is net of margin calls and the gross amount (including margin calls that are reclassified from financing cash flows) is recognized in operating cash flows.

NOTE F18
CASH FLOW FROM DISCONTINUED OPERATIONS

The 2021 cash flow from discontinued operations amounts to €(12) million related to the Pharma business and Polyamides.

NOTES TO THE CONSOLIDATED STATEMENT OF FINANCIAL POSITION

NOTE F19
INTANGIBLE ASSETS

Accounting policy

An intangible asset is an identifiable non-monetary asset without physical substance. It is identifiable when it is separable, i.e. Is capable of being separated or divided from the Group, or when it arises from contractual or other legal rights. An intangible asset shall be recognized if, and only if:

(a) it is probable that the expected future economic benefits that are attributable to the asset will flow to the Group; and

(b) the cost of the asset can be measured reliably.

Intangible assets acquired or developed internally are initially measured at cost. The cost of an acquired intangible asset comprises its purchase price, import duties and non-refundable purchase taxes, after deducting trade discounts and rebates, and any directly attributable cost of preparing the asset for its intended use. Subsequent expenditure on intangible assets is capitalized only if it is probable that it will increase the future economic benefits associated with the specific asset. Other expenditure is expensed as incurred.

After initial recognition, intangible assets are measured at cost less accumulated amortization and impairment losses, if any.

Intangible assets are amortized on a straight-line basis over their estimated useful lives, which do not exceed the contractual period, if any. The estimated useful lives, residual values and amortization methods are reviewed at each year-end, and any changes in estimates are accounted for prospectively.

Patents and trademarks	2-20	years
Software	3-5	years
Development expenditures	2-5	years
Customer relationships	5-29	years
Other intangible assets - Technologies	5-20	years

Amortization expense is included in the consolidated income statement within cost of goods sold, administrative costs, research and development costs and other operating gains and losses.

The asset is tested for impairment if (a) there is a trigger for impairment, and (b) annually for projects under development (see note F24 Impairment).

Intangible assets are derecognized from the consolidated statement of financial position on disposal or when no future economic benefits are expected from their use or disposal. The gain or loss arising from the derecognition of an intangible asset is recognized in profit or loss at the moment of derecognition.

Research and development costs

Research costs are expensed in the period in which they are incurred.

Development costs are capitalized if, and only if, all the following conditions are fulfilled:
- the cost of the asset can be reliably measured;
- the technical feasibility of the product has been demonstrated;
- the product or process will be placed on the market or used internally;
- the assets will generate future economic benefits (a potential market exists for the product or, where it is to be used internally, its future utility has been demonstrated);
- the technical, financial and other resources required to complete the project are available.

Development costs comprise employee expenses, the cost of materials and services directly attributable to the projects, and an appropriate share of directly attributable fixed costs including, and where applicable, borrowing costs. The intangible assets are amortized as from the moment they are available for use, i.e. When they are in the location and condition necessary for them to be capable of operating in the manner intended by management. Development costs, which do not satisfy the above conditions are expensed as incurred.

Patents, trademarks and customer relationships

Those intangible assets have mainly been acquired through business combinations. Customer relationships consist of customer lists.

Other intangible assets

Other intangible assets mainly include technology acquired separately or in a business combination.

In € million	Development costs	Patents and trademarks	Customer relationships	Other intangible assets	Total
Gross carrying amount					
December 31, 2020	**464**	**1,620**	**1,856**	**661**	**4,601**
Additions	48	4		23	75
Disposals and closures	-9	-21		-4	-33
Increase through business combinations	0	0		7	7
Currency translation differences	12	79	117	49	257
Other	1	2		4	7
December 31, 2021	**517**	**1,686**	**1,973**	**739**	**4,914**
Additions	67	3		24	94
Disposals and closures	-22	-16		-5	-43
Increase through business combinations	0	0		0	0
Currency translation differences	7	60	93	22	183
Other	7	11		-15	3
December 31, 2022	**577**	**1,744**	**2,066**	**765**	**5,152**
Accumulated amortization					
December 31, 2020	**-173**	**-930**	**-824**	**-531**	**-2,459**
Amortization	-65	-104	-82	-13	-264
Impairment	0	5	0	-5	0
Disposals and closures	8	21		4	32
Currency translation differences	-3	-36	-36	-42	-116
Other	0	-3		-2	-5
December 31, 2021	**-233**	**-1,047**	**-941**	**-590**	**-2,812**
Amortization	-63	-97	-90	-14	-265
Impairment	0	0	0	0	0
Reversal of impairment	0	0		8	8
Disposals and closures	22	16		5	43
Currency translation differences	-2	-26	-29	-21	-78
Other	0	0		0	0
December 31, 2022	**-277**	**-1,155**	**-1,061**	**-611**	**-3,104**
Net carrying amount					
December 31, 2020	291	690	1,032	129	**2,140**
December 31, 2021	283	638	1,031	149	**2,102**
December 31, 2022	**300**	**589**	**1,005**	**154**	**2,048**

Intangibles mainly relate to the intangibles acquired through the acquisitions of Rhodia and Cytec. The average remaining useful life of Cytec's assets is 10 years.

NOTE F20

GOODWILL AND BUSINESS COMBINATIONS

Accounting policy

General

Acquisitions of subsidiaries are accounted for using the acquisition method. The consideration for each acquisition is measured at the aggregate of the fair values (at the date of acquisition) of assets transferred and liabilities incurred or assumed, and equity instruments issued by the Group in exchange for control of the acquiree. Acquisition-related costs are recognized in profit or loss as incurred.

Where applicable, the consideration for the acquisition includes any asset or liability resulting from a contingent consideration arrangement, measured at its acquisition-date fair value. Subsequent changes in such fair values are adjusted against the cost of acquisition where they qualify as measurement period adjustments (see below). All other subsequent changes in the fair value of contingent consideration classified as an asset or liability are accounted for in accordance with relevant IFRSs, generally through profit or loss.

Where a business combination is achieved in stages, the Group's previously held interests in the acquired entity are remeasured to fair value at the acquisition date (i.e. The date the Group obtains control) and the resulting gain or loss, if any, is recognized in profit or loss. Amounts arising from interests in the acquiree prior to the acquisition date that have previously been recognized in other comprehensive income are reclassified to profit or loss, where such treatment would be appropriate if that interest were disposed of.

The acquiree's identifiable assets, liabilities and contingent liabilities that meet the conditions for recognition under IFRS 3 *Business Combinations* are recognized and measured at their fair value at the acquisition date, except that:

- deferred tax assets or liabilities, and liabilities or assets related to employee benefit arrangements are recognized and measured in accordance with IAS 12 *Income Taxes*, and IAS 19 *Employee Benefits*, respectively;
- liabilities or equity instruments related to the replacement by the Group of an acquiree's share-based payment awards are measured in accordance with IFRS 2 *Share-based Payment*; and
- assets (or disposal groups) that are classified as held for sale in accordance with IFRS 5 *Non-current Assets Held for Sale and Discontinued Operations* are measured in accordance with that Standard.

If the initial accounting for a business combination is incomplete by the end of the reporting period in which the combination occurs, the Group reports provisional amounts for the items for which the accounting is incomplete. Those provisional amounts are adjusted during the measurement period (see paragraph below), or additional assets or liabilities are recognized, to reflect new information obtained about facts and circumstances that existed as of the acquisition date that, if known, would have affected the amounts recognized as of that date.

The measurement period is the period from the date of acquisition to the date the Group obtains complete information about facts and circumstances that existed as of the acquisition date, and does not exceed twelve months.

Goodwill

Goodwill arising in a business combination is recognized as an asset at the date that control is obtained (the acquisition date). Goodwill is measured as the excess of the sum of:

(a) the consideration transferred;

(b) the amount of any non-controlling interests in the acquiree; and

(c) in a business combination achieved in stages, the acquisition date fair value of the previously held equity interest in the acquiree, over the share acquired by the Group in the fair value of the entity's identifiable net assets at the acquisition date.

Goodwill is not amortized but is tested for impairment on an annual basis, and more frequently if there are any impairment triggers identified.

For the purpose of impairment testing, goodwill is allocated to each of the Group's cash-generating units (or groups of cash-generating units) in accordance with IAS 36 *Impairment of Assets*.

A cash-generating unit (CGU) is the smallest identifiable group of assets that generates cash inflows that are largely independent of the cash inflows from other group(s) of assets.

These tests consist of comparing the carrying amount of the assets or (groups of) CGUs with their recoverable amount. The recoverable amount of an asset or a (group of) CGU(s) is the higher of its fair value less costs to sell and its value in use. If the recoverable amount of the CGU is less than its carrying amount, the impairment loss is allocated first to reduce the carrying amount of any goodwill allocated to the unit and then to the other assets of the unit pro-rata on the basis of the carrying amount of each asset in the unit. An impairment loss recognized on goodwill shall not be reversed in a subsequent period.

Assets held for sale include their related goodwill.

On disposal of an operation within a CGU to which goodwill has been allocated, the goodwill associated with the operation disposed of is included in the determination of the profit or loss on disposal. It is measured on the basis of the relative values of the operation disposed of and the portion of the CGU retained, unless another method better reflects the goodwill associated with the operation disposed of.

Goodwill – overview

In € million	Total
December 31, 2020	**3,265**
Currency translation differences	115
Disposals	-1
December 31, 2021	**3,379**
Currency translation differences	94
December 31, 2022	**3,472**

In 2022 and 2021, the currency translation differences mainly relate to goodwill expressed in US dollars.

Goodwill by (groups of) CGU(s)

Goodwill acquired in a business combination is allocated to the CGUs or groups of CGUs that are expected to benefit from that business combination.

	2022			
In € million	**At beginning of the period**	Disposals	Currency translation differences	**At the end of the period**
Operating segments - Groups of CGUs				
Materials	**341**			**341**
Chemicals	**121**			**121**
Solutions	**264**			**264**
(Groups of) CGUs				
Composite Materials	**555**		37	**591**
Novecare	**553**		12	**565**
Technology Solutions	**690**		43	**734**
Special Chem	**210**		0	**210**
Specialty Polymers	**179**		1	**181**
Soda Ash and Derivatives	**162**			**162**
Coatis	**82**			**82**
Silica	**72**			**72**
Aroma Performance	**49**			**49**
Energy Services	**50**			**50**
Hydrogen Peroxide Europe	**21**			**21**
Hydrogen Peroxide Mercosul	**14**			**14**
Hydrogen Peroxide Nafta	**7**			**7**
Hydrogen Peroxide Asia	**11**		0	**11**
Total goodwill	**3,379**	**0**	**94**	**3,472**

	2021			
In € million	At beginning of the period	Disposals	Currency translation differences	At the end of the period
Operating segments - Groups of CGUs				
Materials	341			341
Chemicals	121			121
Solutions	264			264
(Groups of) CGUs				
Composite Materials	509		46	555
Novecare	542	-1	13	553
Technology Solutions	636		54	690
Special Chem	210		0	210
Specialty Polymers	177		2	179
Soda Ash and Derivatives	162			162
Coatis	82			82
Silica	72			72
Aroma Performance	49			49
Energy Services	50			50
Hydrogen Peroxide Europe	21			21
Hydrogen Peroxide Mercosul	14			14
Hydrogen Peroxide Nafta	7			7
Hydrogen Peroxide Asia	11		0	11
Total goodwill	**3,265**	**-1**	**115**	**3,379**

See note F24 Impairment.

NOTE F21
PROPERTY, PLANT AND EQUIPMENT

Accounting policy

General

Property, plant and equipment are tangible items that:
- are held for use in the production or supply of goods or services, for rental to others, or for administrative purposes; and
- are expected to be used during more than one period.

The items of property, plant and equipment owned by the Group are recognized as property, plant and equipment when the following conditions are satisfied:
- it is probable that the future economic benefits associated with the asset will flow to the Group;
- the cost of the asset can be measured reliably.

Items of property, plant and equipment are initially measured at cost. The cost of an item of property, plant and equipment comprises its purchase price and any costs directly attributable to bringing the asset to the location and condition necessary for it to be capable of operating in the manner intended by management. If applicable, the cost comprises borrowing costs during the construction period.

After initial recognition, items of property, plant and equipment are measured at cost less accumulated depreciation and impairment losses, if any.

Items of property, plant and equipment are depreciated on a straight-line basis over their estimated useful lives. The components of an item of property, plant and equipment with different useful lives are depreciated separately. Land is not depreciated. The estimated useful lives, residual values and depreciation methods are reviewed at each year end, also taking into account the potential impact of climate change including the execution of the Solvay One Plant Strategy (see Note Climate Change in the IFRS general accounting policies). Any changes in estimates are accounted for prospectively.

Buildings	30-40	years
IT equipment	3-5	years
Machinery and equipment	10-20	years
Transportation equipment	5-20	years

Depreciation expense is included in the consolidated income statement within cost of goods sold, administrative costs, and R&D costs.

The asset is tested for impairment if there is a trigger for impairment (see note F24 Impairment).

Items of property, plant and equipment are derecognized from the consolidated statement of financial position on disposal or when no future economic benefits are expected from their use or disposal. The gain or loss arising from the derecognition of an item of property, plant and equipment is recognized in profit or loss at the moment of derecognition.

Subsequent expenditure

Subsequent expenditure related to items of property, plant and equipment is capitalized only if it is probable that it will increase the future economic benefits associated with the specific asset. Other expenditure is expensed as incurred. Subsequent expenditure incurred for the replacement of a component of an item of property, plant and equipment is only recognized as an asset when it satisfies the recognition criteria mentioned above. The carrying amount of replaced items is derecognized.

Repair and maintenance costs are recognized in the consolidated income statement as incurred.

Regarding its industrial activity, Solvay incurs expenditure for major repairs over several years for most of its sites. The purpose of this expenditure is to maintain the proper working order of certain installations without altering their useful life. This expenditure is considered as a specific component of the item of property, plant and equipment and is depreciated over the period during which the economic benefits are expected to be obtained, i.e. the major repairs' intervals.

Dismantling and restoration costs

Dismantling and restoration costs are included in the cost of an item of property, plant and equipment if the Group has a legal or constructive obligation to dismantle or restore. They are depreciated over the useful life of the items to which they pertain.

Generally, Solvay's obligation to dismantle and/or restore its operating sites is only likely to arise upon the discontinuation of a site's activities. A provision for dismantling of discontinued sites or installations is recognized when there is a legal obligation (due to a request or injunction from the relevant authorities), or when there is no technical alternative than to dismantle, so to ensure the safety compliance of the discontinued sites or installations.

Borrowing costs

Borrowing costs directly attributable to the acquisition, construction or production of qualifying assets, which are assets that necessarily take a substantial period of time to get ready for their intended use or sale, are added to the cost of those assets, until such time as the assets are substantially ready for their intended use or sale.

Investment income earned on the temporary investment of specific borrowings pending their expenditure on qualifying assets is deducted from the borrowing costs eligible for capitalization.

All other borrowing costs are recognized in profit or loss in the period in which they are incurred.

In € million	Land and buildings	Fixtures and equipment	Other tangible assets	Property, plant and equipment under construction	Total
Gross carrying amount					
December 31, 2020	**2,819**	**9,699**	**414**	**405**	**13,337**
Additions	18	88	13	452	**571**
Disposals and closures	-16	-101	-29	0	**-146**
Increase through business combinations	4	2	0	0	**7**
Currency translation differences	101	348	13	24	**486**
Other	15	151	7	-193	**-20**
December 31, 2021	2,941	10,187	418	688	**14,235**
Additions	28	103	8	715	**854**
Disposals and closures	-28	-132	-19	0	**-179**
Increase through business combinations	0	0	0	0	**0**
Currency translation differences	44	206	8	15	**273**
Other	35	284	11	-385	**-55**
December 31, 2022	**3,021**	**10,648**	**425**	**1,033**	**15,128**
Accumulated depreciation					
December 31, 2020	**-1,478**	**-6,813**	**-329**		**-8,620**
Depreciation	-73	-436	-27		**-535**
Impairment	-5	-4	0		**-9**
Reversal of impairment	1	0	0		**1**
Disposals and closures	12	101	29		**143**
Currency translation differences	-43	-226	-10		**-278**
Other	5	2	0		**7**
December 31, 2021	**-1,580**	**-7,375**	**-337**		**-9,291**
Depreciation	-80	-464	-27		**-570**
Impairment	0	-6	0		**-6**
Reversal of impairment	8	21	0		**29**
Disposals and closures	26	130	19		**175**
Currency translation differences	-25	-151	-7		**-183**
Other	3	26	0		**30**
December 31, 2022	**-1,648**	**-7,818**	**-351**		**-9,816**
Net carrying amount					
December 31, 2020	1,342	2,886	85	405	**4,717**
December 31, 2021	1,361	2,813	81	688	**4,943**
December 31, 2022	**1,373**	**2,830**	**75**	**1,033**	**5,311**

The line “Other” mainly includes changes following portfolio transactions and reclassification of property, plant and equipment under construction to the appropriate categories when they are ready for intended use.

Cash flows related to major investments are disclosed in note F16 Cash flows from investing activities – acquisition/disposal of assets and investments.

NOTE F22
RIGHT-OF-USE ASSETS AND LEASE OBLIGATIONS

Accounting policy

Definition of a lease

At inception of a contract, which generally coincides with the date the contract is signed, the Group assesses whether a contract is, or contains, a lease. A contract is, or contains, a lease if the contract conveys the right to control the use of an identified asset for a period of time in exchange for consideration.

An asset is typically identified by being explicitly specified in a contract. However, an asset can also be identified by being implicitly specified at the time that the asset is made available for use by the customer. If the supplier has a substantive substitution right, then the asset is not identified. A substantive substitution right means that (a) the supplier has the practical ability to substitute the asset throughout the period of use, and (b) would economically benefit from doing so.

To assess whether a contract conveys the right to control the use of an identified asset, the Group assesses whether, throughout the period of use, it has:
- the right to obtain substantially all of the economic benefits from use of the identified asset; and
- the right to direct the use of the identified asset. This is generally the case when the Group has the decision-making rights regarding how and for what purpose the asset is used.

The Group's leased assets relate mainly to buildings, transportation equipment, and industrial equipment.

Lease term

The Group determines the lease term as the non-cancellable period of a lease, together with both:
- periods covered by an option to extend the lease if the Group is reasonably certain to exercise that option; and
- periods covered by an option to terminate the lease if the Group is reasonably certain not to exercise that option.

In its assessment, the Group considers the impact of the following factors (non-exhaustive):
- contractual terms and conditions for the optional periods, compared with market rates;
- significant leasehold improvements undertaken (or expected to be undertaken) over the term of the contract;
- costs relating to the termination of the lease, including relocation costs, costs of identifying another underlying asset suitable for the Group's needs, costs of integrating a new asset into the Group's operations, and termination penalties;
- the importance of that underlying asset to the Group's operations, including the availability of suitable alternatives;
- conditionality associated with exercising the option (i.e. When the option can be exercised only if one or more conditions are met), and the likelihood that those conditions will exist; and
- past practice.

Right-of-use asset and lease liability

The Group recognizes a right-of-use asset and a lease liability at the lease commencement date, which is the date that the lessor makes the asset available for use by the Group except for short-term leases (defined as leases with a lease term of 12 months or less) and leases of low value assets. The right-of-use assets are presented separately in the consolidated statement of financial position, and the lease liabilities are presented as part of financial debt.

Right-of-use asset

The right-of-use asset is initially measured at cost, which comprises:

- the amount of the initial measurement of the lease liability;
- any lease payments made at or before the commencement date, less any lease incentive received; and
- any initial direct costs incurred by the Group.

After the commencement date, the right-of-use asset is measured at cost less any accumulated depreciation and any accumulated impairment losses. Right-of-use assets are depreciated using the straight-line depreciation method, from the commencement date to (a) the end of the useful life of the underlying asset, in case the lease transfers ownership of the underlying asset to the Group by the end of the lease term, or the lease contains a purchase option that the Group is reasonably certain to exercise, or (b) the earlier of the end of the useful life and the end of the lease term, in all other cases.

Lease liability

The lease liability is initially measured at the present value of the lease payments that are not paid at the commencement date, discounted using the interest rate implicit in the lease or, if that rate cannot be readily determined, the respective Group entity's incremental borrowing rate. Lease payments included in the measurement of the lease liability comprise the following:

- fixed payments, less any lease incentives receivable;
- variable lease payments that depend on an index or a rate, initially measured using the index or rate as at the commencement date;
- amounts expected to be payable by the Group under residual value guarantees;
- the exercise price of a purchase option if the Group is reasonably certain to exercise that option; and
- payments of penalties for early terminating the lease, if the Group is reasonably certain to exercise an option to early terminate the lease.

Service components (e.g. Utilities, maintenance, insurance, …) are excluded from the measurement of the lease liability.

After the commencement date, the lease liability is measured by:

- increasing the carrying amount to reflect interest on the lease liability;
- reducing the carrying amount to reflect the lease payments made; and
- remeasuring the carrying amount to reflect any reassessment or lease modifications, or to reflect the impact from a revised index or rate.

Leasing of Palladium

The Group uses palladium, a precious metal, for certain of its operations. Next to purchasing this palladium, the Group also enters into various "leasing" agreements with financial institutions that give the Group the right to use palladium for a certain period and then return it at the end of the "lease". Based on our analysis of these agreements, these contracts are not in the scope of IFRS 16 Leases or IFRS 9 Financial Instruments. Due to the lack of clear IFRS guidance, the Group applied judgment to determine whether these rights and obligations shall be accounted for on a gross or a net basis. Considering that the Group bears no price risk during the 'lease' term and is not in full control of the asset (in accordance with the IFRS Conceptual Framework), the Group believes a net presentation gives a better view on the economic substance of the transaction. As a result, only accruals are recorded for the production losses and regeneration costs and the "lease" fee is recognized within cost of sales. At the end of 2022, the total (gross) value of palladium leased still to be returned amounted to €59 million (end of 2021: €50 million) valued at the year-end closing rate.

In € million	Land	Buildings	Transportation equipment	Industrial equipment	Other tangible assets	Total
Gross carrying amount						
December 31, 2020	**18**	**227**	**207**	**159**	**9**	**620**
Additions	0	29	23	82	1	**134**
Disposals and closures	0	-1	-3	0	0	**-4**
Currency translation differences	0	9	11	7	0	**27**
Other	0	3	10	3	1	**17**
Transfer to assets held for sale	0	0	0	0	0	**1**
December 31, 2021	**19**	**266**	**248**	**251**	**11**	**795**
Additions	0	8	46	27	5	**86**
Disposals and closures	0	-38	-28	-11	-3	**-79**
Currency translation differences	0	7	8	5	0	**21**
Other	0	7	15	5	1	**28**
Transfer to assets held for sale	0	0	0	0	0	**0**
December 31, 2022	**19**	**250**	**289**	**279**	**16**	**852**
Accumulated depreciation						
December 31, 2020	**-2**	**-77**	**-83**	**-47**	**-6**	**-215**
Depreciation	-1	-36	-42	-26	-3	**-107**
Impairment	0	1	3	0	0	**4**
Currency translation differences	0	-4	-5	-3	0	**-11**
December 31, 2021	**-4**	**-115**	**-127**	**-75**	**-8**	**-329**
Depreciation	-1	-33	-46	-34	-3	**-117**
Impairment	0	-3	0	0	0	**-3**
Disposals and closures	0	38	28	11	3	**79**
Currency translation differences	0	-3	-4	-2	0	**-9**
December 31, 2022	**-5**	**-115**	**-148**	**-100**	**-9**	**-378**
Net carrying amount						
December 31, 2020	16	150	124	112	4	405
December 31, 2021	15	151	121	176	3	466
December 31, 2022	**14**	**134**	**141**	**178**	**6**	**474**

The Group primarily leases buildings that include office buildings, and warehouses. Those leases are generally long-term leases and may include extension options.

Next, the Group leases transportation equipment that mainly consists of railcars and containers to transport the Group's products.

Industrial equipment mainly relates to utility assets. In 2022, additions include €27 million for industrial equipment, €23 million for railcars and €17 million for containers.

Lease contracts generally are negotiated by the local teams, and contain a wide range of different terms and conditions. Many lease contracts contain extension options and/or early termination options to provide the Group with operational flexibility. Such options are taken into account when determining the lease term and the lease liability when it is reasonably certain that they will be exercised.

If the Group exercised its extension options not currently included in the lease liability, the present value of additional payments would amount to € 100 million at December 31, 2022 (€143 million at December 31, 2021).

Lease contracts signed not yet commenced amount to €137 million at December 31, 2022 (€135 million for 2021) and mainly relate to a second waste wood boiler, steam turbine and auxiliaries in Germany, industrial equipment in France and rail cars in the United States.

Total cash outflows for leases amount to €134 million for 2022, of which €113 million related to payment of lease liabilities and €21 million of interest expenses. Information on the corresponding lease liabilities (€519 million) can be found in the note F33 Net indebtedness. Information on the finance expense related to lease liabilities can be found in note F6 Net financial charges.

NOTE F23
INVESTMENTS IN ASSOCIATES AND JOINT VENTURES

The list of associates and joint ventures is available in the note F40 List of companies included in the consolidation scope.

The associates and joint ventures not classified as held for sale/discontinued operations are accounted for under the equity method of accounting.

In € million	December 31, 2022			December 31, 2021		
	Associates	Joint ventures	Total	Associates	Joint ventures	Total
Investments in associates and joint ventures	18	790	**809**	18	619	**637**
Earnings from associates and joint ventures	1	170	**171**	2	157	**159**

INVESTMENTS IN ASSOCIATES

In € million	2022	2021
January 1	**18**	**16**
Profit for the year	1	2
Dividends received	-1	-2
Currency translation differences	0	1
December 31	**18**	**18**

The tables below present the summary of the statement of financial position and income statement of the associates as if they were proportionately consolidated.

In € million	December 31, 2022	December 31, 2021
Statement of financial position		
Non-current assets	**14**	**14**
Current assets	**17**	**16**
Cash and cash equivalents	3	3
Non-current liabilities	**2**	**2**
Non-current financial debt	1	1
Current liabilities	**11**	**10**
Current financial debt	2	2
Investments in associates	**18**	**18**

Income statement	2022	2021
Sales	39	33
Depreciation and amortization	1	-1
Interest on loans and short term deposits	0	0
Profit for the year from continuing operations	**2**	**2**
Profit for the year	**2**	**2**
Total comprehensive income	**2**	**3**
Dividends received	**1**	**1**

INVESTMENTS IN JOINT VENTURES

In € million	2022	2021
January 1	**619**	**479**
Additions	0	8
Capital increase / (decrease)	-5	0
Profit for the year	170	157
Dividends received	-18	-127
Currency translation differences	24	34
Impairment reversal	0	67
Other	1	1
December 31	**790**	**619**

In 2022 and 2021, the currency translation differences mainly relate to the evolution of the Russian ruble, of the Brazilian real and of the Indian rupee compared to the euro.

In 2021, the impairment reversal of €67 million and the dividend received of €127 million mainly concern the joint venture Rusvinyl.

In accordance with IFRS 11 *Joint Arrangements*, the Group has assessed whether the changes in the legal and operating environment of Russia have impacted the ability to exercise its joint control over Rusvinyl. There are no changes in facts and circumstances that may significantly limit the Group's ability to exercise its rights or governance with respect to Rusvinyl.

The tables below present the summary of the statement of financial position and income statement of the material joint ventures as if they were proportionately consolidated.

December 31, 2022 In € million	Rusvinyl OOO	Peroxidos do Brasil Ltda	Strata - Solvay Advanced Material JV	Shandong Huatai Interox Chemical Co. Ltd	Hindustan Gum & Chemicals Ltd	Aqua Pharma Group	EECO Holding and subsidiaries	Shinsol Advanced Chemicals	Cogeneration Rosignano
Ownership interest	50%	69,40%	50%	50%	50%	50%	33,3%	51,0%	25,4%
Operating Segment	Chemicals	Chemicals	Materials	Chemicals	Solutions	Chemicals	Corporate & Business Services	Solutions	Corporate & Business Services
Statement of financial position									
Non-current assets	**334**	**73**	**35**	**4**	**5**	**15**	**9**		**4**
Current assets	**147**	**89**	**10**	**12**	**153**	**9**	**13**	**8**	**2**
Cash and cash equivalents	113	39	9	9	138	6	4	8	2
Non-current liabilities	**30**	**6**	**-0**	**-**	**5**	**1**	**6**		**3**
Non-current financial debt	6	3	-0	0	0	0	6		3
Current liabilities	**20**	**38**	**1**	**5**	**7**	**2**	**7**		**0**
Current financial debt	1	7	-	0	0	0	6		0
Investments in joint ventures	**431**	**118**	**43**	**11**	**146**	**21**	**9**	**8**	**3**
2022 income statement									
Sales	304	145	12	20	37	15	0		0
Depreciation and amortization	-27	-5	0	0	-1	-2	-1		-1
Cost of borrowings	-7	0	0	0	0	0	-1		0
Interest on loans and short-term deposits	7	4	0	0	6	0	0		0
Income taxes	-29	-16	0	-1	-1	-1	-1		0
Profit for the year from continuing operations	**117**	**33**	**9**	**2**	**6**	**1**	**2**		**0**
Profit for the year	**117**	**33**	**9**	**2**	**6**	**1**	**2**		**0**
Other comprehensive income	22	9	**0**	0	-8	0	0		
Total comprehensive income	**138**	**42**	**9**	**2**	**-2**	**0**	**0**		**0**
Dividends received	**0**	**12**	**0**	**2**	**2**	**-1**	**0**		**0**

Other comprehensive income mainly comprises the currency translation differences.

December 31, 2021 In € million	Rusvinyl OOO	Peroxidos do Brasil Ltda	Strata - Solvay Advanced Material JV	Shandong Huatai Interox Chemical Co. Ltd	Hindustan Gum & Chemicals Ltd	Aqua Pharma Group	EECO Holding and subsidiaries	Shinsol Advanced Chemicals	Cogeneration Rosignano
Ownership interest	50%	69,40%	50%	50%	50%	50%	33,3%	51,0%	25,4%
Operating Segment	Chemicals	Chemicals	Materials	Chemicals	Solutions	Chemicals	Corporate & Business Services	Solutions	Corporate & Business Services
Statement of financial position									
Non-current assets	**324**	**61**	**29**	**4**	**5**	**16**	**10**		**5**
Current assets	**82**	**58**	**10**	**12**	**156**	**12**	**15**	**8**	**4**
Cash and cash equivalents	57	25	10	9	138	6	2	8	3
Non-current liabilities	**50**	**7**	**0**	**-**	**5**	**4**	**8**		**4**
Non-current financial debt	30	4	0	0	0	0	8		4
Current liabilities	**64**	**26**	**3**	**5**	**8**	**1**	**9**		**1**
Current financial debt	39	4	-	0	0	0	8		1
Investments in joint ventures	**292**	**87**	**36**	**11**	**149**	**23**	**8**	**8**	**4**
2021 income statement									
Sales	276	88	13	22	22	18	0		0
Depreciation and amortization	-22	-4	0	-1	-1	-2	-1		-1
Cost of borrowings	-7	0	0	0	0	0	-1		0
Interest on loans and short-term deposits	2	1	0	0	7	0	1		0
Income taxes	-28	-11	0	-1	-2	-1	0		0
Profit for the year from continuing operations	**111**	**26**	**9**	**2**	**5**	**1**	**1**		**0**
Profit for the year	**111**	**26**	**9**	**2**	**5**	**1**	**1**		**0**
Other comprehensive income	21	2	**0**	1	8	2	0		
Total comprehensive income	**132**	**28**	**9**	**3**	**14**	**3**	**0**		**0**
Dividends received	**103**	**15**	**0**	**1**	**2**	**-1**	**0**		**0**

Other comprehensive income mainly comprises the currency translation differences.

NOTE F24
IMPAIRMENT

Accounting policy

General

At the end of each reporting period, the Group reviews whether there is any indication that assets have suffered an impairment loss. If any such indication exists, the recoverable amount of the asset is estimated in order to determine the extent of the impairment loss (if any). Where it is not possible to estimate the recoverable amount of an individual asset, the Group estimates the recoverable amount of the CGU to which the asset belongs. Where a reasonable and consistent basis of allocation can be identified, corporate assets are allocated to individual CGUs, or otherwise they are allocated to the smallest group of CGUs for which a reasonable and consistent allocation basis can be identified.

The recoverable amount is the higher of fair value less costs of disposal and value in use. In assessing value in use, the estimated future cash flows are discounted to their present value using a pre-tax discount rate. Future cash flows are adjusted for risks not incorporated into the discount rate.

If the recoverable amount of an asset (or CGU) is estimated to be less than its carrying amount, the carrying amount of the asset (or CGU) is reduced to its recoverable amount. An impairment loss is recognized immediately in profit or loss.

When an impairment loss subsequently reverses, the carrying amount of the asset (or CGU) is increased to the revised estimate of its recoverable amount, but so that the increased carrying amount does not exceed the carrying amount that would have been determined (net of amortization or depreciation) had no impairment loss been recognized for the asset (or CGU) in prior years. A reversal of an impairment loss is recognized immediately in profit or loss. An impairment loss recognized for goodwill shall not be reversed in a subsequent period.

Assets other than non-current assets held for sale

In accordance with IAS 36 *Impairment of Assets*, the recoverable amount of property, plant and equipment, intangible assets, right-of-use assets, CGUs or groups of CGUs, including goodwill, and equity method investees corresponds to the higher of their fair value less costs of disposal, and their value in use. The latter equals the present value of the future cash flows expected to be derived from each asset, CGU or group of CGUs, and equity method investees and is determined using the following inputs:

- business plan approved by management based on growth and profitability assumptions, taking into account past performances, forecast changes in the economic environment and expected market developments, including opportunity and risks resulting from climate change (taking into account the Solvay One Planet strategy - see note Climate change in the IFRS general accounting policies) and environmental regulations such as products phasing out. For further details, refer to the Risk Management Section. Such business plan generally covers five years, unless management is confident that projections over a longer period are reliable;
- consideration of a terminal value determined based on the cash flows obtained by extrapolating the cash flows of the last years of the business plan referred to above, affected by a long-term growth rate deemed appropriate for the activity and the location of the assets;
- discounting of expected cash flows at a rate determined using the weighted average cost of capital formula.

Discount rate

Weighted average cost of capital (WACC) was computed using the same methodology applied in previous years after extensive benchmarking with Peers:

- A short term WACC of 6.6% was utilized in 2022 (5.1% in 2021) to discount the expected cash flows of the initial four years, computed based on prevailing discount rates;
- A long term WACC of 6.5% was utilized in 2022 (6.8% in 2021) to discount the expected cash flows of the fifth year and the Terminal Value, and is a rolling 8-year average of historical short term WACCs.

These WACCs are in the low range of the observed Peers' WACC estimates.

Long-term growth rates

The long-term growth rates used in 2022 are based:

- on the comprehensive review of the entire business portfolio performed in 2019 with the definition of the G.R.O.W. Strategy when each CGU was assigned to one of three agile business segments that became effective as from 2020: Materials, Chemicals and Solutions, with different growth opportunities, consistent with the long term growth rates of the market they serve and the Group competitive position in those markets; and
- on the long term growth potential for Composite Materials and Technology Solutions assessed during the 2020 impairment test which remain very strong.

After reassessment of the long-term growth prospects the Group concluded that the prior year rates are still applicable and were thus set at:

- 2% for the Specialty Polymers CGU and 3% for the Composite Materials CGU;
- 0% in the Segment Chemicals, except for Soda Ash and Peroxides, for which a 1% rate was set; and
- 1% for the other CGUs in the Segment Solutions (excluding Technology Solutions, for which 1.5% was used, and Oil & Gas).

Other key assumptions are specific to each CGU (utility price, volumes, margin, etc.) and are based on approved budgets and mid-term plans.

Impairment Test 2022

The impairment tests performed at CGU level at December 31, 2022, were based on the budget 2023 approved by the Board and the Mid Term Plan 2024-2026 which reflect the economic rebound after the COVID crisis and the results of the structural cost saving measures adopted by the Group. They did not lead to any impairment of assets, as the recoverable amounts of the (groups of) CGUs were higher than their carrying amounts. More specifically, the difference between the (groups of) CGUs' value in use and their carrying amount (headroom) represented in all cases more than 10% of their carrying amount. As a result, for these (groups of) CGUs, a reasonable change in a key assumption relating to the recoverable amount for which the (groups of) CGUs is based, would not result in an impairment loss. For comparability purposes the sensitivity analysis to WACC and long term growth rates assumptions for Composite Materials and Technology Solutions are presented.

Composite Materials

In € billion	December 31, 2022	
	Assumptions: Discount rate = 6.5% Long term growth rate = 3%	
Sensitivity to:	**Impact on recoverable amount**	**Revised headroom**
Discount rate -1%	1.7	3.3
Discount rate +1%	-0.9	0.8
Long term growth rate -1%	-0.8	0.8
Long term growth rate +1%	1.5	3.2

In € billion	December 31, 2021	
	Assumptions: Discount rate = 6.8% Long term growth rate = 3%	
	Impact on recoverable amount	**Revised headroom**
Discount rate -1%	1.3	2.4
Discount rate +1%	-0.7	0.4
Long term growth rate -1%	-0.6	0.5
Long term growth rate +1%	1.0	2.1

The table below shows the break-even analysis for the headroom of Composite Materials:

	Discount rate		Long term growth rate	
	Base rate	**Break-even rate**	**Base rate**	**Break-even rate**
December 31, 2022	6.5%	8.9%	3.0%	0.2%
December 31, 2021	6.8%	8.6%	3.0%	0.6%

Technology Solutions

In € billion	December 31, 2022	
	Assumptions: Discount rate = 6.5% Long term growth rate = 1.5%	
Sensitivity to:	**Impact on recoverable amount**	**Revised headroom**
Discount rate -1%	0.7	1.6
Discount rate +1%	-0.4	0.5
Long term growth rate -1%	-0.4	0.6
Long term growth rate +1%	0.6	1.5

In € billion	December 31, 2021	
	Assumptions: Discount rate = 6.8% Long term growth rate = 1.5%	
Sensitivity to:	**Impact on recoverable amount**	**Revised headroom**
Discount rate -1%	0.5	0.9
Discount rate +1%	-0.3	0.1
Long term growth rate -1%	-0.3	0.2
Long term growth rate +1%	0.4	0.8

The table below shows the break-even analysis for the headroom of Technology Solutions:

	Discount rate		Long term growth rate	
	Base rate	**Break-even rate**	**Base rate**	**Break-even rate**
December 31, 2022	6.5%	9.2%	1.5%	-2.1%
December 31, 2021	6.8%	8.3%	1.5%	0.3%

Other small groups of assets (Solutions)

In 2022, following the improvement in performance after the industrial reorganization of some production sites in the Special Chem CGU for Fluor Gases in Europe, the impairment loss booked in 2020, after the COVID-19 crisis has been reversed (€37 million; Operating Segment: Solutions)

Rusvinyl equity investment

Rusvinyl is a Russian joint venture in chlorovinyls (included in the Chemicals Segment) in which Solvay holds a 50% equity interest, together with Sibur who holds the remaining 50% equity interest.

Russia's actions in Ukraine combined with the Group decision to suspend the dividends distribution from our Rusvinyl joint venture have been considered as a trigger for an impairment test.

As a result, the Group performed an impairment test in Q2 and Q4, 2022 based on Dividend Discount Models prepared for different business scenarios, considering the following key assumptions:
- 0% long term growth rate, to reflect the long term impacts of the conflict on economic growth in Russia,
- dividends stream would resume from 2027, assuming a long lasting conflict and sanctions against Russia,
- a long term WACC used for the Terminal Value which reflects pre-crisis levels and a long term uncertainty premium.

The carrying amount of the Rusvinyl equity investment at the end of Q4 2022 was €431 million, based on the closing exchange rate of 77.9 RUB/EUR. The results of the impairment test indicated that no such impairment existed.

NOTE F25
INVENTORIES

Accounting policy

Cost of inventories includes the purchase, conversion and other costs incurred in bringing the inventories to their present location and condition. The cost of inventories is determined by using the weighted average cost method.

Inventories are measured at the lower of purchasing cost (raw materials and merchandise) or production cost (work in progress and finished goods) and net realizable value. Net realizable value represents the estimated selling price, less all estimated costs of completion and the estimated costs necessary to make the sale.

CO_2 emission rights

With respect to the mechanism set up by the European Union to encourage manufacturers to reduce their greenhouse gas emissions, carbon dioxide (CO_2) emission rights are granted to the Group for free. The Group is also involved in Clean Development Mechanism (CDM) under the Kyoto protocol. Under these projects, the Group has deployed facilities in order to reduce greenhouse gas emissions at the relevant sites in return for Certified Emission Reductions (CER).

In the absence of any IFRS regulating the accounting treatment of CO_2 emission rights, the Group applies the Trade/Production model, according to which CO_2 emission rights are presented as inventories if they will be consumed in the production process within the next 12 months, or as derivatives if they are held for trading. Energy Services is involved in CO_2 emission rights' trading, arbitrage and hedging activities. The net income or expense from these activities is recognized in "other operating gains and losses" (a) for the industrial component, where Energy Services sells the excess CO_2 emission rights generated by Solvay or where a Group deficit is recognized, as well as (b) for the trading component, where Energy Services acts as a trader/broker with respect to those CO_2 emission rights.

In light of its centralized CO_2 emission rights' portfolio management, for emission rights that are substitutable between subsidiaries, the Group's financial statements reflect the Group's net position. If this net position is negative, a provision is recognized, measured based on the market price of the CO_2 emission rights at reporting date.

Energy savings certificates (ESCs)

Energy savings certificates are presented as inventory items in Finished goods. They are measured at weighted average cost. As their cost is not separately identifiable, and as they are a by-product, they are measured at their net realizable value upon initial recognition.

In € million	December 31, 2022	December 31, 2021
Finished goods	1,352	1,156
Raw materials and supplies	838	661
Work in progress	21	20
Total	**2,211**	**1,837**
Write-downs	-102	-92
Net total	**2,109**	**1,745**

The CO_2 emission rights amount to €57 million at the end of 2022. €16 million are included in the inventories (for 2022 obligations) and €41 million are reported under Other non-current assets (for obligations after 2022). See Note F32 Financial Instruments for further details on CO_2 hedging.

Inventory write-downs are included in cost of goods sold in the consolidated income statement.

NOTE F26
OTHER RECEIVABLES (CURRENT)

In € million	December 31, 2022	December 31, 2021
VAT and other taxes	398	321
Advances to suppliers	149	189
Financial instruments – operational	929	1,326
Insurance premiums	31	38
Loan receivables	43	28
Other	78	102
Other current receivables	**1,628**	**2,004**

Financial instruments – operational includes held for trading and cash flow hedge derivatives (see note F32.A. Overview of financial instruments).

NOTE F27
ASSETS HELD FOR SALE

Accounting policy

A disposal group is a group of assets to be disposed of, by sale or otherwise, together as a group in a single transaction, and liabilities directly associated with those assets that will be transferred in the transaction. The group includes goodwill acquired in a business combination if the group is a cash-generating unit to which goodwill has been allocated, or if it is an operation within such a cash-generating unit.

Non-current assets and disposal groups are classified as held for sale if their carrying amount will be recovered principally through a sale transaction rather than through continuing use. This condition is regarded as met only when the sale is highly probable and the asset (or disposal group) is available for immediate sale in its present condition. For a sale to be highly probable, management should be committed to a plan to sell the asset (or disposal group), an active program to locate a buyer and complete the plan should be initiated, the asset (or disposal group) should be actively marketed at a price which is reasonable in relation to its current fair value, the sale should be expected to be completed within one year from the date of classification, and actions required to complete the plan should indicate that it is unlikely that significant changes to the plan will be made or that the plan will be withdrawn.

When the Group is committed to a sale plan involving loss of control of a subsidiary, all of the assets and liabilities of that subsidiary are classified as held for sale when the criteria described above are met, regardless of whether the Group will retain a non-controlling interest in its former subsidiary after the sale.

Non-current assets (and disposal groups) classified as held for sale are measured at the lower of their previous carrying amount and fair value less costs to sell. Any excess of the carrying amount over the fair value less costs to sell is recognized as an impairment loss. Depreciation of such assets is discontinued as from their classification as held for sale. Prior period consolidated statements of financial position are not restated to reflect the new classification of a non-current asset (or disposal group) as held for sale.

At the end of 2022 and 2021 there are no assets classified as held for sale.

NOTE F28
EQUITY

Accounting policy

Share capital
Ordinary shares are classified as equity.

Incremental costs directly attributable to the issuance of new share capital are directly recognized in equity as a deduction, net of tax, from the equity issuance proceeds.

Reserves
The reserves include:

- treasury shares;
- perpetual hybrid bonds that qualify as equity absent any unavoidable contractual obligation to repay the principal and interest of the perpetual hybrid bonds (no maturity, interest is payable annually but can be deferred indefinitely at the issuer's discretion);
- retained earnings;
- currency translation differences from the consolidation process relating to the translation of the financial statements of foreign operations prepared in a non-euro functional currency to the euro presentation currency;
- the impacts of the fair value remeasurement of equity instruments measured at fair value through other comprehensive income;
- the impacts of the fair value remeasurement of financial instruments documented as hedging instruments in cash flow hedges;
- actuarial gains and losses related to defined benefit plans.

Non-controlling interests
Those represent the share of non-controlling interests in the net assets and comprehensive income of subsidiaries of the Group, and corresponds to the interests in subsidiaries that are not held by the Company or its subsidiaries.

NUMBER OF SHARES (IN UNITS)

	December 31, 2022	December 31, 2021
Shares issued and fully paid	105,876,416	105,876,416
Treasury shares held	2,107,752	2,236,739

The treasury shares held by the Group have been deducted from consolidated shareholders' equity.

Perpetual hybrid bonds
To strengthen its capital structure, Solvay issued undated deeply subordinated perpetual bonds ("perpetual hybrid bonds") of €1.8 billion as per the following table:

In € million	Issuance date	Nominal value	%	Annual coupon	First call / reset date
Hybrid bond NC10	November 12, 2013	500	5.425%	27	November 12, 2023
Hybrid bond NC8.5	December 2, 2015	500	5.869%	29	June 3, 2024
Hybrid bond NC5.25*	December 4, 2018	300	4.250%	13	March 4, 2024
Hybrid bond NC5.5*	September 2, 2020	500	2.500%	13	March 2, 2026

** with 3 months call option at par*

All perpetual hybrid bonds are classified as equity absent any unavoidable contractual obligation to repay the principal and interest of the perpetual hybrid bonds, specifically:
- No maturity, yet the issuer has a call option at every reset date to redeem the instrument;
- At the option of the issuer, interest payments can be deferred indefinitely.

The coupons related to the perpetual hybrid bonds are recognized as equity transactions and are deducted from equity upon declaration (see consolidated statement of changes in equity). These coupons amount to €82 million in 2022 (€75 million in 2021).

Should Solvay have elected not to pay any interest to the perpetual hybrid bond holders, then any payment of dividends to the ordinary shareholders or repayment of ordinary shares would trigger a contractual obligation to pay previously unpaid interests to the perpetual hybrid bond holders.

Tax impacts related to the perpetual hybrid bonds are recognized in profit or loss.

NOTE F29
NON-CONTROLLING INTERESTS

The amounts disclosed below are fully consolidated amounts and do not reflect the impacts from elimination of intragroup transactions.

At the end of 2022, the following subsidiaries have non-controlling interests totaling €40 million (out of a total of €61 million).

In € million	Zhejiang Lansol	Solvay Hengchang Zhangjiagang Special Chem
Non-controlling ownership interest	45%	30%
Statement of financial position		
Non-current assets	28	17
Current assets	47	72
Non-current liabilities	2	1
Current liabilities	17	34
Income statement		
Sales	93	168
Profit for the year	9	36
Other comprehensive income	-3	-3
Total comprehensive income	**6**	**32**
Dividends paid to non-controlling interests	0	6
Share of non-controlling interest in the profit for the year	4	11
Accumulated non-controlling interests	24	16

During 2022 the Group purchased the remaining outstanding ownership interest in Solvay Soda Ash (20% for US$ 120 million) and Solvay Special Chem Japan (33% for €3.55 million) with the difference between the consideration paid and the net book value of the non-controlling interest being recorded as a component of equity (loss of €88 million on the purchase of Solvay Soda Ash and a gain of €9.5 million on the purchase of Special Chem Japan).

At the end of 2021, the following subsidiaries have non-controlling interests totaling €93 million (out of a total of €112 million).

In € million	Zhejiang Lansol	Solvay Special Chem Japan	Solvay Soda Ash	Solvay Hengchang Zhangjiagang Special Chem
Non-controlling ownership interest	45%	33%	20%	30%
Statement of financial position				
Non-current assets	28	17	285	18
Current assets	37	19	75	70
Non-current liabilities	2	1	19	0
Current liabilities	15	2	79	44
Income statement				
Sales	80	63	309	136
Profit for the year	5	3	135	21
Other comprehensive income	4	-1	-8	3
Total comprehensive income	**9**	**2**	**127**	**25**
Dividends paid to non-controlling interests	3	1	34	1
Share of non-controlling interest in the profit for the year	2	1	27	6
Accumulated non-controlling interests	21	11	49	12

NOTE F30
SHARE-BASED PAYMENTS

Accounting policy

Solvay has set up compensation plans, including equity-settled and cash-settled share-based compensation plans.

In its equity-settled plans, the Group receives services as consideration for its own equity instruments (namely through the issuance of share options). The fair value of services rendered by employees in consideration for the granting of equity-instruments represents an expense. This expense is recognized on a straight-line basis in the consolidated income statement over the vesting periods relating to these equity-instruments with the recognition of a corresponding adjustment in equity. The fair value of services rendered is measured based on the fair value of the equity-instruments on the grant date. It is not subsequently remeasured. At each reporting date, the Group re-estimates the number of share options likely to vest. The impact of the revised estimates is recognized in profit or loss against a corresponding adjustment in equity.

In its cash-settled plans, the Group acquires services by incurring a liability to transfer to its employees rendering those services amounts that are based on the price (or value) of equity instruments (including shares or share options) of the Group (namely through the issuance of performance share units). The fair value of services rendered by employees in consideration for the granting of share-based payments represents an expense. This expense is recognized on a straight-line basis in the consolidated income statement over the vesting periods relating to these share-based payments with the recognition of a corresponding adjustment in liabilities. At each reporting date, the Group re-estimates the number of options likely to vest, with the impact of the revised estimates recognized in profit or loss. The Group measures the services acquired and the liability incurred at the fair value of the liability. Until the liability is settled, the Group remeasures the fair value of the liability at the end of each reporting period and at the date of settlement, with any changes in fair value recognized in profit or loss for the period.

Service and non-market performance conditions are not taken into account when determining the grant date fair value of awards, but the likelihood of the conditions being met is assessed as part of the Group's best estimate of the number of equity instruments that will ultimately vest. Market performance conditions are reflected within the grant date fair value. Any other conditions attached to an award, but without an associated service requirement, are considered to be non-vesting conditions. Non-vesting conditions are reflected in the fair value of an award and lead to an immediate expensing of an award unless there are also service and/or performance conditions. No expense is recognized for awards that do not ultimately vest because non-market performance and/or service conditions have not been met. Where awards include a market or non-vesting condition, the transactions are treated as vested irrespective of whether the market or non-vesting condition is satisfied, provided that all other performance and/or service conditions are satisfied.

The dilutive effect of outstanding options is reflected as additional share dilution in the computation of diluted earnings per share (further details are given in Note F9 Earnings per share).

Stock Option Plan

In 2022, the Board of Directors offered to executive staff (17 beneficiaries) a share option plan with a view to incentivize long-term value creation delivered through the transformation of the Group. The plan is an equity-settled share-based plan. All of the managers involved subscribed to the options offered to them in 2022 with an exercise price of €84.34 representing the average stock market price of the share for the 30 days prior to the offer.

Share option plans	2022	2021	2020	2019	2018 - 2	2018 - 1
Number of share options granted and still outstanding at December 31, 2021		265,433	395,164	429,103	72,078	391,280
Granted share options	386,867					
Forfeitures of rights and expiries		-6,432				
Share options exercised						
Number of share options at December 31, 2022	386,867	259,001	395,164	429,103	72,078	391,280
Share options exercisable at December 31, 2022					72,078	391,280
Exercise price (in €)	84.34	95.58	95.58	97.05	108.38	113.11
Fair value of options at measurement date (in €)	16.47	23.32	15.23	17.77	20.81	19.10

	2017	2016	2015	2014
Number of share options granted and still outstanding at December 31, 2021	308,450	521,095	332,565	204,787
Granted share options				
Forfeitures of rights and expiries			-156	-658
Share options exercised		-23,250		-204,129
Number of share options at December 31, 2022	308,450	497,845	332,409	
Share options exercisable at December 31, 2022	308,450	497,845	332,409	
Exercise price (in €)	111.27	75.98	114.51	101.14
Fair value of options at measurement date (in €)	23.57	17.07	24.52	22.79

	2022		2021	
	Number of share options	Weighted average exercise price	Number of share options	Weighted average exercise price
January 1	**2,919,955**	**104.54**	**3,394,908**	**103.63**
Granted during the year	386,867	84.34	265,433	95.58
Forfeitures of rights and expiries during the year	-7,246	96.49	-152,403	104.56
Exercised during the year	-227,379	98.57	-587,983	95.25
December 31	**3,072,197**	**102.45**	**2,919,955**	**104.54**
Exercisable at December 31	**1,602,062**		**1,366,897**	

In 2022, the share options resulted in an expense of €5 million, which was calculated by third parties according to the Monte Carlo simulation, and recognized in the consolidated income statement as part of administrative costs.

The valuation of the stock option plan of 2022 is based on:
- the price of the underlying asset (Solvay share): €78 at September 29, 2022;
- the time outstanding until option maturity: exercisable from January 1, 2026 until December 31, 2027, taking into account the fact that some of them will be exercised before the option maturity;
- the option exercise price: €84.34;
- the risk-free return: 2.38% (on average);
- the average volatility of the underlying yield, estimated based on the option price: 32.8%;
- an average dividend yield of 2.76%;
- the achievement of a target market capitalization.

Weighted average remaining contractual life of the share option plans:

In years	2022	2021
2014		0.2
2015	0.2	1.2
2016	1.2	2.2
2017	2.2	3.2
2018-1	3.2	4.2
2018-2	3.6	4.6
2019	4.2	5.2
2020	5.2	6.2
2021	6.1	7.1
2022	5.0	

Performance Share Units Plan (PSU)

In 2022, the Board of Directors offered to executive staff a Performance Share Unit Plan, with the objective of promoting long-term success and to increase the focus on sustainable performance for the benefit of the Solvay Group and its stakeholders. All the managers involved subscribed to the PSU offered to them in 2022 with a grant date fair value of €90.61 representing the average stock market price of the share for the 30 days prior to the offer. The PSU plan 2022 is an equity-settled share-based plan with a 3-year vesting period, after which shares will be issued, if vesting conditions are met.

The PSU plans of 2021 and 2020 are cash-settled plans with a 3-year vesting period, after which a cash settlement will take place, if vesting conditions are met.

Performance share units	Plan 2022	Plan 2021	Plan 2020
Number of PSUs	196,605	194,130	236,802
Grant date	17/05/2022	23/02/2021	25/02/2020
Vesting date	01/01/2025	01/01/2024	01/01/2023
Vesting period	17/05/2022 to 31/12/2024	31/03/2021 to 31/12/2023	31/03/2020 to 31/12/2022
Performance conditions	40% of the initial granted PSUs are subject to the achievement of Year over Year Underlying EBITDA growth target for each of the 3 (2022, 2023, 2024) performance years ending on December 31, 2024	40% of the initial granted PSUs are subject to the achievement of Year over Year Underlying EBITDA growth target for each of the 3 (2021, 2022, 2023) performance years ending on December 31, 2023	40% of the initial granted PSUs are subject to the achievement of Year over Year Underlying EBITDA growth target for each of the 3 (2020, 2021, 2022) performance years ending on December 31, 2022
	40% of the initial granted PSUs are subject to the sustained and /or improved ROCE % of the Company for each of the 3 (2022, 2023, 2024) performance years	40% of the initial granted PSUs are subject to the sustained and /or improved ROCE % of the Company for each of the 3 (2021, 2022, 2023) performance years	40% of the initial granted PSUs are subject to the sustained and /or improved ROCE % of the Company for each of the 3 (2020, 2021, 2022) performance years
	20% of the initial granted PSUs are subject to the reduction of GHG absolute emissions during the same 3 years (2022, 2023, 2024)	20% of the initial granted PSUs are subject to the reduction of GHG absolute emissions during the same 3 years (2021, 2022, 2023)	20% of the initial granted PSUs are subject to the reduction of GHG absolute emissions during the same 3 years (2020, 2021, 2022)
	Achievement of the plan is measured for each separate performance year. The score achieved for each individual year is acquired definitively, whatever the achievement of the other years	Achievement of the plan is measured for each separate performance year. The score achieved for each individual year is acquired definitively, whatever the achievement of the other years	Achievement of the plan is measured for each separate performance year. The score achieved for each individual year is acquired definitively, whatever the achievement of the other years
Validation of performance conditions	By the Board of Directors	By the Board of Directors	By the Board of Directors

For the PSU plan 2022, the participants who are also members of the Executive Leadership Team (including the CEO) on the grant date must achieve an additional performance condition. If achievement of the performance conditions outlined in the above table is positive (above 0), delivery of the PSUs is subject to further adjustment based on the Total Shareholder Return (TSR) performance of the Group in comparison to the TSR of the Stoxx 600 index companies for the period equal to the Performance Period.

In 2022, the impact on the consolidated income statement regarding PSUs (net of hedging – see note F32 Financial Instruments) amounts to a cost of € (20) million, compared to a cost of € (17) million in 2021. Included in the 2022 PSU cost is €6 million related to the new equity-settled plan. The carrying amount of the PSU liabilities for the 2021 and 2020 cash-settled plans amounts to €39 million at the end of 2022, compared to €31 million at the end of 2021.

At December 31, 2022, there were 192,828 PSUs outstanding for the 2022 equity settled plan and 180,816 and 200,941 for the 2021 and 2020 cash-settled plans, respectively.

Restricted Share Units (RSU)

In 2022, the Board of Directors offered to executive staff a Restricted Share Unit Plan, with the objective of promoting long-term success and to increase the focus on sustainable performance for the benefit of the Solvay Group and its stakeholders. All the managers involved subscribed to the RSU offered to them in 2022 with a grant date fair value of €90.61 representing the average stock market price of the share for the 30 days prior to the offer. 84,353 RSUs were granted. The Restricted Share Units is an equity-settled share-based plan with a vesting date of December 31, 2024, after which shares will be issued, if vesting conditions are met. At December 31, 2022, there are 82,732 RSUs outstanding.

In 2022, the impact on the consolidated income statement of the RSUs amounts to a cost of €2 million.

The PSUs and RSUs have been hedged by Solvay with 360,000 call options with a strike price at €86.24 maturing on September 29, 2023. See note F32 Financial Instruments.

Employee Stock Purchase Plan (ESPP)

In September 2022, Solvay launched its first employee share purchase plan. By participating in the plan, employees have the opportunity to purchase Solvay Group shares on preferential terms. 27.7% of employees subscribed to the plan offered to them in 2022 with a grant date fair value of €82.85 representing the average stock market price of the share for the 30 days prior to the offer. These employees will receive one free Solvay Group share for joining the plan as well as one matching share for every two shares purchased. The ESPP is an equity-settled share-based plan with a vesting date of September 30, 2024, after which the free and matching shares will be issued, if vesting conditions are met.

At December 31, 2022, 79,455 shares are expected to be granted to the employees. The impact on the consolidated income statement of the ESPP amounts to a cost of €1 million.

The ESPP has been hedged by Solvay with 80,500 call options with a strike price at €78.91 maturing on September 29, 2023.

NOTE F31
PROVISIONS

In € million	Employee benefits	Restructuring	Environment	Litigation	Other	Total
December 31, 2021	**1,574**	**191**	**648**	**62**	**126**	**2,600**
Additions	63	32	194	54	33	377
Reversals of unused amounts	0	0	-17	-10	-13	-41
Uses	-101	-106	-90	-8	-24	-328
Use of provisions for additional voluntary contributions (pension plans)	-155					-155
Increase/decrease through discounting	3	0	-42	1	0	-39
Remeasurements	-351	0	0	0	0	-351
Currency translation differences	16	2	13	3	1	34
Acquisitions and changes in consolidation scope	0	0	0	0	0	0
Disposals	0	0	0	0	0	0
Other	8	0	-3	-4	0	0
December 31, 2022	**1,057**	**119**	**702**	**97**	**123**	**2,097**
Of which current provisions	0	81	108	52	57	297

The provisions decreased by €(503) million in 2022, of which €(517) million for Employee benefits, €(72) million for Restructuring, partially offset by an increase of €54 million for Environment and €35 million for Litigation.

Employees benefit includes other long-term benefits and termination benefits.

For employee benefits, the deleveraging of €(517) million is explained as follows:

- payments (uses) for €(101) million, and voluntary contributions of €(155) million to pension funds to deleverage and de-risk;
- net new liabilities (additions and reversals) for €63 million;
- remeasurements, resulting from the changes in assumptions related to the gross liability for €(1,067) million (mainly due to changes in discount rates);
- return on plan assets increasing the liability by €631 million, of which €(85) million in deduction of "Increase through discounting" and €716 million in increase of "Remeasurements" for the assets return exceeding the discount rate, which excludes the impact of remeasurements on the plan assets surplus (€(195) million);
- net increase through discounting for €3 million for the unwinding of the discount rate on the gross liability;
- other increases in the employee benefit obligations for €109 million mainly due to the reclassification of the amounts recognized in asset surplus and currency translation differences.

Restructuring, environmental and litigation - see note F31.B Provisions other than employee benefits.

The movements in Other provisions mainly relate to post-closing adjustments resulting from M&A warranties as well as indemnities for environmental remediation.

Management expects provisions (other than employee benefits) to be used (cash outlays) as follows:

In € million	up to 5 years	between 5 and 10 years	beyond 10 years	Total
Total provisions for environment	361	96	245	**702**
Total provisions for litigation	92	5		**97**
Total provisions for restructuring and other	226	16		**241**
December 31, 2022	**679**	**116**	**245**	**1,040**

1. F31.A. Provisions for employee benefits

Accounting policy

General

The Group's employees are offered various post-employment benefits, other long-term employee benefits, and termination benefits as a result of legislation applicable in certain countries, and contractual agreements entered into by the Group with its employees or constructive obligations.

The post-employment benefits are classified as defined contribution or defined benefit plans.

Defined contribution plans

Defined contribution plans involve the payment of fixed contributions to a separate entity, and release the employer from any subsequent obligation, as this separate entity is solely responsible for paying the amounts due to the employee. The expense is recognized when an employee has rendered services to the Group during the period.

Defined benefit plans

Defined benefit plans concern all plans other than defined contribution plans, and include:

- post-employment benefits: pension plans, other post-employment obligations and supplemental benefits such as post-employment medical plans.

Taking into account projected final salaries on an individual basis, post-employment benefits are measured by applying a method (projected unit credit method) using assumptions involving discount rate, life expectancy, turnover, wages, annuity revaluation and medical cost inflation. The assumptions specific to each plan take into account the local economic and demographic contexts.

The discount rates are interest rates of high-quality corporate bonds that are denominated in the currency in which the benefits will be paid, and that have terms to maturity approximating the terms of the related pension obligation.

The amount recognized under post-employment obligations corresponds to the difference between the present value of future obligations and the fair value of the plan assets funding the plan, if any. If this calculation gives rise to a deficit, an obligation is recognized in liabilities. Otherwise, a net asset limited to the lower of the surplus in the defined benefit plan and the present value of any future plan refunds or any reduction in future contributions to the plan is recognized. Therefore the amount at which such an asset is recognized in the statement of financial position may be subject to a ceiling.

The defined benefit cost consists of service cost and net interest expense (based on discount rate) on the net liability or asset, both recognized in profit or loss, and remeasurements of the net liability or asset, recognized in other comprehensive income.

Service cost consists of current service cost, past service cost resulting from plan amendments or curtailments and settlement gains or losses.

The interest expenses arising from the reverse discounting of the benefit obligations, the financial income on plan assets (determined by multiplying the fair value of the plan assets by the discount rate) as well as interest on the effect of the asset ceiling are recognized on a net basis in the net financial charges (cost of discounting of provisions).

Remeasurements of the net liability or asset consist of:

- actuarial gains and losses on the benefit obligations arising from experience adjustments and/or changes in actuarial assumptions (including the effect of changes in the discount rate) recognized in other comprehensive income;
- Changes as a consequence of plan amendments, recognized in profit or loss;
- the return on plan assets (excluding amounts in net interest) and changes in the limitation of the net asset recognized.

Other long-term employee and termination benefits

Other long-term employee benefits related to long service benefits granted to employees according to their seniority in the Group. Termination benefits include early pension plans. Other long-term employee and termination benefits are accounted for in the same way as post-employment benefits but remeasurements are fully recognized in the net financial charges during the period in which they occur.

The actuarial calculations of the main post-employment obligations and other long-term benefits are performed by independent actuaries.

OVERVIEW

In € million	December 31, 2022	December 31, 2021
Post-employment benefits	873	1,371
Other long-term benefits	136	153
Termination benefits	49	50
Total employee benefits	**1,057**	**1,574**

POST-EMPLOYMENT BENEFITS

A. Defined contribution plans

For defined contribution plans, Solvay pays contributions to publicly or privately administered pension funds or insurance companies. For 2022, the expense amounts to €59 million compared to €56 million for 2021.

B. Defined benefit plans

Defined benefit plans can be either funded via outside pension funds or insurance companies ("funded plans") or financed within the Group ("unfunded plans"). Unfunded plans have no plan assets dedicated to them.

The net liability results from the net of the provisions and the asset plan surplus.

In € million	December 31, 2022	December 31, 2021
Provisions	873	1,371
Asset plan surplus	-62	-248
Net liability	810	1,123

	2021	2021
Operational expense	**44**	**19**
Finance expense	**14**	**13**

The operating expense includes current service cost for €38 million (€43 million in 2021) (see also B.3.).

B.1. Management of risks

Over recent years, the Group has reduced its exposure to defined benefit plan obligations stemming from future services by converting existing plans into pension plans with a lower risk profile (hybrid plans, cash balance plans and defined contribution plans) or by closing them to new entrants.

Solvay continuously monitors its risk exposure, focusing on the following risks:

Asset volatility

Equity instruments, even though expected to outperform corporate bonds in the long-term, create volatility and risk in the short-term. To mitigate this risk, the allocation to equity instruments is monitored using Assets and Liabilities Management techniques, to ensure it remains appropriate given the respective schemes' and Group's long term objectives.

Changes in bond yields

A decrease in corporate bond yields will increase the carrying amount of the plans' liabilities. For funded schemes this impact will be partially offset by an increase in the fair value of the plan assets.

Corporate bond yields are highly dependent on global and local market situations, the decisions of central banks and the political situation. Events that are currently impacting the financial markets are:

- the war in Ukraine and its geopolitical consequences;
- high inflation due to increasing energy prices;
- quantitative tightening applied by central banks to combat rising inflation.

Consequently, yields in the major currency zones (Eurozone, the UK, and the US) have increased compared to 2021 (see Actuarial assumptions used in determining the liability). The result is a decrease in the Group's defined benefit obligations in 2022.

Inflation risk

The defined benefit obligations are linked to inflation, and as a result, higher inflation will lead to an increase in the benefit obligation (although, in most cases, caps on the level of inflationary increases are in place to protect against extreme inflation). A limited part of the assets are either unaffected by or only partially correlated with inflation, meaning that an increase in inflation will also increase the plans' net liabilities.

The inflation rate in each country is based on the Global Economic Consensus Forecast (GCF) with the exception of the UK, where the information is derived from the Bank of England. Long-term inflation assumptions have increased slightly in the Eurozone in comparison to 2021. In the UK, the outlook for the retail price index and consumer price index remains unchanged from 2021. The long-term inflation rate in the US, which is also based on the GCF, remains unchanged compared to 2021. (See Actuarial assumptions used in determining the liability)

Life expectancy

The majority of the schemes' obligations are to provide benefits for the life of the member. Increases in life expectancy will therefore increase the plans' liabilities.

Regulatory risk

Especially with respect to funded plans, the Group is exposed to the risk of external funding following regulatory constraints. This should not impact the defined benefit obligation but could expose the Group to a potential significant cash outlay.

B.2. Description of obligations

The provisions have been set up to cover post-employment benefits granted by most Group companies in line, either with local rules and /or with established practices, which generate constructive obligations.

The largest post-employment plans in 2022 are in the United Kingdom, the United States, France, Germany and Belgium. These five countries represent 94% of the total defined benefit obligations and represent 95% of the total recognized plan assets.

December 31, 2022

In € million	Defined benefit obligations	In %	Recognized plan assets	Net liability/ (asset)	In %	Ratio plan assets on defined benefit obligations	of which asset surplus recognized in the balance sheet
United Kingdom	1,045	27%	1,031	14	2%	99%	0
United States	1,097	29%	984	113	14%	90%	0
France	722	19%	309	414	51%	43%	32
Germany	399	10%	201	198	24%	50%	0
Belgium	328	9%	330	-2	0%	101%	23
Other countries	209	6%	136	73	9%	65%	7
Total	**3,801**	**100%**	**2,990**	**810**	**100%**	**79%**	**62**

December 31, 2021

In € million	Defined benefit obligations	In %	Recognized plan assets	Net liability/ (asset)	In %	Ratio plan assets on defined benefit obligations	of which asset surplus recognized in the balance sheet
United Kingdom	1,618	32%	1,678	-60	-5%	104%	76
United States	1,315	26%	1,230	86	8%	93%	66
France	953	19%	372	582	52%	39%	50
Germany	516	10%	70	446	40%	14%	
Belgium	384	8%	405	-21	-2%	105%	51
Other countries	229	5%	139	90	8%	61%	5
Total	**5,016**	**100%**	**3,893**	**1,123**	**100%**	**78%**	**248**

United Kingdom

Solvay sponsors a few defined benefit plans in the United Kingdom; the largest one is the Rhodia Pension Fund (the Fund). This is a final salary funded pension plan, with entitlement to accrue a percentage of salary per year of service. It was closed to new entrants in 2003 and replaced by a defined contribution plan.

Broadly, about 8% of the liabilities are attributable to current employees, 28% to former employees and 64% to current pensioners.

The Fund functions and complies with UK legislation under a large regulatory framework. The Pensions Regulator has a risk-based approach to regulation and a code of practice, which provides practical guidance to trustees and employers of defined benefit schemes on how to comply with the scheme funding requirements. In accordance with UK legislation, the Fund is subject to Scheme Specific Funding, which requires that pension plans are funded prudently.

The Fund is governed by a Board of Trustees. They manage the Fund with prudent and fair judgment. The Trustees determine the liabilities used for Statutory Funding Objectives based on prudent actuarial and economic assumptions. Any shortfall or deficit once these liabilities have been deducted from the Fund's assets must be reduced by additional contributions and in a time frame determined in accordance with the employer's ability to pay and the strength of covenant or contingent security being offered by the employer.

The Fund is subject to a triennial valuation cycle for funding purposes. This valuation is performed by the scheme actuary in line with UK regulations and is discussed between the Trustees and the sponsoring employer to agree the valuation assumptions and a funding plan. The last completed valuation was as of July 1, 2021, which established a fixed contribution rate of pensionable pay for active members plus a deficit recovery plan, which aims to fully fund the scheme's technical provisions by the end of 2027 in accordance with local regulations.

The guarantee provided by Solvay (£ 330 million) is based on local regulations and exceeds the recognized liability – See note F36 Contingent assets, liabilities and financial guarantees for more information.

France

Solvay sponsors several defined benefit plans in France. The largest plans are the French compulsory retirement indemnity plan and three closed top hat plans. Indeed, as required by the "Loi Pacte", the open top hat plan (so called "ARS") was closed at the end of 2019 and replaced by a defined contribution plan.

The main plan is for all former Rhodia employees who contributed to the plan prior to its closure in the 1970s. It offers a full benefit guarantee based on the end-of-career salary; more than 99% of the liabilities are attributable to current pensioners. This plan is partially funded.

In accordance with French legislation, adequate guarantees have been provided.

United States

Solvay sponsors five defined benefit pension plans in the United States (two qualified plans and three non-qualified plans). A qualified plan is an employer-sponsored retirement plan that qualifies for special tax treatment under Section 401(a) of the Internal Revenue Code. At this moment all defined benefit plans are closed to new entrants where newly hired employees are eligible to participate in a defined contribution plan. Note that both qualified defined benefit pension plans are funded while the three non-qualified defined benefit pension plans are unfunded. The qualified plans make up the vast majority of the pension liabilities as of December 31, 2022.

Solvay's plans are in compliance with local laws regarding audited financial statements, governmental filings, and Pension Benefit Guaranty Corporation insurance premiums where applicable. The plans are reviewed and monitored locally by fiduciary committees for purposes of plan investments and administrative matters.

For the US qualified plans, Solvay's contributions take into account minimum (tax-deductible) funding requirements as well as maximum tax deductible contributions, both regulated by the tax authorities.

Certain eligible participants may elect to receive their pension in a single lump sum payment instead of a monthly payment.

Broadly, about 24% of the liabilities are attributable to current employees, 11% to former employees for whom benefit payments have not yet commenced and 65% to current pensioners.

In 2022, in the United States Solvay contributed to two multiemployer pension plans under collective bargaining agreements that cover certain of its union-represented employees. Each of the multiemployer plans is a defined benefit pension plan. None of the multiemployer plans provide an allocation of its assets, liabilities, or costs among contributing employers. None of the multiemployer plans provides sufficient information to permit Solvay, or other contributing employers, to account for the multiemployer plan as a defined benefit plan. Accordingly, the company accounts for its participation in each of the multiemployer plans as if they were a defined contribution plan. For multiemployer plans, during 2022 and 2021, the annual contributions paid were less than €1 million.

Germany

Solvay sponsors various defined benefit plans in Germany. The largest plans are a closed final-pay plan and an open cash balance plan. Broadly, about 70% of the liabilities are attributable to current pensioners. These plans are partially funded; an additional voluntary contribution of €155 million to the Contractual Trust Agreement was paid in 2022.

Belgium

Solvay sponsors two defined benefit plans in Belgium. These are funded pension plans. The plan for executives has been closed since the end of 2006, and the plan for the White and Blue collars has been closed since 2004. The past service benefits provided under these plans continue to be adapted each year considering annual salary increase and inflation ("Dynamic management"). In accordance with market practice in Belgium, because of favorable retirement lump sum taxation, most benefits are paid as lump sum.

Furthermore, Solvay sponsors two open defined contribution plans, classified as defined benefit plans for accounting purposes due to the minimum guarantees explained hereafter. These are funded pension plans which are open since the beginning of 2007 for the one in favor of the executives and since the beginning of 2005 for the one in favor of the White and Blue collars. Participants may choose to invest their contributions amongst four different investment funds (from "Prudent" to "Dynamic"). However, regardless of their choices, the Belgian law foresees that the employer must guarantee a return on employer contribution and on personal contribution, creating that way a potential liability for the Group. Since 2016 the return has been fixed at 1.75% for both types of contributions, at the minimum of the range provided by law since January 1, 2016 (1.75% to 3.75%). At the end of 2022, net liability recognized in the consolidated statement of financial position concerning these plans is not material.

Solvay's plans are administered through the Solvay Pension Fund that operates in compliance with local laws regarding minimum funding, investments principles, audited financial statements, governmental filings, and governance principles. The Pension Fund is managed through a General Assembly and a Board of Directors delegating day-to-day activities to an operational committee.

Solvay sponsors a few other smaller pension plans. All these plans are insured.

Other Plans

The majority of the obligations relate to pension plans. In some countries (mainly the United States), there are also post-employment medical plans, which represent 4% (4% in 2021) of the total defined benefit obligation.

B.3. Financial impacts

Changes in net liability

In € million	2022	2021
Net amount recognized at beginning of period	**1,123**	**1,975**
Net expense recognized in P&L - Defined benefit plans	58	33
Actual employer contributions / direct actual benefits paid	-227	-292
Acquisitions and disposals	0	-1
Remeasurements before impact of asset ceiling	-157	-564
Change in the effect of the asset ceiling limit on remeasurements	2	2
Reclassifications	2	-56
Currency translation differences	9	25
Net amount recognized at end of period	**810**	**1,123**

Remeasurements including the impact of asset ceiling €(155) million comprise:
- the unfavorable investment return on plan assets (excluding interests reported in the consolidated income statement) for €910 million;
- increase in discount rates €(1,150) million mainly in the United States, United Kingdom, Brazil and Eurozone;
- increase in inflation rate €60 million for Eurozone;
- other remeasurements due to changes in the other financial assumptions, demographic and experience effects €25 million.

Net expense

In € million	2022	2021
Current service costs	38	43
Past service costs (including curtailments and settlements)	1	-26
Service costs	**40**	**17**
Interest cost	99	66
Interest income	-85	-53
Net interest	**14**	**13**
Administrative expenses paid	**5**	**3**
Net expense recognized in P&L - Defined benefit plans	**58**	**33**
Remeasurements recognized in other comprehensive income	**-155**	**-562**

The service costs and administrative expenses of these benefit plans are recognized within cost of sales, administrative costs, research & development costs or operating gains and losses and results from legacy remediation, and the net interest is recognized as a finance expense.

In 2022 the Group's current service costs amount to €38 million (€43 million in 2021), of which €27 million (€32 million in 2021) related to funded plans and €11 million (€11 million in 2021) related to unfunded plans.

Net liability

In € million	December 31, 2022	December 31, 2021
Defined benefit obligations - Funded plans	**3,477**	**4,468**
Fair value of plan assets at end of period	-2,995	-3,896
Deficit for funded plans	**482**	**573**
Defined benefit obligations - Unfunded plans	323	548
Deficit / surplus (-)	**805**	**1,120**
Amounts not recognized as asset due to asset ceiling (recognized in other comprehensive income)	4	2
Net liability (asset)	**810**	**1,123**
Provision recognized	873	1,371
Asset recognized	-62	-248

Changes in defined benefit obligations

In € million	2022	2021
Defined benefit obligation at beginning of period	**5,016**	**5,436**
Current service costs	38	43
Past service costs (including curtailments)	1	-26
Interest cost	99	66
Employee contributions	4	4
Settlements	0	-2
Acquisitions and disposals (-)	0	-8
Remeasurements in other comprehensive income	-1,067	-422
Actuarial gains and losses due to changes in demographic assumptions	-26	-36
Actuarial gains and losses due to changes in financial assumptions	-1,100	-322
Actuarial gains and losses due to experience	59	-64
Actual benefits paid	-324	-302
Currency translation differences	32	225
Reclassification and other movements	2	1
Defined benefit obligation at end of period	**3,800**	**5,016**
Defined benefit obligations - Funded plans	3,477	4,468
Defined benefit obligations - Unfunded plans	323	548

Changes in the fair value of plan assets

In € million	2022	2021
Fair value of plan assets at beginning of period	**3,896**	**3,461**
Interest income	85	53
Remeasurements in other comprehensive income	-910	142
Return on plan assets (excluding amounts in net interests including on asset surplus)	-910	142
Employer contributions	227	292
Employee contributions	4	4
Administrative expenses paid	-5	-3
Acquisitions / Disposals (-)	0	-7
Settlements	0	-2
Actual benefits paid	-324	-302
Currency translation differences	-23	200
Reclassification and other movements	0	57
Fair value of plan assets at end of period	**2,995**	**3,896**
Actual return on plan assets (including on asset surplus)	-825	195

In 2022, the total return on plan assets, i.e. including interest income, is a loss of €825 million against €195 million gain in 2021.

In 2022, the Group's cash contributions amount to €227 million (€292 million in 2021), of which €42 million (€29 million in 2021) of mandatory contributions to funds, €155 million (€236 million in 2021) of voluntary cash contributions, and €30 million (€27 million in 2021) of direct benefits payments.

In 2022, the voluntary cash contributions were made to improve the funding level of the Germany pension plans (€155 million) and increase de-risking with the additional plans assets.

Except for any significant change in the regulatory environment (see "regulatory risk" above), the Group's mandatory cash contributions and direct benefits payments in 2023 are expected to be approximately €71 million.

Categories of plan assets

	December 31, 2022	December 31, 2021
Equities	20%	23%
Bonds	74%	62%
Properties and infrastructures	3%	3%
Cash and cash equivalents	2%	5%
Others	1%	6%
Total	**100%**	**100%**

With respect to the invested assets, it should be noted that these assets do not contain any direct investment in Solvay shares or in property or other assets occupied or used by Solvay. This does not exclude Solvay shares being included in mutual investment fund type investments.

Changes in asset ceiling

In € million	2022	2021
Effect of the asset ceiling limit at beginning of period	2	
Change in the effect of the asset ceiling limit on remeasurements	2	2
Effect of the asset ceiling limit at end of period	4	2

Actuarial assumptions used in determining the liability

Some of the retirement plans that Solvay has in place provide annuity payments that are adjusted on a regular basis to mitigate the effects for cost of living increases.

The salary growth assumption is used to determine what will be the salary at the end of the career of the individuals, as the defined benefit plans take into account the last salary of the individuals. This assumption includes impacts of both inflation and merit increases.

The pension growth assumption defines the expected future adjustments for these annuity payments. The plan defines how these annuity payments will be adjusted, and might be linked to inflation. Pension growth assumptions mainly apply for the defined benefit retirement plans in the United Kingdom, France and Germany.

The long term inflation assumption is presented separately as salary growth and pension growth assumptions encompass more variables than inflation.

	Eurozone		UK		USA	
	2022	2021	**2022**	2021	**2022**	2021
Discount rates	3.75%	1.00%	4.75%	2.00%	5.00%	2.75%
Expected rates of future salary increases	2.00% - 4.25%	1.75% - 4.00%	2.50% - 3.00%	2.50% - 3.00%	3.00% - 3.50%	3.00% - 3.50%
Inflation	2.00% - 2.50%	1.75% - 2.00%	3.00%	3.00%	2.50%	2.50%
Expected rates of pension growth	0.00% - 2.50%	0.00% - 2.00%	2.80%	2.85%	NA	NA

Actuarial assumptions used in determining the annual cost

	Eurozone		UK		USA	
	2022	2021	**2022**	2021	**2022**	2021
Discount rates	1.00%	0.25%	2.00%	1.25%	2.75%	2.25%
Expected rates of future salary increases	1.75% - 4.00%	1.75% - 3.75%	2.50% - 3.00%	2.00% - 2.75%	3.00% - 3.50%	3.00% - 3.50%
Inflation	1.75% - 2.00%	1.50% - 1.75%	3.00%	2.75%	2.50%	2.00%
Expected rates of pension growth	0.00% - 2.00%	0.00% - 1.75%	2.80%	2.70%	NA	NA

Actuarial assumptions regarding future mortality are based on recent country specific mortality tables. These assumptions translate at January 1, 2022 into an average remaining life expectancy in years for a pensioner retiring at age 65:

In years	Belgium	France	Germany	United Kingdom	United States
Retiring at the end of the reporting period					
Male	19	25	20	20	21
Female	22	28	24	23	22
Retiring 20 years after the end of the reporting period					
Male	20	28	23	21	22
Female	24	31	26	24	24

For most countries the mortality assumptions reflect actual scheme experience and/or Solvay's expectations in terms of future mortality improvements.

The actuarial assumptions used in determining the employee benefits obligation at December 31 are based on the following employee benefits liabilities durations:

	Eurozone	United Kingdom	United States
Duration in years	11.1	14.2	9.0

Sensitivities on the defined benefits obligation for the post-employment benefits

Each sensitivity amount is calculated assuming that all other assumptions are held constant. The economic factors and conditions often affect multiple assumptions simultaneously.

Sensitivity to a change of percentage in the discount rates:

In € million	0.25% increase	0.25% decrease
Eurozone	-35	37
United Kingdom	-34	36
United States	-23	24
Others	-4	4
Total	**-96**	**101**

Sensitivity to a change of percentage in the inflation rates:

In € million	0.25% increase	0.25% decrease
Eurozone	34	-33
United Kingdom	28	-27
United States	0	0
Others	2	-2
Total	**64**	**-62**

Sensitivity to a change of percentage in salary growth rates:

In € million	0.25% increase	0.25% decrease
Eurozone	5	-5
United Kingdom	2	-1
United States	0	0
Others	0	0
Total	**7**	**-6**

Sensitivity to a change of one year on mortality tables – The table shows impacts when the age of all beneficiaries increases or decreases by one year:

In € million	Age correction +1 year	Age correction -1 year
Eurozone	-62	64
United Kingdom	-48	48
United States	-28	28
Others	-5	5
Total	**-143**	**145**

F31.B. Provisions other than for employee benefits

Accounting policy

General

Provisions are recognized when (a) the Group has a present obligation (legal or constructive) as a result of a past event, (b) it is probable that the Group will be required to settle the obligation, and (c) a reliable estimate can be made of the amount of the obligation.

The amount recognized as a provision is the best estimate of the consideration required to settle the present obligation at the end of the reporting period, taking into account the risks and uncertainties surrounding the obligation. Where the effect of the time value of money is material, the amount is the present value of expenditures required to settle the obligation. Impacts of changes in discount rates are generally recognized in the financial result.

When some or all of the economic benefits required to settle a provision are expected to be recovered from a third party, a receivable is recognized as an asset if it is virtually certain that reimbursement will be received when the Group settles the obligation.

Restructurings

A restructuring provision is recognized when the Group has developed a detailed formal plan for the restructuring and has raised a valid expectation in those affected that it will carry out the restructuring by starting to implement the plan or announcing its main features to those affected by it. The measurement of a restructuring provision includes only the direct expenditures arising from the restructuring, which are those amounts that are both necessarily entailed by the restructuring and not associated with the ongoing activities of the entity.

Environmental remediation costs

Environmental liabilities are mainly related to non-ongoing activities (shut-down sites, discontinued activities or divested activities where Solvay maintains certain commitments) and, to a lower extent, to ongoing activities (see comments below).

An environmental provision is recognized, in accordance to IAS 37, when there is a current legal or constructive obligation resulting from past events which will result in a probable outflow of resources (expenses / cash outs) to settle it and for which a reliable estimate of such outflows and timing can be made.

The environmental expenses encompass, but are not limited to, the following key matters

- Sampling and analytical costs for soil and ground water monitoring
- Cost related to dismantling when required to meet a remediation or permit obligation
- Asbestos removal when obligated by regulation
- Environmental investigations and studies (Risk Assessments, Phase I and II soil and groundwater)

The closing amount of the environmental provisions is based on the net present value of the future cash flows needed, for current and future years, to settle remediation obligations. Forecast expenditures are based on external consultant estimates, where appropriate and possible. Future expenditures are forecast and revised biannually and validated quarterly by Solvay finance and suitably qualified industrial experts led by the Group Environmental Rehabilitation Director and benefit from inputs of legal department staff for the evolution of Environmental Regulations.

In the absence of probable obligations, a contingent liability may be disclosed to represent the future possible liability. In some cases, contingent liabilities cannot be quantified. See Note F36 Contingent assets, liabilities and financial guarantees.

Restructuring provisions

In 2022, these provisions amount to €119 million, compared with €191 million at the end of 2021.

The provisions at the end of 2022 mainly relate to the restructuring charges for the simplification of all support functions in the frame of the Group's simplification and transformation program, including the strategic transformation measures.

Environmental provisions

These provisions amount to € 702 million at the end of 2022, compared with € 648 million at the end of 2021, and pertain to:

- mines and drilling operations to the extent that legislation and/or operating permits in relation to quarries, mines and drilling operations contain requirements to pay compensation to third parties. Most of these provisions, based on local expert advice, can be expected to be used over a 1-20 year horizon and amount to € 125 million;
- the dismantling of the last mercury electrolysis activities was completed in 2019. The remaining provisions related to those activities will be used for the management of contamination of soil and groundwater, mostly over the next 20 years;
- lime dikes (settling ponds related mainly to soda ash plant), dump at sites and third party dump sites (linked to several industrial activities). These provisions have an horizon of 1 to 20 years;
- various types of pollution (organic, inorganic) coming from miscellaneous chemical productions; these provisions mainly cover discontinued activities or closed plants. Most of these provisions have a horizon of 1 to 20 years;
- Solvay Specialty Polymers made significant progress toward determining the scope of remedial activities pertaining to the per- and polyfluoroalkyl substances (PFAS) related to the West Deptford, New Jersey site. Due to recent technical studies and in cooperation with the local authorities, Solvay was able to reasonably estimate future expenses to address this remediation. As a consequence, a corresponding provision of €93 million was recognized in Q3 2022. The resulting cash outflows are expected to occur over a minimum 20 year period with 50% of the outflows occurring within the next 2 years. This provision reduces, though does not eliminate, the associated contingent liabilities previously reported.

The variation of Environmental provisions also were impacted from the revised assumptions of higher inflation rates, partially offset by the impact of higher discount rates reducing the present value of the overall liability by €(59) million. This effect, combined with the unwinding of the opening liabilities for €17 million resulted in a net decrease of €(42) million related to discounting. The estimated amounts are discounted based on the probable date of settlement, and are periodically adjusted to reflect the passage of time.

The breakdown of the environmental provisions and related uses for the main Countries/Regions is reported here below:

	December 31, 2022				December 31, 2021			
In € million	Provisions	In %	Provisions ongoing activities	Use of provisions	Provisions	In %	Provisions ongoing activities	Use of provisions
France	145	21%	1	-24	152	24%		-13
Germany	112	16%	7	-5	117	18%	7	-4
Rest of Europe	144	21%	5	-15	161	25%	5	-14
North America	226	32%	0	-37	151	23%		-24
Rest of the world	74	11%	0	-8	66	10%		-6
Total	**702**	**100%**	**12**	**-90**	**648**	**100%**	**13**	**-61**

Provisions for litigation

Provisions for litigation refer to indirect tax and legal exposures. They amount to € 97 million in 2022 (€62 million in 2021). The balance at the end of 2022 relates to indirect tax risks (€ 11 million) and legal claims (€ 86 million).

Other provisions

Other provisions relate to the shutdown or disposal of activities and amount to € 123 million in 2022, compared with € 126 million at the end of 2021.

NOTE F32

FINANCIAL INSTRUMENTS AND FINANCIAL RISK MANAGEMENT

Accounting policy

General

Financial assets and liabilities are recognized when, and only when Solvay becomes a party to the contractual provisions of the instrument.

Amortized cost is the amount at which the financial asset or financial liability is measured at initial recognition minus the principal repayments, plus or minus the cumulative amortization using the effective interest method of any difference between that initial amount and the maturity amount and, for financial assets, adjusted for any loss allowance. The effective interest rate is the rate that exactly discounts estimated future cash payments or receipts through the expected life of the financial asset or financial liability to the gross carrying amount of a financial asset or to the amortized cost of a financial liability. When calculating the effective interest rate, the Group estimates the expected cash flows by considering all the contractual terms of the financial instrument (for example, prepayment, extension, call and similar options) but does not consider the expected credit losses. The calculation includes all fees and points paid or received between parties to the contract that are an integral part of the effective interest rate, transaction costs, and all other premiums or discounts.

Financial assets

Trade receivables are initially measured at their transaction price, if they do not contain a significant financing component, which is the case for substantially all trade receivables. Other financial assets are initially measured at fair value plus, in the case of a financial asset not at fair value through profit or loss, transaction costs that are directly attributable to the acquisition of the financial asset.

A financial asset is classified as current when the cash flows expected to flow from the instrument mature within one year.

All recognized financial assets will subsequently be measured at either amortized cost or fair value under IFRS 9 *Financial Instruments*. Specifically:

- a debt instrument that (i) is held within a business model whose objective is to collect the contractual cash flows and (ii) has contractual cash flows that are solely payments of principal and interest on the principal amount outstanding is measured at amortized cost (net of any write down for impairment), unless the asset is designated at fair value through profit or loss (FVTPL) under the fair value option;
- a debt instrument that (i) is held within a business model whose objective is achieved both by collecting contractual cash flows and selling financial assets and (ii) has contractual terms that give rise on specified dates to cash flows that are solely payments of principal and interest on the principal amount outstanding, is measured at fair value through other comprehensive income (FVTOCI), unless the asset is designated at FVTPL under the fair value option. Upon derecognition, the cumulative gains and losses previously recognized in other comprehensive income are reclassified to profit or loss;
- all other debt instruments are measured at FVTPL;
- all equity investments are measured in the consolidated statement of financial position at fair value, with gains and losses recognized in profit or loss except that if an equity investment is not held for trading, nor contingent consideration recognized by an acquirer in a business combination, an irrevocable election can be made at initial recognition to measure the investment at FVTOCI, with dividend income recognized in profit or loss. This classification is determined on an instrument-by-instrument basis. Upon derecognition, the cumulative gains or losses previously recognized in other comprehensive income are reclassified to retained earnings.
- Equity investments in partnerships of investment funds are measured in the consolidated statement of financial position at fair value with gains and losses recognized in profit or loss. Based on the analysis of the characteristics of these funds the Group determined that they were not eligible for the FVTOCI option and therefore are accounted for at FVTPL.

For instruments quoted in an active market, the fair value corresponds to a market price (level 1). For instruments that are not quoted in an active market, the fair value is determined using valuation techniques including reference to recent arm's length market transactions or transactions involving instruments which are substantially the same (level 2), or discounted cash flow analysis including, to the greatest possible extent, assumptions consistent with observable market data (level 3). However, in limited circumstances, cost of equity instruments may be an appropriate estimate of their fair value. That may be the case if insufficient more recent information is available to measure fair value, or if there is a wide range of possible fair value measurements and cost represents the best estimate of fair value within that range.

Impairment of financial assets

The impairment loss of a financial asset measured at amortized cost is calculated based on the expected loss model, representing the weighted average of credit losses with the respective risks of a default occurring as the weights. Expected credit losses are based on the difference between the contractual cash flows due in accordance with the contract and all the cash flows that the Group expects to receive, discounted at an approximation of the original effective interest rate.

For trade receivables that do not contain a significant financing component (i.e. substantially all trade receivables), the loss allowance is measured at an amount equal to lifetime expected credit losses. Those are the expected credit losses that result from all possible default events over the expected life of those trade receivables, using a provision matrix that takes into account historical information on defaults adjusted for the forward-looking information per customer. The Group considers a financial asset in default when contractual payments are 60 days past due. However, in certain cases, the Group may also consider a financial asset to be in default when internal or external information indicates that the Group is unlikely to receive the outstanding contractual amounts in full before taking into account any credit enhancements held by the Group. A financial asset is fully impaired when there is no reasonable expectation of recovering the contractual cash flows.

Impairment losses are recognized in the consolidated income statement, except for debt instruments measured at fair value through other comprehensive income. In this case, the allowance is recognized in other comprehensive income.

Financial liabilities

Financial liabilities are initially measured at fair value minus, in the case of a financial liability not at fair value through profit or loss, transaction costs that are directly attributable to the issue of the financial liability. Subsequently, they are measured at amortized cost, except for:

- financial liabilities at fair value through profit or loss. Such liabilities, including derivatives that are liabilities, are subsequently measured at fair value;
- financial guarantee contracts. After initial recognition, guarantees are subsequently measured at the higher of the expected losses and the amount initially recognized.

Derivative financial instruments

A derivative financial instrument is a financial instrument or other contract within the scope of IFRS 9 *Financial Instruments* with all three of the following characteristics:

- its value changes in response to the change in a specified interest rate, financial instrument price, commodity price, foreign exchange rate, index of prices or rates, credit rating or credit index, or other variable, provided in the case of a non-financial variable that the variable is not specific to a party to the contract (sometimes called the 'underlying');
- it requires no initial net investment or an initial net investment that is smaller than would be required for other types of contracts that would be expected to have a similar response to changes in market factors;
- it is settled at a future date.

The Group enters into a variety of derivative financial instruments (forward, future, option, collars and swap contracts) to manage its exposure to interest rate risk, foreign exchange rate risk, and commodity risk (mainly utility and CO_2 emission rights price risks).

As explained above, derivatives are initially recognized at fair value at the date a derivative contract is entered into and are subsequently remeasured to their fair value at the end of each reporting period. The resulting gain or loss is recognized in income or expense, unless the derivative is designated and effective as a hedging instrument. The Group designates certain derivatives as hedging instruments of the exposure to variability in cash flows with respect to a recognized asset or liability or a highly probable forecast transaction that could affect profit or loss (cash flow hedges).

A derivative with a positive fair value is recognized as a financial asset whereas a derivative with a negative fair value is recognized as a financial liability. Derivative instruments (or portions of them) are presented as non-current assets or non-current liabilities if the remaining maturity of the underlying settlements is more than twelve months after the reporting period. Other derivative instruments (or portions of them) are presented as current assets or current liabilities.

Hedge accounting

The Group designates certain derivatives and embedded derivatives, in respect of interest rate risk, foreign exchange rate risk, Solvay share price risk, and commodity risk (mainly utility and CO_2 emission rights price risks), as hedging instruments in a cash flow hedge relationship.

At the inception of the hedge relationship, there is a formal designation and documentation of the hedging relationship and the Group's risk management objective and strategy for undertaking the hedge. So to apply hedge accounting: (a) there is an economic relationship between the hedged item and the hedging instrument, (b) the effect of credit risk does not dominate the value changes that result from that economic relationship, and (c) the hedge ratio of the hedging relationship is the same as that resulting from the quantity of the hedged item that the Group actually hedges and the quantity of the hedging instrument that the Group actually uses to hedge that quantity of hedged item.

The requirement under (a) above that an economic relationship exists means that there is an expectation that the value of the hedging instrument and the value of the hedged item will systematically change in the opposite direction in response to movements in either the same underlying (or underlyings that are economically related in such a way that they respond in a similar way to the risk that is being hedged).

Cash flow hedges

The effective portion of changes in the fair value of hedging instruments that are designated in a cash flow hedge is recognized in other comprehensive income.

The gain or loss relating to the ineffective portion is recognized immediately in profit or loss.

As long as cash flow hedge qualifies, the hedging relationship is accounted for as follows:

a) the separate component of equity associated with the hedged item (cash flow hedge reserve) is adjusted to the lower of the following (in absolute amounts):

(i) the cumulative gain or loss on the hedging instrument from inception of the hedge; and

(ii) the cumulative change in fair value (present value) of the hedged item (i.e. The present value of the cumulative change in the hedged expected future cash flows) from inception of the hedge.

b) the portion of the gain or loss on the hedging instrument that is determined to be an effective hedge (i.e. The portion that is offset by the change in the cash flow hedge reserve calculated in accordance with (a)) is recognized in other comprehensive income;

c) any remaining gain or loss on the hedging instrument (or any gain or loss required to balance the change in the cash flow hedge reserve calculated in accordance with (a)) is hedge ineffectiveness that is recognized in profit or loss.

d) the amount that has been accumulated in the cash flow hedge reserve in accordance with (a) is accounted for as follows:

(i) if a hedged forecast transaction subsequently results in the recognition of a non-financial asset or a non-financial liability, the Group removes that amount from the cash flow hedge reserve and includes it directly in the initial cost or other carrying amount of the asset or the liability. This is not a reclassification adjustment and hence it does not affect other comprehensive income;

(ii) for cash flow hedges other than those covered by i), that amount is reclassified from the cash flow hedge reserve to profit or loss as a reclassification adjustment in the same period or periods during which the hedged expected future cash flows affect profit or loss (for example, in the periods that interest income or interest expense is recognized or when a forecast sale occurs);

(iii) however, if that amount is a loss and the Group expects that all or a portion of that loss will not be recovered in one or more future periods, it immediately reclassifies the amount that is not expected to be recovered into profit or loss as a reclassification adjustment.

Most hedged items are transaction related. The time value of options, forward elements of forward contracts, and foreign currency basis spreads of financial instruments that are hedging the items affect profit or loss at the same time as those hedged items.

Hedge accounting is discontinued prospectively when the hedging relationship (or a part of a hedging relationship) ceases to meet the qualifying criteria (after taking into account any rebalancing of the hedging relationship, if applicable). This includes instances when the hedging instrument expires or is sold, terminated or exercised.

When the Group discontinues hedge accounting for a cash flow hedge it accounts for the amount that has been accumulated in the cash flow hedge reserve as follows:

- if the hedged future cash flows are still expected to occur, that amount remains in the cash flow hedge reserve until the future cash flows occur. However, if that amount is a loss and the Group expects that all or a portion of that loss will not be recovered in one or more future periods, it immediately reclassifies the amount that is not expected to be recovered into profit or loss as a reclassification adjustment;
- if the hedged future cash flows are no longer expected to occur, that amount is immediately reclassified from the cash flow hedge reserve to profit or loss as a reclassification adjustment. A hedged future cash flow that is no longer highly probable to occur may still be expected to occur.

Fair value hedges

The gain or loss on the hedging instrument shall be recognized in profit or loss (or other comprehensive income, if the hedging instrument hedges an equity instrument for which an entity has elected to present changes in fair value in other comprehensive income).

The hedging gain or loss on the hedged item shall adjust the carrying amount of the hedged item (if applicable) and be recognized in profit or loss. If the hedged item is a financial asset (or a component thereof) that is measured at fair value through other comprehensive income, the hedging gain or loss on the hedged item shall be recognized in profit or loss. However, if the hedged item is an equity instrument for which an entity has elected to present changes in fair value in other comprehensive income, those amounts shall remain in other comprehensive income. When a hedged item is an unrecognized firm commitment (or a component thereof), the cumulative change in the fair value of the hedged item subsequent to its designation is recognized as an asset or a liability with a corresponding gain or loss recognized in profit or loss.

The following table presents the financial assets and liabilities as current or non-current according to their classification under IFRS 9.

		December 31, 2022	December 31, 2021
In € million	Classification	Carrying amount	Carrying amount
Non-current assets - Financial instruments		**464**	**553**
Equity instruments measured at fair value through other comprehensive income	Financial assets measured at fair value through other comprehensive income	24	51
Equity instruments measured at fair value through profit or loss	Financial assets measured at fair value through profit or loss	47	62
Loans and other non-current assets (excluding pension fund surpluses and long-term inventory balance)	Financial assets measured at amortized cost	197	252
Financial instruments - Operational		**196**	**187**
Held for trading	Held for trading	130	108
Derivative financial instruments designated in a cash flow hedge relationship	Cash-flow hedge	66	79
Current assets - Financial instruments		**4,093**	**4,300**
Trade receivables	Financial assets measured at amortized cost	2,026	1,805
Other financial instruments		206	229
Other marketable securities >3 months	Financial assets measured at amortized cost	43	70
Currency swaps	Held for trading	1	4
Other current financial assets	Financial assets measured at amortized cost	162	155
Financial instruments - Operational		**929**	**1,326**
Held for trading	Held for trading	553	1,101
Derivative financial instruments designated in a cash flow hedge relationship	Cash-flow hedge	376	225
Cash and cash equivalents	**Financial assets measured at amortized cost**	**932**	**941**
Total assets - Financial instruments		**4,557**	**4,853**
Non-current liabilities - Financial instruments		**2,753**	**2,907**
Financial debt		2,450	2,576
Bonds	Financial liabilities measured at amortized cost	1,994	2,112
Other non-current debts	Financial liabilities measured at amortized cost	42	55
Lease liabilities IFRS 16 - Non-current portion	Lease liabilities measured at amortized cost	413	408
Other liabilities	Financial liabilities measured at amortized cost	112	153
Financial instruments - Operational		**192**	**178**
Held for trading	Held for trading	146	107
Derivative financial instruments designated in a cash flow hedge relationship	Cash-flow hedge	46	71
Current liabilities - Financial instruments		**3,646**	**4,414**
Financial debt		510	773
Short-term financial debt	Financial liabilities measured at amortized cost	397	673
Currency swaps	Held for trading	2	3
Lease liabilities IFRS 16 - Current portion	Lease liabilities measured at amortized cost	111	97
Trade payables	Financial liabilities measured at amortized cost	2,296	2,131
Financial instruments - Operational		676	1,350
Held for trading	Held for trading	492	1,118
Derivative financial instruments designated in a cash flow hedge relationship	Cash-flow hedge	183	232
Dividends payables	Financial liabilities measured at amortized cost	165	160
Total liabilities - Financial instruments		**6,399**	**7,320**

In 2021 and 2022, long-term CO_2 inventory balances reported are not financial assets and hence are not included in the table above. They are presented as other non-current assets.

F32.A. Overview of financial instruments

The following table gives an overview of the carrying amount of all financial instruments by category as defined by IFRS 9.

Financial Instruments

	December 31, 2022	December 31, 2021
In € million	Carrying amount	Carrying amount
Fair value through profit or loss	***731***	***1,275***
Held for trading (financial instruments - operational - see note F26)	*683*	*1,209*
Held for trading (other financial instruments - see note F33, table Changes in financial debt)	*1*	*4*
Equity instruments measured at fair value through profit or loss	*47*	*62*
Financial assets measured at amortized cost	***3,360***	***3,223***
Financial assets measured at amortized cost (including cash and cash equivalents, trade receivables, loans and other current/non-current assets except pension fund surpluses and long-term inventory balance)	*3,360*	*3,223*
Financial assets measured at fair value through other comprehensive income	***466***	***356***
Derivative financial instruments designated in a cash flow hedge relationship (see note F26)	*442*	*304*
Equity instruments measured at fair value through other comprehensive income	*24*	*51*
Total financial assets	***4,557***	***4,853***
Fair value through profit or loss	***-641***	***-1,228***
Held for trading (financial instruments - operational - see note F34)	*-639*	*-1,225*
Held for trading (financial debt - see note F33, table Changes in financial debt)	*-2*	*-3*
Financial liabilities measured at amortized cost	***-5,005***	***-5,284***
Financial liabilities measured at amortized cost (excluding dividends payable and IFRS 16 lease liabilities)	*-4,841*	*-5,124*
Dividends payables	*-165*	*-160*
Lease liabilities measured at amortized cost	***-524***	***-505***
Lease liabilities IFRS16 measured at amortized cost	*-524*	*-505*
Financial Liabilities measured at fair value through other comprehensive income	***-229***	***-304***
Derivative financial instruments designated in a cash flow hedge relationship (see note F34)	*-229*	*-304*
Total financial and lease liabilities	***-6,399***	***-7,320***

The category "Held for trading" contains derivative financial instruments that are used for management of foreign currency risk, interest rate risk, utility and CO_2 emission rights price risks, index and Solvay share price. Contracts which have been documented as hedging instruments (hedge accounting under IFRS 9 *Financial Instruments*) or which meet the exemption criteria for own use are not included in the category "Held for trading". Equity instruments measured at fair value through OCI and through profit or loss pertain to Solvay's New Business Development (NBD) activity: the Group has built a Corporate Venturing portfolio, which consists of direct investments in start-up companies and of investments in venture capital funds. If the Group does not have significant influence or joint control, the investments are measured at fair value according to the valuation guidelines published by the European Private Equity and Venture Capital Association. The impacts of the direct investments are recognized in other comprehensive income while the venture capital funds are generally recognized through profit and loss.

F32.B. Fair value of financial instruments

Valuation techniques and assumptions used for measuring fair value.

Accounting policy

Quoted market prices are available for financial assets and financial liabilities with standard terms and conditions that are traded on active markets. The fair values of derivative financial instruments are equal to their quoted prices, if available. In case such quoted prices are not available, the fair value of the financial instruments is determined based on a discounted cash flow analysis using the applicable yield curve derived from quoted interest rates matching maturities of the contracts for non-optional derivatives. Optional derivatives are fair valued based on option pricing models, taking into account the present value of probability weighted expected future payoffs, using market reference formulas.

The fair values of other financial assets and financial liabilities are determined in accordance with generally accepted pricing models based on discounted cash flow analysis.

Fair value of financial instruments measured at amortized cost (excluding IFRS 16 lease liabilities)

In € million	December 31, 2022		December 31, 2021	
	Carrying amount	Fair value	Carrying amount	Fair value
Non-current assets - Financial instruments	**197**	**197**	**252**	**252**
Loans and other non-current assets (except pension fund surpluses and long-term inventory balance)	197	197	252	252
Non-current liabilities - Financial instruments	**-2,148**	**-1,994**	**-2,321**	**-2,465**
Bonds	-1,994	-1,830	-2,112	-2,256
Other non-current debts	-42	-42	-55	-55
Other liabilities	-112	-112	-153	-153

The carrying amounts of current financial assets and liabilities are estimated to reasonably approximate their fair values, due to the short term to maturity.

Financial instruments measured at fair value in the consolidated statement of financial position

The table "Financial instruments measured at fair value in the consolidated statement of financial position" provides an analysis of financial instruments that, subsequent to their initial recognition, are measured at fair value, grouped into Levels 1 to 3 based on the degree to which the fair value is observable. Financial instruments, classified as held for trading and as hedging instruments in cash flow hedges are mainly grouped into Levels 1 and 2. They are fair valued based on forward pricing and swap models using present value calculations. The models incorporate various inputs including foreign exchange spot and interest rates of the respective currencies, currency basis spreads between the respective currencies, interest rate curves and forward rate curves of the underlying commodity. The equity instruments measured at fair value through OCI and through profit and loss are presented within Level 1 and 3. The fair value of the instruments presented under Level 3 is measured based on the guidelines recommended by The International Private Equity and Venture Capital Valuation (IPEV).

In accordance with the Group internal rules, the responsibility for measuring the fair value level resides with (a) the Treasury department for the non-utility derivative financial instruments, and the non-derivative financial liabilities, (b) the Sustainable Development and Energy department for the utility derivative financial instruments and (c) the Finance department for non-derivative financial assets.

The Group determines whether transfers have occurred between levels in the hierarchy by re-assessing categorisation (based on the lowest level input that is significant to the fair value measurement as a whole) at the end of each reporting period. During the year, no such transfers have occurred.

Financial instruments measured at fair value in the consolidated statement of financial position

	December 31, 2022			
In € million	Level 1	Level 2	Level 3	Total
Held for trading	**483**	**200**		**683**
Foreign currency risk		5		5
Utility risk	466	188		654
CO_2 risk	17	4		21
Solvay share price		2		2
Index		2		2
Equity instruments measured at fair value through profit or loss			**47**	**47**
New Business Development			47	47
Cash flow hedges	**184**	**259**		**442**
Foreign currency risk		20		20
Utility risk	44	236		280
CO_2 risk	140	2		142
Solvay share price				
Equity instruments measured at fair value through other comprehensive income			**24**	**24**
New Business Development			24	24
Total assets	**667**	**459**	**71**	**1,197**
Held for trading	**-275**	**-366**		**-640**
Foreign currency risk		-3		-3
Utility risk	-275	-313		-588
CO_2 risk		-46		-46
Solvay share price		-1		-1
Index		-2		-2
Cash flow hedges	**-127**	**-102**		**-229**
Foreign currency risk		-7		-7
Utility risk	-103	-93		-195
CO_2 risk	-24	-2		-26
Solvay share price		-1		-1
Total liabilities	**-401**	**-468**		**-869**

In 2022, the fair value of the financial instruments to manage the utility risk remains significant due to the unprecedented rise in the prices of power and gas. In Q2 2022, management practices related to the hedging of CO_2 risk exposure were changed in view of both increased volatility in Energy and CO_2 markets and the separation plan. Consequently, the own use accounting exemption was reconsidered and the related portfolio of CO_2 emission rights was accounted for in accordance with the general rules of IFRS 9 at fair value through profit or loss and a profit of €322 million was recognized. Subsequently, on July 1, 2022, the related portfolio has been designated as hedging instruments in a cash flow hedge relationship.

	December 31, 2021			
In € million	Level 1	Level 2	Level 3	Total
Held for trading	**773**	**439**		**1,212**
Foreign currency risk		7		7
Utility risk	769	429		1,198
CO_2 risk	4			4
Solvay share price		2		2
Index		2		2
Equity instruments measured at fair value through profit or loss			62	62
New Business Development			62	62
Cash flow hedges	**38**	**266**		**304**
Foreign currency risk		5		5
Utility risk	38	260		298
Solvay share price		1		1
Equity instruments measured at fair value through other comprehensive income	**35**		**17**	**51**
New Business Development	35		17	51
Total assets	846	705	79	1,630
Held for trading	**-620**	**-608**		**-1,228**
Foreign currency risk		-4		-4
Utility risk	-620	-598		-1,217
CO_2 risk	0	-4		-5
Index		-2		-2
Cash flow hedges	**-232**	**-72**		**-304**
Foreign currency risk		-13		-13
Utility risk	-232	-59		-291
Total liabilities	**-852**	**-679**		**-1,531**

Movements of the period

Reconciliation of level 3 fair value measurements of financial assets and liabilities.

	December 31, 2022		
	At fair value through profit or loss	At fair value through other comprehensive income	Total
In € million	Equity instruments	Equity instruments	
January 1	**62**	**17**	**79**
Total gains or losses			
- Recognized in profit or loss	-15		-15
- Recognized in other comprehensive income		8	8
Acquisitions	-1	-1	-2
Capital decreases			
Transfers out of level 3			
December 31	**47**	**24**	**70**

	December 31, 2021		
	At fair value through profit or loss	At fair value through other comprehensive income	Total
In € million	Equity instruments	Equity instruments	
January 1	**55**	**11**	**66**
Total gains or losses			
- Recognized in profit or loss	1		
- Recognized in other comprehensive income		1	1
Acquisitions	6	7	13
Capital decreases	0	0	-1
Transfers out of level 3		-2	-2
December 31	**62**	**17**	**79**

Derivatives for utilities, CO_2 and commodities

2022	Amounts recognized in the statement of financial position			Amounts by counterparty			
€ in million	Non-current	Current	Total	Market cleared	Negotiated with EFET/ ISDA counterparties	Other	Total
Cash flow hedges	66	356	422				
Held for trading	130	545	675				
Total assets	**196**	**901**	**1,097**	**727**	**276**	**94**	**1,097**
Cash flow hedges	-46	-176	-222				
Held for trading	-146	-488	-634				
Total liabilities	**-192**	**-664**	**-856**	**-448**	**-100**	**-308**	**-856**

EFET = European Federation of Energy Traders (EFET), ISDA = International Swaps and Derivatives Association

Derivatives for utilities, CO_2 and commodities

2021	Amounts recognized in the statement of financial position			Amounts by counterparty			
€ in million	Non-current	Current	Total	Market cleared	Negotiated with EFET/ ISDA counterparties	Other	Total
Cash flow hedges	79	218	298				
Held for trading	108	1,093	1,201				
Total assets	187	1,312	1,499	891	390	218	1,499
Cash flow hedges	-71	-219	-291				
Held for trading	-107	-1,116	-1222				
Total liabilities	-178	-1,335	-1,513	-931	-143	-439	-1,513

EFET = European Federation of Energy Traders (EFET), ISDA = International Swaps and Derivatives Association

The amounts of these financial instruments are significant as they are presented gross in accordance with IAS 32. However, the credit risk remains limited considering that:

- Most instruments are negotiated with market cleared counterparties;
- Very low risk is associated with counterparty members of the European Federation of Energy Traders or of the International Swaps and Derivatives Association, with high credit ratings (A-1/A+).

No significant credit value adjustment is reflected in these derivatives' fair market value.

Income and expenses of financial instruments recognized in the consolidated income statement and in other comprehensive income

In € million	2022	2021
Recognized in the consolidated income statement		
Recycling from OCI of derivative financial instruments designated in a cash flow hedge relationship		
Foreign currency risk	-31	9
Utility risk	238	78
Changes in the fair value of financial instruments held for trading		
Utility risk	259	88
CO_2 risk	2	-4
Recognized in the gross margin	**468**	**170**
Recycling from OCI of derivative financial instruments designated in a cash flow hedge relationship		
Foreign currency risk		
Solvay share price		
Changes in the fair value of financial instruments held for trading		
CO_2 risk	188	
Solvay share price	-2	2
Gains and losses (time value) on derivative financial instruments designated in a cash flow hedge relationship		
Foreign currency risk		
Foreign operating exchange gains and losses	0	1
Recognized in other operating gains and losses	**186**	**3**
Recycling from OCI of derivative financial instruments designated in a cash flow hedge relationship		
Foreign currency risk	0	1
Recognized in results from portfolio management and reassessments	**0**	**1**
Net interest expense	-79	-80
Financial charge on lease liabilities	-21	-19
Other gains and losses on net indebtedness (excluding gains and losses on items not related to financial instruments)		
Foreign currency risk	-4	-1
Interest element of financial instruments	10	8
Others	-3	-7
Recognized in charges on net indebtedness (*)	**-97**	**-100**
Dividends from equity instruments measured at fair value through other comprehensive income	-13	6
Total recognized in the consolidated income statement	**544**	**80**

(*) The note F6 Net Financial Charges shows an amount of €(98) million for 2022 (€(103) million for 2021) reported under "Net cost of borrowings". This amount includes € (1) million for 2022 (€ (3) million for 2021) of financial expenses not related to financial instruments that are excluded in this table from the line item "Recognized in charges on net indebtedness".

The loss on highly probable sales in foreign currency recognized in gross margin for €(31) million and the gain recognized on utility instruments for € 238 million are the result of the recycling of gains and losses of derivative financial instruments designated in a cash flow hedge relationship. The loss of €(31) million is mainly due to the hedging of the US$ currency and the gain on utility for €238 million is mainly related to gas procurement for € 450 million, coal for €55 million, partially offset by a loss on power procurement for €(267) million.

The change in fair value of financial instruments held for trading recognized in gross margin is explained by:

- a gain of €259 million (€88 million in 2021) mainly due to the price increase of gas and electricity;
- a gain of €2 million (a loss of €(4) million in 2021) mainly due to the price variation of CO_2;

The gain of €186 million (a gain of €3 million in 2021) recognized in other operating gains and losses is mainly explained by the CO_2 emission rights, previously considered under the "own use" exemption. The remaining amounts are related to changes in fair value of equity swaps for long-term incentives.

In the caption other gains and losses on net indebtedness, the gain of €10 million (€8 million for 2021) is related to the interest element of financial derivatives (forward points). The other costs decreased from €(7) million in 2021 to €(3) million in 2022. In 2022, these costs included €(2) million related to a loan write-off. In 2021, these costs include €(6) million related to the early repayment of €372.5 million on the €750 million senior bond in December 2021.

Income and expenses on financial instruments recognized in other comprehensive income include the following:

In € million	Cash flow hedges									
	Foreign currency risk		Interest rate risk		Commodity risk		Risk on Solvay share price		Total	
	2022	2021	**2022**	2021	**2022**	2021	**2022**	2021	**2022**	2021
January 1	**-7**	**16**			**7**		**2**	**2**	**1**	**17**
Recycling from other comprehensive income of derivative financial instruments designated in a cash flow hedge relationship	31	-9			-257	-78			-226	-87
Effective portion of changes in fair value of cash flow hedge	-10	-14			317	85	-1		306	71
December 31	**13**	**-7**			**67**	**7**	**1**	**2**	**81**	**1**

Conventionally, (+) indicates an increase and (-) a reduction in equity.

F32.C. Capital management

See 2 Capital, shares and shareholders in respect of capital in the Corporate Governance statement chapter of this annual report.

The Group manages its funding structure with the objective of safeguarding its ability to continue as a going concern, optimizing the return for shareholders, maintaining an investment-grade rating, and minimizing the cost of debt.

The capital structure of the Group consists of equity (including perpetual hybrid bonds (see note F28 Equity) and of net debt (see note F33 Net indebtedness). Perpetual hybrid bonds are nevertheless considered as debt in the Group's Underlying metrics.

Besides the statutory minimum equity funding requirements that apply to the Company's subsidiaries in the different countries, Solvay is not subject to any additional legal capital requirements.

The Treasury department reviews the capital structure on an ongoing basis under the authority and the supervision of the Chief Financial Officer. As appropriate, the Legal department is involved to ensure compliance with legal and contractual requirements.

F32.D. Financial risk management

The Group is exposed to market risk from movements in foreign exchange rates, interest rates and other market prices (utility prices, CO_2 emission rights prices and equity prices). The Group's senior management oversees the management of these risks and is supported by the Treasury department (non-commodity risks) and Solvay Sustainable Development and Energy department that advise on financial risks and the appropriate financial risk governance framework for the Group. Both departments provide assurance to the Group's senior management that the Group's financial risk activities are governed by appropriate policies and procedures and that financial risks are identified, measured and managed in accordance with the Group's policies and risk objectives. Solvay uses derivative financial instruments to hedge clearly identified foreign exchange, interest rate, index, utility price and CO_2 emission rights price risks (hedging instruments). All derivative activities for risk management purposes are carried out by specialist teams that have the appropriate skills, experience and supervision. However, the required criteria to apply hedge accounting are not met in all cases.

Furthermore, the Group is also exposed to liquidity risks and credit risks.

Foreign currency risks

The Group is a multi-specialty chemical company with operations worldwide, and hence undertakes transactions denominated in foreign currencies. Consequently, the Group is exposed to exchange rate fluctuations. In 2022, the Group was mainly exposed to US dollar, Chinese yuan, Brazilian real and Japanese yen.

To mitigate its foreign currency risk, the Group has defined a hedging policy that is essentially based on the principles of financing its activities in local currency and hedges the transactional exchange risk at the time of invoicing (risk which is certain). The Group constantly monitors its activities in foreign currencies and hedges, where appropriate, the exchange rate exposures on expected cash flows (risk which is highly probable).

Exchange rate exposures are managed within approved policy parameters utilizing forward foreign exchange contracts or, when appropriate, other derivatives like currency options.

In the course of 2022, the €/US$ exchange rate moved from 1.1326 at the start of January to 1.0674 at the end of December (from 1.2270 to 1.1326 in 2021).

A fluctuation of (0.10) to the US$/€ exchange rate, would generate in 2022 about €180 million (€120 million for 2021) variation to the EBITDA. 51% of this variation is at conversion level and 49% at transaction level, the latter being mostly hedged. EBITDA is the key non-IFRS metric for operational performance as defined in the glossary.

At the end of 2022, a strengthening of the US dollar vs euro would increase the net debt by approximately €87 million (€79 million in 2021) per 0.10 US$/€ fluctuation. Conversely, a weakening of the US dollar vs euro would decrease the net debt by approximately €72 million (€66 million in 2021) per 0.10 US$/€ fluctuation.

The Group's currency risk can be split into two categories: translation and transactional risk.

Translation risk

The translation exchange risk is the risk affecting the Group's consolidated financial statements related to investees operating in a currency other than the EUR (the Group's presentation currency).

During 2022 and 2021, the Group did not hedge the currency risk of foreign operations.

Transactional risk

The transactional risk is the exchange risk linked to a specific transaction, such as a Group entity buying or selling in a currency other than its functional currency.

To the largest extent possible, the Group manages the transactional risk on receivables and borrowings centrally and locally when centralization is not possible.

The choice of borrowing currency depends mainly on the opportunities offered by the various markets. This means that the selected currency is not necessarily that of the country in which the funds will be invested. Nonetheless, operating entities are financed essentially in their functional currencies.

In emerging countries, it is not always possible to borrow in local currency, either because funds are not available in local financial markets, or because the financial conditions are too onerous. In such a situation, the Group has to borrow in a different currency. Nonetheless, the Group considers opportunities to refinance its borrowings in emerging countries with local currency debt.

Derivatives are initially recognized at fair value at the date a derivative contract is entered into and are classified into the two categories described below:

Held for trading

The transactional risk is managed either by spot or forward contracts. Unless documented as hedging instruments (see above), derivative financial instruments are classified as held for trading.

In 2022, the notional amounts transacted to manage the transactional risk are:
- a short position of €(666) million (compared to €(660) million in 2021);
- a long position of €343 million (compared to €605 million in 2021).

In 2021, the long position was explained by the need to convert US$ into € for the early repayment of €372.5 million on the €750 million senior bond in December 2021.

The following table details the notional amounts of the Group's derivatives contracts outstanding at the end of the period:

In € million	Notional amount [1]		Fair value assets		Fair value liabilities	
December 31	**2022**	2021	**2022**	2021	**2022**	2021
Held for trading long position	343	605	1	3	-1	-2
Held for trading short position	-666	-660	4	4	-2	-2
Total	**-323**	**-55**	**5**	**7**	**-3**	**-4**

(1) Long/(short) positions (if the foreign exchange transaction does not involve the functional currency, both notional amounts are considered).

Cash flow hedge

The Group uses derivatives to hedge identified foreign exchange rate risks. It documents those as hedging instruments unless it hedges a recognized financial asset or liability when generally no cash flow hedge relationship is documented. Most hedges are transaction related.

At the end of 2022, the Group had mainly hedged highly probable sales in foreign currencies (short position) in a nominal amount of US$ 839 million (€786 million) and JP¥ 15,902 million (€113 million). All cash flow hedge contracts that exist at the end of December 2022 will be settled within the next 12 months, and will impact profit or loss during that period.

The following table details the notional amounts of Solvay's derivatives contracts outstanding at the end of the period:

NOTIONAL AMOUNTS

December 31, 2022

In € million	Notional amount of the instrument (1)	Notional amount of the risk exposure (1)	Percentage of exposure hedged		Average hedge exchange rate per risk category	Cash flow hedge reserve	Fair value of the hedging instrument	
						Equity	Assets	Liabilities
Cash flow hedges - Forecasted sales and purchases (3)								
JPY/EUR	-71	-147	48%		139.17	0	1	1
JPY/USD	-42	-87	48%	(2)	132.47	-1	1	2
Total JPY	**-113**	**-234**				**-1**	**1**	**2**
USD/BRL	-187	-285	66%	(2)	5.28	3	3	0
USD/CNY	-157	-353	45%	(2)	6.82	-1	1	2
USD/EUR	-340	-674	50%		1.05	8	10	2
USD/MXN	-66	-135	49%	(2)	21.01	3	3	0
USD/THB	-36	-79	45%		34.69	1	1	0
Total USD	**-786**	**-1,525**				**14**	**19**	**5**
Total	**-899**	**-1,759**				**13**	**20**	**7**

(1) Long/(short) positions.
(2) In compliance with Group Treasury Policy the percentage of hedged exposure will reach the progressive minimum compliance level of 60% in 2023.
(3) The Hedging instruments are located in the line item: "Other Receivables" and "Other Liabilities" in the statement of financial position.

Hedge relationships are seldom perfect. Therefore, ineffectiveness could arise with the result that changes in the fair value or cash flows of the hedged item that are attributable to a hedged risk and the hedging instrument do not offset within a period. The sources of hedge ineffectiveness that could potentially affect the hedging relationship during its term are listed below:

- A reduction in the amount of the forecast sales resulting in quantity or notional amount differences – the hedged item and hedging instrument are based on different quantities or notional amounts.
- A significant change in the credit risk of parties.
- Timing differences – the hedged item and hedging instrument occur or are settled at different dates.

In 2022, no hedge ineffectiveness was recognized in the consolidated income statement.

December 31, 2021

In € million	Notional amount of the instrument (1)	Notional amount of the risk exposure (1)	Percentage of exposure hedged		Average hedge exchange rate per risk category	Cash flow hedge reserve	Fair value of the hedging instrument	
						Equity	Assets	Liabilities
Cash flow hedges - Forecasted sales and purchases (3)								
JPY/EUR	-45	-110	41%		130.80	1		
JPY/USD	-31	-64	48%	(2)	111.66	1	1	
Total JPY	**-76**	**-174**				**1**	**1**	
USD/BRL	-146	-194	75%	(2)	5.26			
USD/CNY	-122	-225	54%	(2)	6.58	3	3	
USD/EUR	-314	-634	50%		1.18	12		12
USD/MXN	-40	-89	45%	(2)	21.73	2	2	
USD/THB	-20	-44	45%		32.51	1		1
Total USD	**-642**	**-1,187**				**17**	**4**	**13**
Total	**-718**	**-1,361**				**18**	**5**	**13**

(1) Long/(short) positions.
(2) In compliance with Group Treasury Policy the percentage of hedged exposure will reach the progressive minimum compliance level of 60% in 2022.
(3) The Hedging instruments are located in the line item: "Other Receivables" and "Other Liabilities" in the statement of financial position.

Interest rate risks

See the Financial risk in the Management of risks section of this annual report for additional information on the interest rate risks management.

Interest rate risk is managed at Group level.

The Group is exposed to interest rate risk because entities in the Group borrow funds at both fixed and floating interest rates. Interest rate risk is managed at Group level by maintaining an appropriate mix between fixed and floating rate borrowings.

Interest rate exposure by currency is summarized below:

In € million	December 31, 2022			December 31, 2021		
Currency	Fixed rate	Floating rate	Total	Fixed rate	Floating rate	Total
Financial debt						
EUR	-1,642	-32	**-1,673**	-1,923	-18	**-1,941**
USD	-1,153	-11	**-1,163**	-1,246	-23	**-1,269**
BGN	0	-33	**-33**	0	-4	**-5**
SAR	0	0	**0**		-18	**-18**
INR	-11	-6	**-17**	-39	0	**-39**
KRW	-19	-7	**-26**	-21	-1	**-22**
THB	-12	0	**-12**	-11	0	**-11**
BRL	-12	0	**-12**	-9	-2	**-11**
Other	-22	-1	**-23**	-28	-4	**-32**
Total	**-2,870**	**-90**	**-2,959**	**-3,277**	**-71**	**-3,349**
Cash and cash equivalents						
EUR		201	**201**		206	**206**
USD		320	**320**		458	**458**
CAD		53	**53**		5	**5**
THB		28	**28**		36	**36**
SAR		11	**11**		15	**15**
BRL		177	**177**		53	**53**
CNY		22	**22**		35	**35**
KRW		7	**7**		7	**7**
JPY		30	**30**		33	**33**
Other		83	**83**		93	**93**
Total		**932**	**932**		**941**	**941**
Other financial instruments						
CNY		43	**43**		70	**70**
EUR		185	**185**		160	**160**
SAR		4	**4**		21	**21**
Other		4	**4**		8	**8**
Total		**236**	**236**		**259**	**259**
Total	**-2,870**	**1,078**	**-1,791**	**-3,277**	**1,128**	**-2,149**

At the end of 2022, approximately €2.87 billion of the Group's gross debt was at fixed-rate, and is largely comprised of:

- Senior EUR Bonds for a total of €1,100 million maturing in 2027 and 2029 (carrying amount of €1,094 million);
- Remaining portion (US$ 163 million) of the US$ Senior Bonds 2025 of US$ 250 million (carrying amount of €152 million);
- Senior US$ Bond for a total of US$ 800 million (carrying amount of €748 million);
- IFRS 16 lease liability for a total of €524 million (carrying amount of €524 million).

The floating rate debts that are subject to interest rate swaps are discussed below.

The impact of interest rate volatility at the end of 2022 compared to 2021 is the following:

	Sensitivity to a + 100bp movement in EUR market interest rates		Sensitivity to a - 100bp movement in EUR market interest rates	
In € million	**2022**	2021	**2022**	2021
Profit or loss	-1	0	1	0

The sensitivity to interest rates' volatility remains insignificant at the end of 2022 compared to 2021 as the floating rate debt is very limited.

Interest rate risk hedged by instrument accounted for as held for trading

In € million	Notional amount		Fair value assets		Fair value liabilities	
December 31	**2022**	2021	**2022**	2021	**2022**	2021
Held for trading	0	18				
Total	**0**	**18**				

The notional amount reported in 2021 under "held for trading" is mainly explained by a cross currency swap contracted in May 2017 and settled in the course of 2022 to mitigate the volatility (forex and interest rate) of the external financing set up for the Group's HPPO joint operation (Saudi Hydrogen Peroxide Company) 50/50 with Sadara in Saudi Arabia (notional amount €18 million corresponding to 50%).

Interest rate risk hedged by instrument accounted for as a hedging instrument in a cash flow hedge

In 2022, there are no outstanding interest rate instruments accounted for under cash flow hedges.

Other market risks

— Utility and CO_2 price risks

The Group purchases a large portion of its coal, gas and electricity needs in Europe and the United States based on fluctuating liquid market indices. Moreover, the Group purchases raw materials with a price formula referring to market indices (e.g. benzene). In order to reduce the cost volatility, the Group has developed a policy for exchanging variable price against fixed price through derivative financial instruments. Most of these hedging instruments can be documented as hedging instruments of the underlying purchase contracts. Utility purchase contracts at fixed price with a physical delivery for use in the Group's operations are qualified as own use contracts and constitute a natural hedge. Those have not been included in this note.

Similarly, the Group's exposure to CO_2 price is partially hedged by forward purchases of European Union Allowances (EUA). In 2021, forward purchases with physical delivery for use in the Group's operations were qualified as own use contracts (not derivatives). In 2022, in view of both increased volatility in energy and CO_2 markets and the plan to separate Solvay SA into two independent groups, the Group reconsidered the conditions of the own use exemption. Accordingly the entire portfolio of CO_2 emission rights forward purchases has been accounted for at the end of Q2 2022 in accordance with the general rules of IFRS 9, and a profit of €322 million has been classified as "Other operating gains and losses". Subsequently, on July 1, 2022, the related portfolio has been designated as hedging instruments in a cash flow hedge relationship.

Finally, some exposure to gas, coal and electricity prices may arise from the production of electricity on Solvay sites (mostly from cogeneration units in Europe), which can be hedged by means of forward purchases and forward sales or optional schemes. In this case, cash flow hedge accounting is applied.

Financial hedging of utility and CO_2 emission rights price risks is managed centrally by Energy Services on behalf of the Group entities.

Energy Services also carries out trading transactions with respect to utility and CO_2.

The following tables detail the notional principal amounts and fair values of utility and CO_2 derivative financial instruments outstanding at the end of the reporting period:

Held for trading	Notional amount of the instrument [1]		Notional amount of the instrument (in units)			Fair value of the instrument - Asset		Fair value of the instrument - Liability	
December 31	2022	2021	2022	2021		2022	2021	2022	2021
In € million (except where indicated)									
Coal					Tons				
Power	922	1,189	7,318,874	21,005,859	MWh	307	764	-306	-781
Standard Quality Gas	619	613	13,372,959	27,701,363	MWh	347	434	-282	-437
CO_2	10	11	707,550	206,294	Tons	21	4	-46	-5
Total	**1,550**	**1,813**				**675**	**1,202**	**-634**	**-1,223**

(1) The hedging instruments are located in the line item: "Other Receivables" and "Other Liabilities" in the consolidated statement of financial position.

The amounts presented in the tables hereafter include hedging needs of the GBUs of the Group that are sourced through Energy Services, and not the full Group utility hedging needs.

December 31, 2022

Cash flow hedge	Notional amount of the instrument [1]	Notional amount of the instrument (in units)		Notional amount of the risk exposure	Notional amount of the risk exposure (in units)		Percentage of exposure hedged	Average hedge price per risk category		Cash flow hedge reserve	Fair value of the instrument - Asset	Fair value of the instrument - Liability
In € million (except where indicated)												
Benzene												
Coal												
Power	154	1,078,973	MWh	702	3,505,469	MWh	31%	132	EUR/ MWh	71	40	-111
Standard Quality Gas	330	13,525,810	MWh	1,650	34,722,420	MWh	39%	33	EUR/ MWh	-156	240	-84
CO_2	368	5,440,050	Tons	1,150	24,096,508	Tons	45%	61	EUR/Tons	152	142	-26
Total	**899**									**67**	**422**	**-221**

(1) The hedging instruments are located in the line item: "Other Receivables" and "Other Liabilities" in the consolidated statement of financial position.

December 31, 2021

Cash flow hedge	Notional amount of the instrument [1]	Notional amount of the instrument (in units)		Notional amount of the risk exposure	Notional amount of the risk exposure (in units)		Percentage of exposure hedged	Average hedge price per risk category		Cash flow hedge reserve	Fair value of the instrument - Asset	Fair value of the instrument - Liability
In € million (except where indicated)												
Benzene	1	1,477	Tons	1	1,479	Tons	100%	556	EUR/ton			
Coal	17	243,000	Tons	62	702,041	Tons	35%	77	USD/ton	5	6	-1
Power	154	2,506,335	MWh	607	3,591,600	MWh	70%	62	EUR/MWh	-270	1	-271
Standard Quality Gas	254	13,648,389	MWh	954	24,096,508	MWh	57%	19	EUR/MWh	273	291	-18
Total	**426**			**1,625**						**8**	**298**	**-290**

(1) The hedging instruments are located in the line item: "Other Receivables" and "Other Liabilities" in the consolidated statement of financial position.

Hedge relationships are seldom perfect. Therefore, ineffectiveness could arise with the result that changes in the fair value or cash flows of the hedged item that are attributable to a hedged risk and the hedging instrument do not offset within a period. The sources of hedge ineffectiveness that could potentially affect the hedging relationship during its term are listed below:

- A reduction in the amount of the forecast sales resulting in quantity or notional amount differences – the hedged item and hedging instrument are based on different quantities or notional amounts.
- A significant change in the credit risk of parties.
- Timing differences – the hedged item and hedging instrument occur or are settled at different dates.
- In 2022, no hedge ineffectiveness was recognized in the consolidated income statement.

In the wake of the European energy crisis impacting gas consumption in several countries and due to the European Union's sanctions on the sourcing of gas and coal from Russia, the Group revised the expected activity of several of its cogeneration units in Europe in Q3 2022 with a view to both preserving business continuity and reducing gas consumption. These developments triggered the need to reassess the probability and conditions of future energy consumption at each site when updating the Cash Flow Hedge (CFH) documentation. As part of this reassessment, the Group identified certain hedges for which the underlying future energy purchases are no longer highly probable (but still expected to occur) or subject to modified purchasing conditions, resulting in those hedges ceasing to meet the qualifying criteria for CFH accounting during Q3 2022. The discontinuation of hedge accounting resulted in a favorable €39 million accumulated mark-to-market that will remain in Other Comprehensive Income with future recycling to the consolidated income statement as the underlying transactions occur (€18 million in 2022, €18 million in 2023).

Fair value hedge

On December 31, 2022, the Group covers a part of its CO_2 emission rights in inventory by forward sales of CO_2 emission rights to a related party. The Group qualifies this hedging strategy as Fair value hedge. The change in fair value of forward sales are accounted in profit and loss, concomitantly with the revaluation of the CO_2 emission rights held in inventory.

The Group has established a 1:1 hedge ratio for the underlying risk of the forward sales of CO_2 emission rights to the related party that is identical to the hedged risk component.

The impact of the hedging instrument on the statement of financial position as at December 31, 2022 is, as follows:

			December 31, 2022				
			Carrying amount		Balance sheet line item (s)	Change in fair value used for calculating hedge ineffectiveness	
	Notional		Assets	Liabilities		Assets	Liabilities
	In Tons	In € million	In € million			In € million	
Fair Value Hedge							
CO_2 emission rights forwards	86,500	1		-6	Financial instrument		-6

			December 31, 2022				
			Carrying amount		Balance sheet line item (s)	Change in fair value used for calculating hedge ineffectiveness	
	Notional		Assets	Liabilities		Assets	Liabilities
	In Tons	In € million	In € million			In € million	
Fair Value Hedge							
CO_2 emission rights forwards	86,500	-1	7		Inventories	6	

The sensitivities of commodity derivative financial instruments as of December 31, 2022 are presented below.

The sensitivities were defined based on the price levels and volatility levels of each commodity. These assumptions do not constitute an estimation of future market prices and the sensitivities presented are not representative of future changes in Solvay's equity and results.

	December 31, 2022		
	Price change	Other comprehensive income	Profit or loss
In € million			
Natural gas	+10€/MWh	-109	-
Natural gas	-10€/MWh	109	-
Electricity	+30€/MWh	32	1
Electricity	-30€/MWh	-32	-1
CO_2 Emission rights	+5€/T	28	-
CO_2 Emission rights	-5€/T	-28	-

Performance Share Units Plan (PSU) risk on Solvay share price

In order to neutralize the volatility of the Solvay share price, which will impact the liability valuation relating to the cash settled PSU plans (with related employer charges), the Group entered into equity swaps covering approximately 100% of the risk. In 2022, a liability of €39 million, recognized for 2020 and 2021 PSU plans (in 2021, €24 million for the 2020 and 2021 PSU plans) corresponds to the best estimate of the amount due at maturity.

Credit risk

See the Financial risk in the Management of risks section of this annual report for additional information on credit risk management.

The Group continuously monitors the credit risk of important business partners.

The Group engages in transactions only with financial institutions with a good credit rating. The Group monitors and manages exposures to financial institutions within approved counterparty credit limits and credit risk parameters in order to mitigate the risk of default. For financial guarantees, see note F36 Contingent assets, liabilities and financial guarantees.

The Group recognizes expected credit losses on all of its trade receivables: it applies the simplified approach and recognizes lifetime expected losses on all trade receivables, using a provision matrix in order to calculate the lifetime expected credit losses for trade receivables, using historical information on defaults adjusted for the forward-looking information.

The Group classifies the customers and their related receivables in various rating classes, based on the risks' grading attributed to the customers and on the aging balance of receivables. As such, for all receivables overdue below six months, the Group considers percentages within a range between 0.005% and 4.204%, depending on the rating class. For all receivables overdue in excess of six months, the Group considers a rate of 50% or of 100%, depending on the rating class. The customer's grading is reviewed annually for customers assessed as low risk profile, and every six months for customers assessed as higher risk profile.

There is no significant concentration of credit risk at Group level because the receivables' credit risk is spread over a large number of customers and markets.

The ageing of trade receivables, financial instruments - operational, loans and other non-current assets is as follows:

December 31, 2022 In € million			With expected loss allowance, not credit-impaired				
	Total	Credit-impaired	not past due	less than 30 days past due	between 30 and 60 days past due	between 60 and 90 days past due	more than 90 days past due
Trade receivables	**2,098**	68	1,986	33	6	1	3
Trade receivables - allowance	**-72**	-67	-2	0			-2
Trade receivables - net	**2,026**	**1**	**1,984**	**33**	**6**	**1**	**1**
Financial instruments - operational	**1,125**		**1,125**				
Loans and other non-current assets	**312**	12	300	0			
Loans and other non-current assets - allowance	**-11**	-11					
Loans and other non-current assets - net	**301**	**0**	**300**	**0**	**0**	**0**	**0**
Total	**3,452**	**1**	**3,410**	**33**	**6**	**1**	**1**

The Loans and other non-currents assets do not include the long-term inventory balance.

December 31, 2021 In € million	Total	Credit-im-paired	With expected loss allowance, not credit-impaired not past due	less than 30 days past due	between 30 and 60 days past due	between 60 and 90 days past due	more than 90 days past due
Trade receivables	**1,857**	50	1,765	36	2	1	3
Trade receivables - allowance	**-51**	-49	-2				-1
Trade receivables - net	**1,805**	**2**	**1,763**	**36**	**2**	**1**	**2**
Financial instruments - operational	**1,513**		**1,513**				
Loans and other non-current assets	**511**	11	500	0			
Loans and other non-current assets - allowance	**-11**	-11					
Loans and other non-current assets - net	**500**	**0**	**500**	**0**	**0**	**0**	**0**
Total	**3,818**	**2**	**3,776**	**36**	**2**	**1**	**2**

The table below presents the allowances on trade receivables:

In € million	2022	2021
January 1	**-51**	**-39**
Additions	-22	-19
Uses	2	5
Reversal	1	2
Currency translation differences	-2	0
December 31	**-72**	**-51**

Liquidity risk

See the Financial risk in the Management of risks section of this annual report for additional information on the liquidity risk management.

Liquidity risk relates to Solvay's ability to service and refinance its debt (including notes issued) and to fund its operations.

This depends on its ability to generate cash from operations and not to overpay for acquisitions.

The Finance Committee gives its opinion on the appropriate liquidity risk management for the Group's short, medium and long term funding and liquidity management requirements.

The Group manages liquidity risk by maintaining adequate reserves, banking facilities and reserve borrowing facilities, by continuously monitoring forecasts and actual cash flows, and by matching the maturity profiles of financial assets and liabilities.

The Group staggers the maturities of its financing sources over time in order to limit amounts to be refinanced each year.

The following tables detail the Group's remaining contractual maturity for its financial liabilities with contractual repayment periods.

The tables have been prepared using the discounted cash flows of financial liabilities, based on the earliest date on which the Group can be required to pay.

The following tables present discounted amounts (carrying amounts):

In € million	December 31, 2022				
Outflows of cash	**Total**	**Within one year**	**In year two**	**In years three to five**	**Beyond five years**
Trade payables	**2,296**	2,296			
Dividends payables	**165**	165			
Financial instruments - operational	**867**	675	20	172	
Other non-current liabilities	**99**		59	26	14
Financial debt	**2,435**	399	10	1,423	604
Leasing debt	**524**	111	90	160	164
Total	**6,386**	**3,646**	**178**	**1,781**	**782**

In € million	December 31, 2021				
Outflows of cash	**Total**	**Within one year**	**In year two**	**In years three to five**	**Beyond five years**
Trade payables	**2,131**	2,131			
Dividends payables	**160**	160			
Financial instruments - operational	**1,528**	1,350	10	168	
Other non-current liabilities	**153**		25	78	49
Financial debt	**2,844**	676	187	873	1,108
Leasing debt	**505**	97	70	159	179
Total	**7,320**	**4,413**	**292**	**1,278**	**1,336**

The following tables present undiscounted amounts (nominal value):

In € million	December 31, 2022				
Outflows of cash	**Total**	**Within one year**	**In year two**	**In years three to five**	**Beyond five years**
Trade payables	**2,296**	2,296			
Dividends payables	**165**	165			
Financial instruments - operational	**867**	675	20	172	
Other non-current liabilities	**99**		59	26	14
Financial debt	**2,444**	399	9	1,428	608
Leasing debt	**524**	111	90	160	164
Total	**6,395**	**3,646**	**178**	**1,786**	**785**
Interests on financial debt and lease liabilities	**321**	78	73	122	48
Total outflows of cash	**6,717**	**3,724**	**251**	**1,908**	**833**

€ million	31 December 2021				
Outflows of cash	**Total**	**Within one year**	**In year two**	**In years three to five**	**Beyond five years**
Trade payables	**2,131**	2,131			
Dividends payables	**160**	160			
Financial instruments - operational	**1,528**	1,350	10	168	
Other non-current liabilities	**153**		25	78	49
Financial debt	**2,856**	677	188	877	1,115
Leasing debt	**505**	97	70	159	179
Total	**7,333**	**4,414**	**293**	**1,282**	**1,343**
Interests on financial debt and lease liabilities	**379**	86	74	158	62
Total outflows of cash	**7,712**	**4,500**	**367**	**1,439**	**1,405**

Trade payables include €172 million (2021: €198 million) due to suppliers that have signed up for a supply chain financing program, under which the suppliers can elect to receive a discounted early payment from the partner bank rather than being paid in line with the agreed payment terms. If the option is taken, the Group's liability is assigned by the supplier to the partner bank. The value of the Group's liability remains unchanged. The Group assesses each arrangement against indicators to determine if the liabilities which suppliers have sold to the partner bank under the supplier financing scheme continue to meet the definition of trade payables or should be classified as financial debt. On December 31, 2022 and 2021, the liabilities met the criteria of Trade Payables.

Solvay's liquidity amounts to €6.7 billion including €932 million of cash and cash equivalents on the statement of financial position and € 5.8 billion of committed fully undrawn credit facilities (€2.9 billion term loan in the context of the separation plan, €2 billion multilateral RCF due 2024, and €0.9 billion bilateral RCF, largely multi-year) unused at the end of December 2022.

In addition, Solvay has access to a Belgian Treasury Bill program for €1.5 billion and, alternatively, to a US commercial paper for US$ 500 million (no outstanding balance for both on December 31, 2022). The two programs are covered by back-up credit lines.

NOTE F33

NET INDEBTEDNESS

The Group's net indebtedness is the balance between its financial debts and other financial instruments, and cash and cash equivalents.

In € million	December 31, 2022	December 31, 2021
Financial debt	2,959	3,349
Cash and cash equivalents	-932	-941
Other financial instruments	-236	-259
Net indebtedness	**1,791**	**2,149**

The decrease in the net indebtedness is mainly due to the strong free cash flow generation.

Solvay Investment Grade rating is Baa2/P2 (stable outlook) with Moody's and BBB/A2 (negative outlook) with Standard & Poor's (upon the Solvay announcement of March 15, 2022 indicating the plans to separate itself into two independent companies).

Financial debt: main borrowings

	December 31, 2022						December 31, 2021	
In € million (except where indicated)	Nominal amount	Coupon	Maturity	Secured	Amount at a mortized cost	Fair value	Amount at amortized cost	Fair value
Senior € notes		1.625%	2022	No			377	382
Senior US$ note Cytec Industries Inc. (issuance US$ 400 million)		3.5%	2023	No			172	177
Senior US$ note Cytec Industries Inc. (issuance US$ 250 million)	153	3.95%	2025	No	152	147	143	153
Senior US$ notes (144A;US$ 800 million)	750	4.45%	2025	No	748	721	704	769
Senior € notes	500	2.75%	2027	No	497	482	497	564
Senior € notes	600	0.500%	2029	No	597	479	596	593
Total					**1,994**	**1,829**	**2,489**	**2,638**

There are no instances of default on the above-mentioned financial debts. There are no financial covenants, neither on Solvay SA, nor on any of the Group's holding companies.

In 2022, the senior EUR bond (€378 million) was fully repaid in September as well as the Cytec bond (US$ 196 million) in December.

Other financial instruments

In € million	December 31, 2022	December 31, 2021
Non-current other financial instruments	**30**	**30**
Current other financial instruments	**206**	**229**
Currency swaps	1	4
Other marketable securities > 3 months	43	70
Other current financial assets	162	155
Other financial instruments	**236**	**259**

The other marketable securities > 3 months include the bank drafts position.

The other current financial assets mainly include margin calls of Energy Services for instruments with a negative fair value, and represent collateral for the obligations.

Cash and cash equivalents

In € million	December 31, 2022	December 31, 2021
Cash	630	620
Term deposits	303	320
Cash and cash equivalents	**932**	**941**

By their nature, the carrying amount of cash and cash equivalents is equal to, or a very good proxy of, its fair value.

Changes in financial debt and in other financial instruments arising from financing activities

	2021	2022								
In € million	Total	Cash flows from increase of borrowings	Cash flows from repayment of borrowings	Changes in foreign exchange rates	Changes in other current financial assets	Other in financing cash flows	Transfer from non-current to current	Payment of lease liabilities	Other	Total
Bonds	2,112	3		65			-186			1,994
Other non-current debts	55	24	-32	2			-9		3	42
Long term leasing debt	409			10			-125		119	413
Non-current financial debt	**2,576**	**27**	**-32**	**77**			**-320**		**121**	**2,450**
Current financial debt	**773**	**222**	**-764**	**3**		**128**	**320**	**-113**	**-59**	**510**
Total financial debt	**3,350**	**248**	**-796**	**80**		**128**		**-113**	**63**	**2,960**
Other non-current financial instruments	**-30**									**-30**
Currency swaps	-4								3	-1
Other marketable securities > 3 months	-70			1	26					-43
Other current financial assets	-155			-2	1				-5	-162
Other financial instruments	**-229**			**-1**	**27**				**-2**	**-206**
Total cash flow	**-310**	**248**	**-796**	**79**	**27**	**128**		**-113**	**61**	**-366**

The financial debt decreased from €3,350 million at the end of 2021 to €2,960 million at the end of 2022.

The non-current financial debt decreased by €(127) million, mainly resulting from:

- the transfer to current financial debt for €(320) million (mainly explained by the Cytec bond US$ 196 million early repayment in December 2022 for €(186) million and IFRS 16 leases for €(125) million);
- the change in foreign exchange rates for €77 million (significant impact of €65 million on senior bonds in USD);
- €119 million in "Other" mainly relates to leases that commenced during the year, as well as lease modifications.

The current financial debt decreased by €(263) million, mainly in short term financial debt:

- the repayment in September 2022 of €(378) million for the remaining portion of the €750 million bonds and the Cytec bond US$ 196 million early repayment in December 2022 for €(186) million;
- the transfer from non-current financial debt to current for €320 million (mainly explained by the Cytec bond US$ 196 million early repayment in December 2022 for €186 million and IFRS 16 leases for €125 million);
- the increase and decrease of borrowings is mainly explained by the issuance of commercial paper in June 2022 for €80 million, fully repaid in September 2022; and by short-term financing needs in Bulgaria and India;
- the increase of €128 million of margin calls on hedging instruments as part of Energy Services' activities;
- the repayment of short term lease obligations under IFRS 16 of €(113) million.

The other financial instruments decreased by €23 million, mainly for the collateral related to the margin calls on energy services (see note F33 Net indebtedness), following the increase in the energy and gas prices.

NOTE F34
OTHER LIABILITIES (CURRENT)

In € million	December 31, 2022	December 31, 2021
Wages and benefits debts	371	303
VAT and other taxes	184	153
Social security	51	58
Financial instruments - operational	676	1,350
Insurance premiums	15	19
Advances from customers	97	91
Other	106	76
Other current liabilities	**1,499**	**2,051**

Financial instruments – operational include held for trading and cash flow hedge derivatives (see note F32.A. Overview of financial instruments).

MISCELLANEOUS NOTES

NOTE F35
COMMITMENTS TO ACQUIRE PROPERTY, PLANT AND EQUIPMENT AND INTANGIBLE ASSETS

In € million	December 31, 2022	December 31, 2021
Commitments to acquire property, plant and equipment and intangible assets	457	301

The amount mainly relates to commitments for the acquisition of property, plant and equipment. The increase in 2022 over the prior year is mainly explained by the planned purchase of the new Solvay Group headquarters in Belgium as well as the acquisition of industrial equipment for the extension of the Tavaux site in France.

NOTE F36
CONTINGENT ASSETS, LIABILITIES AND FINANCIAL GUARANTEES

Accounting policy

A contingent asset is a possible asset that arises from past events and whose existence will be confirmed only by the occurrence or nonoccurrence of one or more uncertain future events not wholly within the control of the Group.

Contingent assets are not recognized in the consolidated financial statements since this may result in the recognition of income that may never be realized. However, when the realization of income is virtually certain, then the related asset is not a contingent asset and its recognition is appropriate.

Contingent assets are assessed continually to ensure that developments are appropriately reflected in the consolidated financial statements. If it has become virtually certain that an inflow of economic benefits will arise, the asset and the related income are recognized in the consolidated financial statements of the period in which the change occurs. If an inflow of economic benefits has become probable, the Group discloses the contingent asset.

A contingent liability is:

(a) a possible obligation that arises from past events and whose existence will be confirmed only by the occurrence or non-occurrence of one or more uncertain future events not wholly within the control of the Group; or

(b) a present obligation that arises from past events but is not recognized because:

(i) it is not probable that an outflow of resources embodying economic benefits will be required to settle the obligation; or

(ii) the amount of the obligation cannot be measured with sufficient reliability

Contingent liabilities are not recognized in the consolidated financial statements, except if they arise from a business combination. They are disclosed unless the possibility of an outflow of economic benefits is remote.

Financial guarantees are contracts that require the Group to make specified payments to reimburse the holder for a loss it incurs because a specified debtor fails to make payment when due in accordance with the original or modified terms of a debt instrument.

In order to avoid double counting, only guarantees in excess of liabilities recognized or disclosures made elsewhere in the Group's consolidated financial statements are disclosed in this note. Regarding financial guarantees, all financial guarantees of the Group are presented in this note.

In € million	December 31, 2022	December 31, 2021
Contingent assets	**91**	**91**
Financial guarantees Rusvinyl	0	83
Guarantees for pensions	378	348
Environmental contingent liabilities	315	301
Contingent liabilities	**693**	**733**

Contingent Asset

Following an arbitration procedure that began in 2012, on June 22, 2021 the ICC Arbitration Court in Geneva (CH) issued a partial award in favor of Solvay Specialty Polymers Italy SpA, ordering Edison S.p.A. (Edison) to pay €91.632 million for the losses, damages and costs incurred up to the end of 2016 in relation to certain environmental issues at the Spinetta Marengo and Bussi sites, previously owned and operated by (Mont)Edison SpA and Ausimont SpA. A further phase of the arbitration proceeding, expected to end in 2024, will define the quantification of the additional losses, damages and costs from 2017 onwards, as well as the interests applicable to the amount awarded and the costs of litigation, to be reimbursed to Solvay Specialty Polymers Italy SpA. No income was recognized during either 2021 or 2022 in relation to the partial award, pending Edison's appeals against the enforcement of the partial award.

On January 23, 2023, the Group received a favorable ruling from the Court of Appeal of Milan which rejected Edison's appeal against the enforcement of the partial award, making it definitively enforceable in Italy. On February 8, 2023, Edison settled the €91.632 million partial award in full with Solvay.

Contingent Liabilities

The financial guarantees related to Rusvinyl, the joint venture with SIBUR for the operation of a PVC plant in Russia were released in Q3 2022 following the full repayment of Rusvinyl financial debt.

The guarantees for pensions are related to the main UK Pension Funds (€358 million) – See note F31.B.2. Description of obligations. Such corresponds to the amount by which the guarantee exceeds the recognized pension liability (as at December 31, 2022) or the recognized plan assets surplus as at (December 31, 2021). This guarantee applies to the pension liability measured based on a local UK regulatory basis (prudential basis) plus an allocation for market risk, which is higher when compared to the IAS 19 methodology. The probability of the guarantees being called is considered to be highly remote.

Contingent liabilities of €315 million above relate to environmental remediation matters that can be estimated with sufficient reliability.

Generally, in line with good business practice, we are not reporting any pending or threatened proceeding, which has not matured, and where the probability of existing or future exposure is unlikely or uncertain, where financial impact is not estimable and for which we are not able to quantify contingent liabilities.

In the United States, Solvay Specialty Polymers USA, LLC (SpP) is a defendant in 35 separate individual and class action lawsuits relating to its historical use of per- and polyfluoroalkyl substances (PFAS). The vast majority of these cases (30) are pending in the federal and state courts in the state of New Jersey, in the US, and the majority (27) are claims by private plaintiffs seeking medical monitoring or compensation for alleged personal injury or other alleged economic loss. Three (3) of the cases involve civil claims by separate US state governmental authorities—New Jersey, Michigan and Illinois—seeking various damages for alleged violations of state environmental laws, including natural resource damages. The State of New Jersey also seeks the environmental cleanup of PFAS pollution allegedly caused by a single operating facility of the subsidiary in New Jersey. Two (2) cases relate to allegations that contamination from the same operating facility caused contamination to a local municipal well. Finally, three (3) of the cases allege that products purchased from the subsidiary caused contamination elsewhere.

Overall, the number of these cases remains low in comparison to other industry participants. Solvay continues to dispute the merits of these claims and defend itself accordingly. In all of these cases, the plaintiffs have the burden of proof against all defendants.

See note F31.B Provisions Other than Employee Benefits for additional information.

In Italy, there are several pending litigations:
- (a) With reference to the Rosignano industrial site, certain criminal preliminary investigations continue to be pending before the Criminal Court of Livorno regarding the alleged contamination of certain areas outside the site;
- (b) With regard to the Spinetta industrial site, in December 2022 the Public Prosecutor Office of the Court of Alessandria closed the preliminary investigations started at the end of 2020 regarding certain alleged environmental violations of two Solvay managers. The Public Prosecutor Office should decide to request the dismissal of this provisional charge or alternatively the case should go to trial by the end of Q1, 2023;
- (c) With regard to the Bussi industrial site, sold by Solvay in 2016 with the surrounding area sold in 2018, an administrative litigation is pending in relation to the identification of the polluter of the industrial site.

Based on the overall assessment, including compliance with applicable laws and regulations and the unlikely or uncertain probability of existing or future exposure, as well as undefined financial impact, which is not estimable at this time, no additional provisions have been recorded in association with these litigations and contingent liabilities cannot be quantified.

NOTE F37
RELATED PARTIES

Balances and transactions between Solvay SA and (a) its subsidiaries and (b) its joint operations for the Group's share of the respective joint operations, which are related parties of Solvay SA, have been eliminated in consolidation and are not disclosed in this note. Details of transactions between the Group and other related parties are disclosed below.

Sale and purchase transactions

In € million	Sale of goods		Purchase of goods	
	2022	2021	**2022**	2021
Associates	20	13	-38	-34
Joint ventures	31	22	-20	-16
Other related parties	91	70	-98	-56
Total	**142**	**106**	**-157**	**-107**

In € million	Amounts owed by related parties		Amounts owed to related parties	
December 31	**2022**	2021	**2022**	2021
Associates		1	4	5
Joint ventures			1	1
Other related parties	15	16	28	8
Total	**15**	**16**	**34**	**14**

Loans to related parties

In € million	December 31, 2022	December 31, 2021
Loans to associates	2	0
Loans to other related parties	54	24
Total	**55**	**24**
Loans from other related parties	-4	-4

Compensation of key management personnel

Key management personnel is composed of all members of the Board of Directors and members of the Executive Leadership Team.

Amounts due in respect of the year (compensation) and obligations existing at the end of the year in the consolidated statement of financial position:

In € million	December 31, 2022	December 31, 2021
Wages, charges and short-term benefits	4	3
Long-term benefits	1	1
Cash-settled share-based payments liability	4	3
Total	**9**	**7**

Expenses of the year:

In € million	2022	2021
Wages, charges and short-term benefits	-11	-10
Termination benefit		-5
Long-term benefits	-2	-2
Share-based payments expenses	-5	-4
Total	**-18**	**-21**

Excluding employer social charges and taxes.

Please refer to the Compensation Report for further details.

NOTE F38

DIVIDENDS PROPOSED FOR DISTRIBUTION

The Board of Directors will propose to the "General Shareholders' Meeting" a gross dividend of €4.05 per share.

Taking into account the dividend advance payment distributed in January 2023 of € 1.54 per share, the dividends proposed for distribution, but not yet recognized as a distribution to equity holders amount to € 266 million.

NOTE F39

EVENTS AFTER THE REPORTING PERIOD

Accounting policy

Events after the reporting period which provide evidence of conditions that existed at the end of the reporting period (adjusting events) are recognized in the consolidated financial statements. Events indicative of conditions that arose after the reporting period are non-adjusting events and are disclosed in the notes if material.

Edison

Solvay received compensation of €91.632 million after decisions by the International Chamber of Commerce's arbitration tribunal, the Swiss Supreme Court, and the Milan Court of Appeal, all of which ruled in favor of Solvay. The outcome follows more than 10 years of legal proceedings in relation to Solvay's claims of environmental breaches by Edison, a subsidiary of EDF, in the context of Solvay's acquisition of the Italian company Ausimont in 2002.

The compensation relates to costs, losses and damages suffered by Solvay up to the end of 2016. Additional arbitration procedures are currently ongoing regarding costs, losses and damages suffered by Solvay from January 2017 onwards. Solvay is confident in the merits of its claim for additional significant compensation for damage in this second phase and expects proceedings to conclude in 2024.

Rusvinyl

On February 6, 2023, the Group announced that it is in advanced negotiations to divest its stake in Rusvinyl, an independent 50/50 joint venture in Russia, to its joint venture partner, Sibur. In addition to the recently obtained preliminary clearance from Russian governmental authorities, the potential transaction is still subject to several other regulatory approvals.

The Group considers that the Rusvinyl joint venture does not meet the criteria under IFRS 5 *Non-current Assets Held for Sale and Discontinued Operations* to be classified as held for sale at December 31, 2022 nor at the date of authorization of these consolidated financial statements.

NOTE F40

LIST OF COMPANIES INCLUDED IN THE CONSOLIDATION SCOPE

The Group consists of Solvay SA and a total of 304 investees.

Of these 304 investees, 152 are fully consolidated, 7 are proportionately consolidated and 23 are accounted for under the equity method, whilst the other 122 do not meet the criteria of significance.

In accordance with the concept of materiality, certain companies (Other Investments), which are insignificant, have not been included in the consolidation scope. They are measured at cost and tested for impairment on an annual basis, which is considered a good proxy of their fair value. For more information, refer to Principles of consolidation.

List of companies entering or leaving the consolidation scope

Companies entering the consolidation scope

Country	Company	Comments
PORTUGAL	Solvay Biotecnologia Portugal LDA, Carnaxide	New company
LUXEMBOURG	Renestia S.A., Capellen	New company
UNITED KINGDOM	Oldbury Energy Solutions UK Ltd, Oldbury	Meets the consolidation criteria
UNITED STATES	Energy Solutions US LLC, Breckenridge, TX	Meets the consolidation criteria

Companies leaving the consolidation scope

Country	Company	Comments
LATVIA	Solvay Business Services Latvia SIA, Riga	Liquidated
UNITED KINGDOM	Penso Holdings Ltd, Coventry	Liquidated
UNITED STATES	Solvay Soda Ash Expansion JV, Houston, Texas	Merged into American Soda LLC
	Solvay Soda Ash Joint Venture, Houston, Texas	Merged into American Soda LLC

List of subsidiaries

Indicating the percentage holding.

The percentage of voting rights is very close to the percentage holding.

ARGENTINA	
Solvay Argentina SA, Buenos Aires	100
Solvay Quimica SA, Buenos Aires	100
AUSTRALIA	
Cytec Asia Pacific Holdings Pty Ltd, Baulkham Hills	100
Cytec Australia Holdings Pty Ltd, Baulkham Hills	100
Solvay Interox Pty Ltd, Banksmeadow	100
AUSTRIA	
Solvay Österreich GmbH, Wien	100
BELGIUM	
Carrières les Petons S.P.R.L., Walcourt	100
Solvay Chemicals International S.A., Brussels	100
Solvay Chimie S.A., Brussels	100
Solvay Participations Belgique S.A., Brussels	100
Solvay Pharmaceuticals S.A. - Management Services, Brussels	100
Solvay Specialty Polymers Belgium SA / NV, Brussels	100
Solvay Stock Option Management S.P.R.L., Brussels	100
BRAZIL	
Cogeracao de Energia Electricica Paraiso SA, Brotas	100
Rhodia Brasil SA, Sao Paolo	100
Rhodia Poliamida Brasil Ltda , Sao Paolo	100
Rhopart-Participacoes Servidos e Comercio Ltda, Sao Paolo	100
BULGARIA	
Solvay Bulgaria EAD, Devnya	100
CANADA	
Cytec Canada Inc, Niagara Falls Welland	100
Solvay Canada Inc, Toronto	100
CHINA	
Cytec Industries Co. Ltd, Shanghai	100
Cytec Engineered Materials Co. Ltd, Shanghai	100
Liyang Solvay Rare Earth New Material Co., Ltd, Liyang City	96.3
Rhodia Hong Kong Ltd , Hong Kong	100
Solvay (Shanghai) International Trading Co., Ltd, Shanghai	100
Solvay (Shanghai) Ltd, Shanghai	100
Solvay (Zhangjiangang) Specialty Chemicals Co. Ltd, Suzhou	100
Solvay (Zhenjiang) Chemicals Co., Ltd, Zhenjiang New area	100
Solvay Chemicals (Shanghai) Co. Ltd, Shanghai	100
Solvay China Co., Ltd , Shanghai	100
Solvay Fine Chemical Additives (Qingdao) Co., Ltd, Qingdao	100
Solvay Hengchang (Zhangjiagang) Specialty Chemical Co., Ltd, Zhangjiagang City	70
Solvay Lantian (Quzhou) Chemicals Co., Ltd, Zhejiang	55
Solvay Specialty Polymers (Changshu) Co. Ltd, Changshu	100
Zhuhai Solvay Specialty Chemicals Co Ltd, Zhuhai City	100
CHILE	
Cytec Chile Ltda, Santiago	100
FINLAND	
Solvay Chemicals Finland Oy, Voikkaa	100

FRANCE	
Cogénération Tavaux SAS, Paris	33.3
Rhodia Chimie S.A.S. , Aubervilliers	100
Rhodia Energy GHG S.A.S. , Puteaux	100
Rhodia Laboratoire du Futur S.A.S. , Pessac	100
Rhodia Operations S.A.S. , Aubervilliers	100
Rhodia Participations S.N.C. , Courbevoie	100
Rhodianyl S.A.S. , Saint-Fons	100
Solvay - Opérations - France S.A.S., Paris	100
Solvay Energie France S.A.S., Paris	100
Solvay Energy Services S.A.S. , Puteaux	100
Solvay Finance S.A., Paris	100
Solvay France S.A. , Courbevoie	100
GERMANY	
Cavity GmbH, Hannover	100
Cytec Engineered Materials GmbH, Oestringen	100
European Carbon Fiber GmbH , Kelheim	100
Horizon Immobilien AG, Hannover	100
Salzgewinnungsgesellschaft Westfalen GmbH & Co KG, Hannover	65
German limited partnership, which makes use of the exemptions offered by Section 264(b) of the German Commercial Code, not to publish their annual financial statements.	
Solvay Chemicals GmbH, Hannover	100
Solvay Fluor GmbH, Hannover	100
Solvay Flux GmbH, Hannover	100
Solvay GmbH, Hannover	100
Solvay Specialty Polymers Germany GmbH, Hannover	100
Solvin GmbH & Co. KG - PVDC, Rheinberg	100
Solvin Holding GmbH, Hannover	100
INDIA	
Solvay Specialities India Private Limited, Mumbai	100
INDONESIA	
PT. Cytec Indonesia, Jakarta	100
IRELAND	
Solvay Finance Ireland Unlimited, Dublin	100
ITALY	
Solvay Chimica Italia S.p.A., Milano	100
Solvay Energy Services Italia S.r.l., Bollate	100
Solvay Solutions Italia S.p.A., Milano	100
Solvay Specialty Polymers Italy S.p.A., Milano	100
JAPAN	
Nippon Solvay KK, Tokyo	100
Solvay Japan K.K., Tokyo	100
Solvay Nicca Ltd, Tokyo	60
Solvay Special Chem Japan Ltd, Anan City	100
Solvay Specialty Polymers Japan KK, Minato Ku-Tokyo	100
LUXEMBOURG	
Cytec Luxembourg International Holdings Sarl, Strassen	100
Renestia S.A., Capellen	100
Solvay Chlorovinyls Holding S.a.r.l., Luxembourg	100
Solvay Finance (Luxembourg) SA, Luxembourg	100
Solvay Hortensia S.A., Luxembourg	100
Solvay Luxembourg S.a.r.l., Luxembourg	100

MEXICO	
Cytec de Mexico S.A. de C.V., Jalisco	100
Solvay Fluor Mexico S.A. de C.V., Ciudad Juarez	100
Solvay Mexicana S. de R.L. de C.V., Monterrey	100
NETHERLANDS	
Cytec Industries B.V., Vlaardingen	100
Rhodia International Holdings B.V., Den Haag	100
Solvay Chemicals and Plastics Holding B.V., Linne-Herten	100
Solvay Chemie B.V., Linne-Herten	100
Solvay Solutions Nederland B.V., Klundert	100
Solvin Holding Nederland B.V., Linne-Herten	100
NEW ZEALAND	
Solvay New Zealand Ltd, Auckland	100
PERU	
Cytec Peru S.A.C., Lima	100
POLAND	
Solvay Poland Sp. z o.o., Gorzow Wielkopolski	100
PORTUGAL	
Solvay Biotecnologia Portugal LDA, Carnaxide	100
Solvay Business Services Portugal Unipessoal Lda, Carnaxide	100
Solvay Peroxidos Portugal Unipessoal LDA , Povoa	100
RUSSIA	
Solvay Vostok OOO, Moscow	100
SINGAPORE	
Rhodia Amines Chemicals Pte Ltd, Singapore	100
Solvay Fluor Holding (Asia-Pacific) Pte. Ltd., Singapore	100
Solvay Specialty Chemicals Asia Pacific Pte. Ltd., Singapore	100
SOUTH KOREA	
Cytec Korea Inc, Seoul	100
Solvay Chemical Services Korea Co. Ltd, Seoul	100
Solvay Silica Korea Co. Ltd, Incheon	100
Solvay Specialty Polymers Korea Company Ltd, Seoul	100
SPAIN	
Solvay Quimica S.L., Barcelona	100
SWITZERLAND	
Solvay Vinyls Holding AG, Bad Zurzach	100
THAILAND	
Solvay Asia Pacific Company Ltd, Bangkok	100
Solvay (Bangpoo) Specialty Chemicals Ltd, Bangkok	100
Solvay (Thailand) Ltd, Bangkok	100
Solvay Peroxythai Ltd, Bangkok	100
TURKEY	
Solvay Istanbul Kimya Limited Sirketi, Istanbul	100
UNITED ARAB EMIRATES	
Cytec Nibras llc, Al Ain	100
UNITED KINGDOM	
Advanced Composites Group Investments Ltd, Heanor	100
Cytec Engineered Materials Ltd, Wrexham	100
Cytec Industrial Materials (Derby) Ltd, Heanor	100
Cytec Industrial Materials (Manchester) Ltd, Heanor	100
Cytec Industries UK Holdings Ltd, Wrexham	100

McIntyre Group Ltd, Watford	100
Oldbury Energy Solutions UK Ltd, Oldbury	100
Rhodia Holdings Ltd, Watford	100
Rhodia International Holdings Ltd, Oldbury	100
Rhodia Limited, Watford	100
Rhodia Organique Fine Ltd, Watford	100
Rhodia Overseas Ltd, Watford	100
Rhodia Pharma Solutions Holdings Ltd, Cramlington	100
Rhodia Pharma Solutions Ltd, Cramlington	100
Rhodia Reorganisation, Watford	100
Solvay Interox Ltd, Warrington	100
Solvay Solutions UK Ltd, Watford	100
Solvay UK Holding Company Ltd, Warrington	100
Umeco Composites Ltd, Heanor	100
Umeco Ltd, Heanor	100
UNITED STATES	
American Soda LLC, Houston, TX	100
Ausimont Industries, Inc., Wilmington, Delaware	100
CEM Defense Materials LLC, Tempe Arizona	100
Cytec Engineered Materials Inc., Princeton New Jersey	100
Cytec Global Holdings Inc., Princeton New Jersey	100
Cytec Industrial Materials (ok) Inc., Tulsa Oklahoma	100
Cytec Industries Inc, Princeton New Jersey	100
Cytec Korea Inc., Princeton New Jersey	100
Cytec Technology Corp., Princeton New Jersey	100
Energy Solutions US LLC, Breckenridge, Texas	100
Garret Mountain Insurance Co., Burlington Vermont	100
Rocky Mountain Coal Company, LLC, Houston, Texas	100
Solvay America Holdings, Inc., Houston, Texas	100
Solvay America Inc., Houston, Texas	100
Solvay Chemicals, Inc., Houston, Texas	100
Solvay Finance (America) LLC, Houston, Texas	100
Solvay Fluorides, LLC., Greenwich, Connecticut	100
Solvay Holding Inc., Princeton, New Jersey	100
Solvay India Holding Inc., Princeton, New Jersey	100
Solvay Specialty Polymers USA, LLC, Alpharetta, Georgia	100
Solvay USA INC., Princeton, New Jersey	100
URUGUAY	
Zamin Company S/A, Montevideo	100

List of joint operations

Indicating the percentage holding.

AUSTRIA	
Solvay Sisecam Holding AG, Wien	75
BELGIUM	
BASF Interox H2O2 Production N.V., Brussels	50
BULGARIA	
Solvay Sodi AD, Devnya	73.5
NETHERLANDS	
MTP HP JV C.V., Weesp	50
MTP HP JV Management bv, Weesp	50
SAUDI ARABIA	
Saudi Hydrogen Peroxide Co, Jubail	50
THAILAND	
MTP HP JV (Thailand) Ltd, Bangkok	50

List of companies consolidated by applying the equity method of accounting

Indicating the percentage holding.

Joint ventures

AUSTRALIA	
Aqua Pharma Australia Pty Ltd, Armidale	50
BELGIUM	
EECO Holding SA, Brussels	33.3
BRAZIL	
Peroxidos do Brasil Ltda, Sao Paulo	69.4
CANADA	
Aqua Pharma Inc, Saint John	50
CHILE	
Aqua Pharma Chile Spa, Puerto Montt	50
CHINA	
Shandong Huatai Interox Chemical Co. Ltd, Dongying	50
INDIA	
Hindustan Gum & Chemicals Ltd, New Delhi	50
IRELAND	
Aqua Pharma Ireland Ltd, Dublin	50
ITALY	
Cogeneration Rosignano S.r.l., Rosignano	25.4
Cogeneration Spinetta S.p.a., Bollate	33.3
NORWAY	
Aqua Pharma Group A.S., Lillehammer	50
Aqua Pharma A.S., Lillehammer	50
Haugaland Shipping A.S., Haugesund	50
RUSSIA	
Rusvinyl OOO, Moscow	50
TAIWAN	
Shinsol Advanced Chemicals Corporation, New Taipei	51
UNITED ARAB EMIRATES	
Strata - Solvay Advanced Materials Joint-Venture LLC, Al Ain	50

UNITED KINGDOM	
Aqua Pharma Technical Ltd, Inverness	50
Aqua Pharma Ltd, Inverness	50
UNITED STATES	
Aqua Pharma U.S. Inc, Kirkland	25

Associates

CHINA	
Qingdao Hiwin Solvay Chemicals Co. Ltd, Qingdao	30
FRANCE	
GIE Chime Salindres, Salindres	50
INDONESIA	
Solvay Manyar P.T., Gresik	50
MEXICO	
Silicatos y Derivados S.A. DE C.V., Estado de Mexico	20

3. SUMMARY FINANCIAL STATEMENTS OF SOLVAY SA

The annual financial statements of Solvay SA are presented in summary format below. In accordance with the Belgian Companies Code, the annual financial statements of Solvay SA, the management report and the statutory auditor's report will be filed with the National Bank of Belgium.

These documents are also available free of charge on the internet or upon request sent to:

Solvay SA

Rue de Ransbeek 310

B – 1120 Brussels

The balance sheet of Solvay SA at the end of the year 2022 presented below is based on a dividend distribution of € 4.05 per share.

At the end of 2022, Solvay SA has still one Branch, Solvay S.A. Italia (Viale Lombardia 20, 20021 Bollate, Italy).

The accounts of Solvay SA are prepared in accordance with Belgian generally accepted accounting principles.

The main activities of Solvay SA consist of holding and managing a number of investments in Group companies and of financing the Group's activities from the bank and bond markets. Solvay SA also has a Group internal factoring activity without recourse. As a result, Solvay SA owns and manages Group's trade receivables from customers based in Europe and in Asia. It manages the research center at Neder-Over-Heembeek (Brussels, Belgium) and a very limited number of commercial activities not undertaken through subsidiaries.

BALANCE SHEET OF SOLVAY SA (SUMMARY)

In € million	December 31, 2022	December 31, 2021
ASSETS		
Fixed assets	**11,438**	**11,309**
Start-up expenses and intangible assets	117	123
Tangible assets	73	70
Financial assets	11,248	11,116
Current assets	**4,508**	**4,074**
Inventories	3	11
Trade receivables	1,000	830
Other receivables	2827	2,538
Short-term investments and cash equivalents	656	680
Accrued income and deferred charges	22	15
Total assets	**15,946**	**15,383**
SHAREHOLDERS' EQUITY AND LIABILITIES		
Shareholders' equity	**9,021**	**8,995**
Capital	1,588	1,588
Share premiums	1,200	1,200
Reserves	1,982	1,982
Net income carried forward	4,250	4,225
Provisions and deferred taxes	**230**	**188**
Financial debt	**2,429**	**2,803**
- due in more than one year	1,922	2,421
- due within one year	507	382
Trade payables	**147**	**128**
Other liabilities	**4,081**	**3,239**
Accrued charges and deferred income	**38**	**29**
Total shareholders' equity and liabilities	**15,946**	**15,383**

The total assets increase (€563 million) is resulting from:

- the increase of Financial assets (€132 million) due to Investments made (€72 million) mainly in the context of the Spin-off project and additional long term loans to affiliates (€60 million);
- the increase of trade receivables (€170 million) factored due to the significant 2022 sales growth of the different activities at Solvay Group level;
- the other receivables increase (€289 million) mainly linked to the increase of the current accounts with subsidiaries.

The Shareholders equity increase (€25 million) is due to the result of the year (€454 million) and the dividend to be distributed in 2023 (€(429) million).

The financial debt totals €2,429 million compared to €2,803 million at the end of 2021. The decrease of €(374) million is essentially due to the reimbursement of the senior bonds expiring in 2022 (€377 million):

Other liabilities increase by €842 million due to an increase of current accounts vis-à-vis affiliates. Payable for dividend (€429 million) is slightly higher than last year (€+21 millions).

INCOME STATEMENT OF SOLVAY SA (SUMMARY)

In € million	2022	2021
Sales	141	51
Other operating income	1,141	1,368
Operating expenses	-1,154	-991
Operating profit / (loss)	**128**	**428**
Financial income and expenses	338	105
Profit / (loss) for the year before taxes	**466**	**533**
Income taxes	-12	-1
Profit / (loss) for the year	**454**	**532**
Profit / (loss) for the year available for distribution	**454**	**532**

In 2022, the net result for the year of Solvay SA is a profit amounting to €454 million, compared with a profit of €532 million in 2021.

This result includes:

- The operating result amounting to €128 million, compared with an operating profit of €428 million in 2021. This decrease is mainly driven by the provision reversal of €350 million in 2021 in order to partially offset an impairment done on the UK subsidiaries subsequently to a capital increase of UK entities for €410 million;
- Financial gain and losses (€338 million) impacted in 2022 by dividends received for €421 million and financial net interests (€(90million));
- In 2021, Financial gain and losses amounting to €105 million were explained for a part by dividends received from affiliates (€470 million) and the capital gain on the intragroup sale of Solvay Specialty Korea (€47 million) and for a part by financial net interest charges (€(73 million)) and net impairment losses/reversal on shares ((€345 million)).

PROFIT AVAILABLE FOR DISTRIBUTION

In € million	2022	2021
Profit / (loss) for the year available for distribution	454	532
Carried forward	4,225	4,101
Total available to the General Shareholders' Meeting	**4,679**	**4,633**
Appropriation		
Gross dividend	429	408
Carried forward	4,250	4,225
Total	**4,679**	**4,633**

DECLARATIONS

Declarations: Auditor's reports and Declaration by the persons responsible

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EY Réviseurs d'Entreprises
De Kleetlaan 2
B - 1831 Diegem

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ey.com

Independent auditor's report to the general meeting of Solvay SA for the year ended 31 December 2022

In the context of the statutory audit of the Consolidated Financial Statements) of Solvay SA (the "Company") and its subsidiaries (together the "Group"), we report to you as statutory auditor. This report includes our opinion on the consolidated statement of financial position as at 31 December 2022, the consolidated income statement, the consolidated statement of comprehensive income, the consolidated statement of changes in equity and the consolidated statement of cash flows for the year ended 31 December 2022 and the disclosures (all elements together the "Consolidated Financial Statements") as well as our report on other legal and regulatory requirements. These two reports are considered one report and are inseparable.

We have been appointed as statutory auditor by the shareholders' meeting of 10 May 2022, in accordance with the proposition by the Board of Directors following recommendation of the Audit Committee and following recommendation of the workers' council. Our mandate expires at the shareholders' meeting that will deliberate on the Consolidated Financial Statements for the year ending 31 December 2024. We performed the audit of the Consolidated Financial Statements of the Group for the first time.

Report on the audit of the Consolidated Financial Statements

Unqualified opinion

We have audited the Consolidated Financial Statements of Solvay SA, that comprise of the consolidated statement of financial position as at 31 December 2022, the consolidated income statement, the consolidated statement of comprehensive income, the consolidated statement of changes in equity and the consolidated statement of cash flows for the year ended 31 December 2022, and the disclosures, which show a consolidated balance sheet total of € 20.661 million and of which the consolidated income statement shows a profit for the year of € 1.934 million.

In our opinion, the Consolidated Financial Statements give a true and fair view of the consolidated net equity and financial position as at 31 December 2022, and of its consolidated results for the year then ended, prepared in accordance with the International Financial Reporting Standards as adopted by the European Union ("IFRS") and with applicable legal and regulatory requirements in Belgium.

Basis for the unqualified opinion

We conducted our audit in accordance with International Standards on Auditing ("ISA's") applicable in Belgium. In addition, we have applied the ISA's approved by the International Auditing and Assurance Standards Board ("IAASB") that apply at the current year-end date and have not yet been approved at national level. Our responsibilities under those standards are further described in the "Our responsibilities for the audit of the Consolidated Financial Statements" section of our report.

We have complied with all ethical requirements that are relevant to our audit of the Consolidated Financial Statements in Belgium, including those with respect to independence.

We have obtained from the Board of Directors and the officials of the Company the explanations and information necessary for the performance of our audit and we believe that the audit evidence we have obtained is sufficient and appropriate to provide a basis for our opinion.

Other matter

The Company's consolidated financial statements for the year ended 31 December 2021 were audited by another statutory auditor who expressed an unqualified opinion on these consolidated financial statements on 18 March 2022.

Audit report dated 23 March 2023 on the Consolidated Financial Statements of Solvay SA as of and for the year ended 31 December 2022 (continued)

Key audit matters

Key audit matters are those matters that, in our professional judgment, were of most significance in our audit of the Consolidated Financial Statements of the current reporting period.

These matters were addressed in the context of our audit of the Consolidated Financial Statements as a whole and in forming our opinion thereon, and consequently we do not provide a separate opinion on these matters.

Defined benefit obligations

Description of the key audit matter

The defined benefit obligations mainly relate to post-employment pension plans and amount to € 810 million as at 31 December 2022, and are disclosed in note F31 of the Consolidated Financial Statements. It consists of gross defined benefit obligations (€ 3.800 million) offset partially by plan assets (€ 2.990 million). The largest plans in 2022 are in the United Kingdom, France, the United States, Germany, and Belgium and represent 94% of the total defined benefit obligations of the Group.

This area is important to our audit because of the magnitude of the amounts, management's judgment involved in determining actuarial assumptions (more in particular discount rates and inflation rates) and plan assets' fair values and the technical expertise required to evaluate these obligations and properly reflect the impacts in the Consolidated Financial Statements in accordance with IAS 19 "Employee Benefits".

Summary of the procedures performed

- We obtained an understanding of the Group estimation process to evaluate the defined-benefit obligations and plan assets as well as the related management review controls;
- We assessed and performed a walkthrough of the design of the controls established by the Group to manage the underlying participant data and to ensure that the amendments to the plans are properly and timely reflected in the Consolidated Financial Statements;
- We reconciled, on a sample basis, the fair value of the plan assets to external confirmations;
- We assessed the expertise, independence and integrity of the external actuaries engaged by the Group;
- With the assistance of our internal actuarial specialists, we assessed the actuarial report prepared by the external actuaries engaged by the Group to ensure that the main changes to the plans were properly considered in the actuarial calculations;
- We compared, on a sample basis, the input data used for the calculation of the provisions by the external actuary (such as population, age, years of service, wage,…) with source information of the human resources department of the Group;
- We assessed the appropriateness of the key actuarial assumptions (discount rates and inflation rates) with the assistance of our internal actuarial specialists;
- We validated that the actuarial calculations are properly recorded in the Consolidated Financial Statements in accordance with IAS19;
- We assessed the roll-forward of the provisions to understand the changes in the valuation of the provisions compared to last year;
- We assessed the adequacy and completeness of the disclosures presented in the note F31 of the Consolidated Financial Statement based on the requirements of IAS19.

Impairment of goodwill and other non-current assets of the CGU's Technology Solutions, Composite Materials and Oil & Gas

Description of the key audit matter

Following the Group's past acquisitions, significant goodwill has arisen, amounting to € 3.472 million as at 31 December 2022, which represents 17% of the consolidated total assets and includes € 734 million of goodwill for Technology Solutions and € 591 million for Composite Materials.

Audit report dated 23 March 2023 on the Consolidated Financial Statements of Solvay SA as of and for the year ended 31 December 2022 (continued)

As described in notes F20 (Goodwill and business combinations) and F24 (Impairment), the Company reviews the carrying amounts of its cash generating units ("CGU's") annually or more frequently if impairment indicators are present. The impairment assessment involves a comparison of the estimated value in use of the CGU to its carrying amount. The assessment is a judgmental process which requires estimates concerning the projected future cash flows associated with the CGU, the weighted average cost of capital ("WACC") and the growth rate of revenue and costs to be applied in determining the value in use.

This area is important to our audit because of the magnitude of the amounts, the judgments, and the technical expertise required to perform the impairment testing of long-term assets.

Summary of the procedures performed

- We obtained an understanding of the Group impairment testing and processes;
- We evaluated and challenged management determination of CGU's and allocation of goodwill to those CGU's for the purpose of impairment testing;
- We assessed the methodology, clerical accuracy, long term growth rate and discount rate, by comparison to (i) peer-group information, (ii) the Group's cost of capital and (iii) relevant risk factors;
- We tested the reasonableness of projected cash flows considering the Group's historic forecasting accuracy and compared these projections with the long-term plan as adopted and approved by the Board of Directors, including with respect to the impact of climate change and the alignment with the Solvay One Planet objectives;
- We included our internal valuation specialist on our team to analyze and test the valuation model and the abovementioned critical assumptions used in the valuation model;
- We analyzed and tested the sensitivity analysis prepared by management, to understand the impact of reasonable changes in the key assumptions on the available headroom for the three CGU's;
- We assessed the Group reconciliation of the value in use derived from the impairment tests to the market capitalization;
- We considered additional impairment or reversal of impairment indicators and triggers by reading minutes of the board of directors' meetings, and we held regular discussions with the management and the audit committee;
- We assessed the appropriateness and completeness of the disclosures in the Notes to the Consolidated Financial Statements in accordance with IAS 36.

Responsibilities of the Board of Directors for the preparation of the Consolidated Financial Statements

The Board of Directors is responsible for the preparation of the Consolidated Financial Statements that give a true and fair view in accordance with IFRS and with applicable legal and regulatory requirements in Belgium and for such internal controls relevant to the preparation of the Consolidated Financial Statements that are free from material misstatement, whether due to fraud or error.

As part of the preparation of Consolidated Financial Statements, the Board of Directors is responsible for assessing the Company's ability to continue as a going concern, and provide, if applicable, information on matters impacting going concern, The Board of Directors should prepare the financial statements using the going concern basis of accounting, unless the Board of Directors either intends to liquidate the Company or to cease business operations, or has no realistic alternative but to do so.

Our responsibilities for the audit of the Consolidated Financial Statements

Our objectives are to obtain reasonable assurance whether the Consolidated Financial Statements are free from material misstatement, whether due to fraud or error, and to express an opinion on these Consolidated Financial Statements based on our audit. Reasonable assurance is a high level of

Audit report dated 23 March 2023 on the Consolidated Financial Statements of Solvay SA as of and for the year ended 31 December 2022 (continued)

assurance, but not a guarantee that an audit conducted in accordance with the ISA's will always detect a material misstatement when it exists. Misstatements can arise from fraud or error and considered material if, individually or in the aggregate, they could reasonably be expected to influence the economic decisions of users taken on the basis of these Consolidated Financial Statements.

In performing our audit, we comply with the legal, regulatory and normative framework that applies to the audit of the Consolidated Financial Statements in Belgium. However, a statutory audit does not provide assurance about the future viability of the Company and the Group, nor about the efficiency or effectiveness with which the board of directors has taken or will undertake the Company's and the Group's business operations. Our responsibilities with regards to the going concern assumption used by the board of directors are described below.

As part of an audit in accordance with ISA's, we exercise professional judgment and we maintain professional skepticism throughout the audit. We also perform the following tasks:

- identification and assessment of the risks of material misstatement of the Consolidated Financial Statements, whether due to fraud or error, the planning and execution of audit procedures to respond to these risks and obtain audit evidence which is sufficient and appropriate to provide a basis for our opinion. The risk of not detecting material misstatements resulting from fraud is higher than when such misstatements result from errors, since fraud may involve collusion, forgery, intentional omissions, misrepresentations, or the override of internal control;
- obtaining insight in the system of internal controls that are relevant for the audit and with the objective to design audit procedures that are appropriate in the circumstances, but not for the purpose of expressing an opinion on the effectiveness of the Company's internal control;
- evaluating the selected and applied accounting policies, and evaluating the reasonability of the accounting estimates and related disclosures made by the Board of Directors as well as the underlying information given by the Board of Directors;
- conclude on the appropriateness of the Board of Directors' use of the going-concern basis of accounting, and based on the audit evidence obtained, whether or not a material uncertainty exists related to events or conditions that may cast significant doubt on the the Company's or Group's ability to continue as a going concern. If we conclude that a material uncertainty exists, we are required to draw attention in our auditor's report to the related disclosures in the Consolidated Financial Statements or, if such disclosures are inadequate, to modify our opinion. Our conclusions are based on audit evidence obtained up to the date of the auditor's report. However, future events or conditions may cause the Company to cease to continue as a going-concern;
- evaluating the overall presentation, structure and content of the Consolidated Financial Statements, and evaluating whether the Consolidated Financial Statements reflect a true and fair view of the underlying transactions and events.

We communicate with the Audit Committee within the Board of Directors regarding, among other matters, the planned scope and timing of the audit and significant audit findings, including any significant deficiencies in internal control that we identify during our audit.

Because we are ultimately responsible for the opinion, we are also responsible for directing, supervising and performing the audits of the subsidiaries. In this respect we have determined the nature and extent of the audit procedures to be carried out for group entities.

We provide the Audit Committee within the Board of Directors with a statement that we have complied with relevant ethical requirements regarding independence, and to communicate with them all relationships and other matters that may reasonably be thought to bear on our independence, and where applicable, related safeguards.

Audit report dated 23 March 2023 on the Consolidated Financial Statements of Solvay SA as of and for the year ended 31 December 2022 (continued)

From the matters communicated with the Audit Committee within the Board of Directors, we determine those matters that were of most significance in the audit of the Consolidated Financial Statements of the current period and are therefore the key audit matters. We describe these matters in our report, unless the law or regulations prohibit this.

Report on other legal and regulatory requirements

Responsibilities of the Board of Directors

The Board of Directors is responsible for the preparation and the content of the Board of Directors' report on the Consolidated Financial Statements.

Responsibilities of the auditor

In the context of our mandate and in accordance with the additional standard to the ISA's applicable in Belgium, it is our responsibility to verify, in all material respects, the Board of Directors' report on the Consolidated Financial Statements, the non-financial information attached to the Board of Directors' report, as well as to report on these matters.

Aspects relating to Board of Directors' report and other information included in the annual report

In our opinion, after carrying out specific procedures on the Board of Directors' report, the Board of Directors' report is consistent with the Consolidated Financial Statements and has been prepared in accordance with article 3:32 of the Code of companies and associations.

In the context of our audit of the Consolidated Financial Statements, we are also responsible to consider whether, based on the information that we became aware of during the performance of our audit, the Board of Directors' report and other information included in the annual report, being:

- Strategy
- Sustainable value creation

contain any material inconsistencies or contains information that is inaccurate or otherwise misleading. In light of the work performed, there are no material inconsistencies to be reported.

The non–financial information required by article 3:32, § 2, of the Code of companies and associations has been included in the annual report. The Company has prepared the Group's non-financial information based on the reporting guidelines of the Global Reporting Initiative standards ("GRI"). However, in accordance with article 3:80 § 1, 5° of the Code of companies and associations, we do not express any opinion on the question whether this non-financial information has been established in accordance with the GRI framework. As requested by the Company, we have issued a separate reasonable and limited assurance report on a selection of value chain, environmental, and social Key Performance Indicators ("KPI's") in accordance with the International Standard on Assurance Engagements ISAE 3000. We do not express any assurance on the KPI's not covered by our separate reasonable and limited assurance report.

Independence matters

Our audit firm and our network have not performed any services that are not compatible with the audit of the Consolidated Financial Statements and have remained independent of the Company during the course of our mandate.

The fees related to additional services which are compatible with the audit of the Consolidated Financial Statements as referred to in article 3:65 of the Code of companies and associations were duly itemized and valued in the notes to the Consolidated Financial Statements (chapter corporate governance).

European single electronic format ("ESEF")

In accordance with the standard on the audit of the conformity of the financial statements with the European single electronic format (hereinafter "ESEF"), we have carried out the audit of the compliance of the ESEF format with the regulatory technical standards set by the European Delegated Regulation No 2019/815 of

Audit report dated 23 March 2023 on the Consolidated Financial Statements of Solvay SA as of and for the year ended 31 December 2022 (continued)

17 December 2018 (hereinafter: "Delegated Regulation").

The board of directors is responsible for the preparation, in accordance with the ESEF requirements, of the consolidated financial statements in the form of an electronic file in ESEF format (hereinafter 'the digital consolidated financial statements') included in the annual financial report available on the portal of the FSMA (https://www.fsma.be/en/data-portal).

It is our responsibility to obtain sufficient and appropriate supporting evidence to conclude that the format and markup language of the digital consolidated financial statements comply in all material respects with the ESEF requirements under the Delegated Regulation.

Based on the work performed by us, we conclude that the format and tagging of information in the digital consolidated financial statements of Solvay SA per 31 December 2022 included in the annual financial report available on the portal of the FSMA (https://www.fsma.be/en/data-portal) are, in all material respects, in accordance with the ESEF requirements under the Delegated Regulation.

Other communications.

- This report is consistent with our supplementary declaration to the Audit Committee as specified in article 11 of the regulation (EU) nr. 537/2014.

Diegem, 23 March 2023

EY Réviseurs d’Entreprises SRL
Commissaire
Représentée par

Marie Kaisin *
Partner
* Agissant au nom d'une SRL

Ref: 23/MK/0019

EY Bedrijfsrevisoren
EY Réviseurs d'Entreprises
De Kleetlaan 2
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Independent auditor's assurance report on sustainability indicators

Scope

We have been engaged by Solvay SA to perform a Reasonable assurance engagement on Solvay SA's sustainability indicators listed in Appendix A (also the "Reasonable assurance indicators") and a Limited assurance engagement, on Solvay SA's sustainability indicators listed in Appendix B (also the "Limited assurance indicators"), of the extra-financial section of accompanying annual report 2022 (the "Report") for the period from 1 January 2022 to 31 December 2022. The sustainability indicators in Appendix A and B are the "Subject Matter".

Other than as described in the preceding paragraph, which sets out the scope of our engagement, we did not perform assurance procedures on the remaining sustainability information included in the Report, and accordingly, we do not express an opinion on this information.

Criteria applied by Solvay SA

In preparing the Subject Matter, Solvay SA applied own reporting criteria, based on elements of the Global Reporting Initiative (GRI), Sustainability Accounting Standards Board (SASB), World Economic Forum (WEF), Task force on Climate-related Financial Disclosures (TCFD) and the Greenhouse Gas Protocol Corporate Accounting and Reporting Standard, as disclosed in the Report (also the "Criteria").

Solvay SA's responsibilities

Solvay's management is responsible for selecting the Criteria, and for presenting the Subject Matter in accordance with that Criteria, in all material respects. This responsibility includes establishing and maintaining internal controls, adequate records and making estimates that are relevant to the preparation of the Subject Matter, such that it is free from material misstatement, whether due to fraud or error.

Our independence and quality control

We have maintained our independence and confirm that we have met the requirements of the Code of Ethics for Professional Accountants issued by the International Ethics Standards Board for Accountants, and have the required competencies and experience to conduct this assurance engagement.

EY also applies International Standard on Quality Control 1, *"Quality Control for Firms that Perform Audits and Reviews of Financial Statements, and Other Assurance and Related Services Engagements"*, and accordingly maintains a comprehensive system of quality control including documented policies and procedures regarding compliance with ethical requirements, professional standards and applicable legal and regulatory requirements.

Our responsibilities and procedures performed related to the reasonable assurance report

Our responsibility is to express an opinion on the Reasonable assurance indicators (included in Appendix A) based on the evidence we have obtained. We conducted our reasonable assurance engagement in accordance with the *International Standard for Assurance Engagements Other Than Audits or Reviews of Historical Financial Information* ("ISAE 3000"), issued by the International Auditing and Assurance Standards Board.

A reasonable assurance engagement in accordance with ISAE 3000 involves performing procedures to obtain evidence about the Reasonable assurance indicators. The nature, timing and extent of the procedures selected depend on our judgment, including the assessment of the risks of material misstatement, whether due to fraud or error, in the Reasonable assurance indicators. In making those risk assessments, we considered internal control relevant to Solvay's preparation of the Reasonable assurance indicators.

Our procedures included amongst others:

- Obtaining an understanding of the reporting processes for the Subject Matter;
- Performing walkthroughs of the reporting processes at the group level and on site level based on our scoping;
- Assessing the appropriateness of the Criteria in terms of its relevance, completeness, reliability, impartiality and clarity;
- Evaluating the consistent application of the Criteria;
- Interviewing relevant staff at the local level responsible for reporting of the Subject Matter;
- Interviewing management and relevant staff at the corporate level responsible for consolidating and carrying out internal control procedures on the Subject Matter;
- Interviewing relevant staff responsible for reporting the Subject Matter in the Report;
- Determining the nature and extent of the audit procedures for the locations contributing to the Subject Matter. Based on the site scoping, 15 sites were visited to evaluate the design and implementation of data reporting processes related to the Subject Matter;
- In respect of the audit of the data, performing tests of details on the Subject Matter using internal and external documentation, and reconciling the Subject Matter with the underlying records;
- Performing an overall analytical review of the data and trends in the Subject Matter at consolidated level as well as on site level;
- Evaluating the overall presentation of the Subject Matter in the Report.

We also performed other procedures as we considered necessary in the circumstances.

We believe that the evidence we have obtained is sufficient and appropriate to provide a basis for our reasonable assurance opinion.

Our responsibilities and procedures performed related to the limited assurance report

Our responsibility is to express a limited assurance conclusion on the Limited assurance indicators listed in Appendix B, based on the evidence we have obtained. We conducted our limited assurance engagement in accordance with International Standard for Assurance Engagements Other Than Audits or Reviews of Historical Financial Information ("ISAE 3000"), issued by the International Auditing and Assurance Standards Board.

A limited assurance engagement undertaken in accordance with ISAE 3000 involves assessing the suitability of Solvay's use of the Criteria as the basis for the preparation of the Limited assurance indicators, assessing the risks of material misstatement whether due to fraud or error, responding to the assessed risks as necessary in the circumstances, and evaluating the overall presentation of the Limited assurance indicators.

A limited assurance engagement is substantially less in scope than a reasonable assurance engagement in relation to the risk assessment procedures, including an understanding of internal control, and the procedures performed in response to the assessed risks.

A limited assurance engagement consists of making inquiries, primarily of persons responsible for preparing the Subject Matter and related information, and applying analytical and other appropriate procedures. A higher level of assurance, i.e. reasonable assurance, would have required more extensive procedures.

Our procedures included amongst other:

- Obtaining an understanding of the reporting processes for the Subject Matter;
- Assessing the appropriateness of the Criteria in terms of its relevance, completeness, reliability, impartiality and clarity;
- Evaluating the consistent application of the Criteria;
- Interviewing relevant staff at local level responsible for reporting of the Subject Matter;
- Interviewing management and relevant staff at the corporate level responsible for consolidating and carrying out internal control procedures on the Subject Matter;
- Interviewing relevant staff responsible for reporting the Subject Matter in the Report;
- Performing an overall analytical review of the data and trends in the Subject Matter at consolidated level as well as on site level;
- Evaluating the overall presentation of the Subject Matter in the Report.

We believe that the evidence we have obtained is sufficient and appropriate to provide a basis for our limited assurance conclusion.

Opinion and Conclusion

Opinion on the Reasonable assurance engagement

In our opinion, the Reasonable assurance indicators for the period from 1 January 2022 to 31 December 2022 are presented, in all material respects, in accordance with the Criteria.

Conclusion on the Limited assurance engagement

Based on our review, nothing has come to our attention that causes us to believe that the Limited assurance indicators for the period from 1 January 2022 to 31 December 2022 are not prepared, in all material respects, in accordance with the Criteria.

Diegem, 23 March 2023

EY Réviseurs d'Entreprises SRL
Represented by

Marie Kaisin*
Partner
* Acting on behalf of an SRL

Ref: 23/MK/0021

Appendix A: Reasonable assurance indicators

Domain	Topic	KPI	Level of Assurance
CLIMATE	GHG emissions	GHG reductions achieved compared to last year (at constant scope and constant GHG accounting methodology)	Reasonable
	GHG emissions	Direct CO2 emissions (Scope 1)	Reasonable
	GHG emissions	Indirect CO2 emissions (Scope 2)	Reasonable
	GHG emissions	Other greenhouse gas emissions not according to Kyoto (Scope 1)	Reasonable
	GHG emissions	Other greenhouse gas emissions according to Kyoto Protocol (Scope 1)	Reasonable
	GHG emissions	Total direct and indirect emissions (Scopes 1 & 2)	Reasonable
	GHG emissions	Scope 3 emissions - all categories	Reasonable
	Energy	Phase-out of coal use in total energy production	Reasonable
	Biodiversity	Pressure of Solvay products on biodiversity	Reasonable
RESOURCES	Water & wastewater	Freshwater withdrawal	Reasonable
	Waste & hazardous materials	Non-hazardous industrial waste	Reasonable
	Waste & hazardous materials	Hazardous industrial waste	Reasonable
	Waste & hazardous materials	Total industrial waste	Reasonable

	Waste & hazardous materials	Non-hazardous industrial waste not treated in a sustainable way	Reasonable
	Waste & hazardous materials	Hazardous industrial waste not treated in a sustainable way	Reasonable
	Waste & hazardous materials	Total industrial waste not treated in a sustainable way	Reasonable
	Waste & hazardous materials	Mining waste	Reasonable
	Sustainable business solutions	Product portfolio assessed	Reasonable
	Sustainable business solutions	Sustainable business solutions	Reasonable
BETTER LIFE	Employee health & Safety (occupational safety – OS)	RIIR - Reportable Injuries and Illnesses Rate	Reasonable
	Employee health & Safety (occupational safety – OS)	LTIIR – Lost Time Injuries and Illnesses Rate	Reasonable
	Employee health & Safety (occupational safety – OS)	Fatal accidents of Solvay employees and contractors	Reasonable
	Diversity & inclusion	Total headcount	Reasonable
	Diversity & inclusion	Percentage of women in the Group	Reasonable
	Diversity & inclusion	Percentage of women in senior and middle management	Reasonable

Appendix B: Limited assurance indicators

Domain	Topic	KPI	Level of Assurance
CLIMATE	Energy	Primary Energy consumption	Limited
	Circular economy	Percentage of sales aligned with circular economy principles	Limited
RESOURCES	Water & wastewater	Chemical oxygen demand (COD)	Limited
	Waste & hazardous materials	Substance of very high concern (SVHC) according to REACH criteria present in products sold	Limited
	Waste & hazardous materials	Percentage of completion of Analysis of Safer Alternatives program for marketed substances	Limited
	Air quality	Nitrogen oxides emissions – NOx	Limited
	Air quality	Sulphur oxides emissions – SOx	Limited
	Air quality	Non-methane volatile organic compounds emissions – NMVOC	Limited
	Air quality	Ozone depleting substances - ODP	Limited
	Diversity & inclusion	Headcount by employee category (senior manager, middle manager, junior manager, non-manager)	Limited
	Process accident & safety (PS)	Process safety incident rate	Limited
	Process accident & safety (PS)	Number of incidents (Medium, High, Catastrophic)	Limited
	Process accident & safety (PS)	Number of incidents (Medium, High, Catastrophic) with environmental consequences	Limited

BETTER LIFE	Process accident & safety (PS)	Number of incidents (Medium, High, Catastrophic) with environmental consequences in which the limits of the operating permit were exceeded	Limited
	Customer welfare	Solvay's Net Promoter Score (NPS)	Limited
	Employee Engagement and wellbeing	Coverage by collective agreement	Limited
	Management of the legal ethics and Regulatory framework	Total claims made	Limited
	Management of the legal ethics and Regulatory framework	Total claims closed including cases for which there was insufficient information or cases that were misdirected or referred	Limited
	Management of the legal ethics and Regulatory framework	Unsubstantiated claims among resolved cases	Limited
	Management of the legal ethics and Regulatory framework	Substantiated claims among resolved cases	Limited

Declaration by the persons responsible

The Board of Directors hereby declares that, to the best of its knowledge:

- The financial statements, prepared in accordance with International Financial Reporting Standards ("IFRS"), give a true and fair view of the assets, liabilities, financial position, and earnings of the issuer and of the entities included in the consolidation;
- The extra-financial statements are prepared in accordance with the GRI standards and the Integrated Reporting Framework;
- The management report includes an accurate review of the business developments, earnings, and financial position of the issuer and of the entities included in the consolidation, as well as a description of the main risks and uncertainties that these entities face.

Nicolas Boël
Chairman of the Board of Directors

Ilham Kadri
President of the Executive Leadership Team and CEO, Director

Nicolas Boël

Ilham Kadri

Glossary

Additional voluntary contributions related to employee benefits plan

Contributions to plan assets in excess of mandatory contributions to employee benefits plans. These payments are discretionary and are driven by the objective of value creation. These voluntary contributions are excluded from free cash flow as they are deleveraging in nature as a reimbursement of debt.

Adjustments

Each of these adjustments made to the IFRS results is considered to be significant in nature and/or value. Excluding these items from the profit metrics provides readers with relevant additional information on the Group's underlying performance over time because it is consistent with how the business' performance is reported to the Board of Directors and the Executive Committee. These adjustments consist of:

- Results from portfolio management and major restructurings;
- Results from legacy remediation and major litigations;
- Amortization of intangible assets resulting from Purchase Price Allocation (PPA) and inventory step-up in gross margin;
- Net financial results related to changes in discount rates, coupons of hybrid bonds deducted from equity under IFRS and debt management impacts (mainly including gains/(losses) related to the early repayment of debt;
- Adjustments of equity earnings for impairment gains or losses and unrealized foreign exchange gains or losses on debt;
- Results from equity instruments measured at fair value;
- Gains and losses, related to the management of the CO_2 hedges not accounted for as Cash Flow Hedge, deferred in adjustments until the maturity of the economic hedge;
- Tax effects related to the items listed above and tax expense or income of prior years;
- All adjustments listed above apply to both continuing and discontinuing operations, and include the impacts on non-controlling interests.

Basic earnings per share

Net income (Solvay's share) divided by the weighted average number of shares, after deducting own shares purchased to cover stock option programs.

Capital expenditure (capex)

Cash paid for the acquisition of tangible and intangible assets presented in cash flows from investing activities, and cash paid on the lease liabilities (excluding interests paid), presented in cash flows from financing activities. This indicator is used to manage capital employed in the Group.

Cash conversion

Is a ratio used to measure the conversion of EBITDA into cash. It is defined as (Underlying EBITDA + Capex from continuing operations) / Underlying EBITDA.

CARECHEM

Carechem 24 is a multilingual telephone advice service providing access to a team of trained responders 24 hours a day, 365 days a year. Carechem 24 provides companies all over the world with emergency product support during a hazardous materials incident.

CFROI

Cash Flow Return On Investment measures the cash returns of Solvay's business activities. Movements in CFROI levels are relevant indicators for showing whether economic value is being added, though it is accepted that this measure cannot be benchmarked or compared with industry peers. The definition uses a reasonable estimate (management estimate) of the replacement cost of assets and avoids accounting distortions, e.g. for impairments. It is calculated as the ratio between recurring cash flow and invested capital, where:

- Recurring cash flow = Underlying EBITDA + (Dividends from associates and joint ventures – Underlying Earnings from associates and joint ventures) + Recurring capex + Recurring income taxes;
- Invested capital = Replacement value of goodwill & fixed assets + Net working capital + Carrying amount of associates and joint ventures;
- Recurring capex is normalized at 2,3% of the Replacement value of fixed assets net of Goodwill;
- Recurring income taxes are normalized at 28% of (Underlying EBIT – Underlying Earnings from associates and joint ventures) in 2022 (was 27% in 2021).

CGU

Cash-generating unit.

Code of conduct

Solvay is committed to responsible behavior and integrity, taking into account the sustainable growth of its business and its good reputation in the communities in which it operates.

CTA

Currency Translation Adjustment.

Diluted earnings per share

Net income (Solvay's share) divided by the weighted average number of shares adjusted for effects of dilution.

Discontinued operations

Component of the Group which the Group has disposed of or which is classified as held for sale, and:

- Represents a separate major line of business or geographical area of operations;
- Is part of a single coordinated plan to dispose of a separate major line of business or geographical area of operations;
- Is a subsidiary acquired exclusively with a view to resale.

Dividend yield (net)

Net dividend divided by the closing share price on December 31.

Dividend yield (gross)

Gross dividend divided by the closing share price on December 31.

DJ STOXX

Dow Jones Stoxx is a European stock index composed of the 665 most important European shares.

DJ EURO STOXX

Dow Jones Euro Stoxx is a pan-European stock index which includes the 326 most important shares of the general Dow Jones index, belonging to eleven countries of the Eurozone.

EBIT

Earnings before interest and taxes. Performance indicator that is a measure of the Group's operating profitability irrespective of the funding's structure.

EBITDA

Earnings before interest and taxes, depreciation and amortization. The Group has included EBITDA as an alternative performance indicator because management believes that the measure provides useful information to assess the Group's operating profitability as well as the Group's ability to generate operating cash flows.

Eco-profile

A description of the magnitude and significance of the environmentally relevant inputs and outputs (including, as appropriate, raw materials, intermediate products, emissions and waste) associated with a product throughout its lifecycle.

Environmental protection agency

The U.S. Environmental Protection Agency (EPA or USEPA) is an agency of the United States federal government which was created for the purpose of protecting human health and the environment by writing and enforcing regulations based on laws passed by Congress.

Equity per share

Equity (Solvay share) divided by the number of outstanding shares at year end (issued shares - treasury shares).

EURONEXT

Global operator of financial markets and provider of trading technologies.

Free cash flow

Cash flows from operating activities (excluding cash flows linked to acquisitions or disposals of subsidiaries, cash outflows of Voluntary Pension Contributions, as they are deleveraging in nature as a reimbursement of debt and cash flows related to internal management of portfolio such as one-off external costs of internal carve-out and related taxes…), cash flows from investing activities (excluding cash flows from or related to the acquisitions and disposals of subsidiaries), and other investments, and excluding loans to associates and non-consolidated investments, and recognition of factored receivables), payment of lease liabilities, and increase/decrease of borrowings related to environmental remediation. Prior to the adoption of IFRS 16, operating lease payments were included within free cash flow. Following the application of IFRS 16, because leases are generally considered to be operating in nature, free cash flow incorporates the payment of the lease liability (excluding the interest expense). Excluding this item in the free cash flow would result in a significant improvement of free cash flow compared to prior periods, whereas the operations themselves have not been affected by the implementation of IFRS 16. It is a measure of cash generation, working capital efficiency and capital discipline of the Group.

Free cash flow to solvay shareholders

Free cash flow after payment of net interests, coupons of perpetual hybrid bonds and dividends to non-controlling interests. This represents the cash flow available to Solvay shareholders, to pay their dividend and/or to reduce the net financial debt.

Free cash flow conversion

Calculated as the ratio between the free cash flow to Solvay shareholders of the last rolling 12 months (before netting of dividends paid to non-controlling interest) and underlying EBITDA of the last rolling 12 months.

FTSEUROFIRST 300

The FTSEurofirst 300 Index tracks the equity performance across the region of the 300 largest companies ranked by market capitalization in the FTSE Developed Europe Index.

GBU

Global business unit.

Gearing ratio

Underlying net debt / total equity.

GRI

GRI (Global Reporting Initiative) is the independent, international organization that helps businesses and other organizations take responsibility for their impacts, by providing them with the global common language to communicate those impacts. GRI provides the world's most widely used standards for sustainability reporting – the GRI Standards.

HPPO

Hydrogen peroxide propylene oxide, a new technology to produce propylene oxide using hydrogen peroxide.

ICCA

International Council of Chemistry Associations.

IFRS

International Financial Reporting Standards.

Integrated reporting

This is a process founded on integrated thinking, which results in a periodic integrated report by an organization about value creation over time and related communications regarding aspects of value creation.

ISO 9001

The ISO 9001 standard defines a set of requirements for the establishment of a system of quality management in an organization, whatever its size and activity.

ISO 14001

The ISO 14001 family addresses various aspects of environmental management. It provides practical tools for companies and organizations looking to identify and control their environmental impact and constantly improve their environmental performance.

ISO 14040

The ISO 14040 standard covers life cycle assessment (LCA) studies and life cycle inventory (LCI) studies.

ISO 26 000

The ISO 26000 is a global standard which provides guidelines for organizations that wish to operate in a socially responsible manner. The standard was published in 2010 after five years of negotiations among a large number of stakeholders worldwide. Representatives of governments, NGOs, industry, consumer groups, and the world of work were involved in its development. It therefore represents an international consensus.

LCA

Life Cycle Assessment.

Leverage ratio

Net debt / underlying EBITDA of the last 12 months. Underlying leverage ratio = underlying net debt / underlying EBITDA of the last 12 months.

Loss prevention process

Loss prevention aims at maintaining production flow and profitability of the plants by providing risk mitigation. It also contributes to increasing the protection of people and the environment.

LTII

Lost Time Injury or Illness: A Work Related Injury or Illness that results in a work interruption of one or more days, not including the day of the accident.

LTIIR

Lost Time Injury and Illness Rate: number of Lost Time Injury and Illnesses resulting from accident per 200,000 work hours.

Mandatory contributions to employee benefits plans

For funded plans, contributions to plan assets corresponding to amounts required to be paid during the respective period, in accordance with agreements with trustees or regulation, as well as, for unfunded plans, benefits paid to beneficiaries.

Materiality

Organizations are faced with a wide range of topics on which they could report. The relevant topics are those that may reasonably be considered important for reflecting the organization's economic, environmental, and social impacts, or influencing the decisions of stakeholders, and therefore potentially merit inclusion in an annual report. Materiality is the threshold at which topics become sufficiently important that they should be reported.

Natural currency hedge

A natural currency hedge is an investment that reduces the undesired risk by matching cash in and outflows.

Near miss

accident or collision narrowly avoided.

Net cost of borrowings

Cost of borrowings netted with interest on loans and short-term deposits, as well as other gains (losses) on net indebtedness.

Net financial debt (IFRS)

(IFRS) net debt = Non-current financial debt + current financial debt – cash & cash equivalents – other financial instruments (current and non-current). Underlying net debt reclassifies as debt 100% of the hybrid perpetual bonds, considered as equity under IFRS. It is a key measure of the strength of the Group's financial position and is widely used by credit rating agencies.

Net financial charges

Net cost of borrowings, and costs of discounting provisions (namely, related to post-employment benefits and Health Safety and Environmental liabilities).

Net pricing

The difference between the change in sales prices versus the change in variable costs.

Net sales

Sales of goods and value added services corresponding to Solvay's know-how and core business. Net sales exclude Revenue from non- core activities.

Net working capital

Includes inventories, trade receivables and other current receivables, netted with trade payables and other current liabilities.

Occupational accident

Accident which occurred during the execution of a work contract with Solvay. Accidents on the way to/from home are not considered as work related except if at the time of the accident, the worker was traveling for Solvay.

OCI

Other Comprehensive Income.

OECD

Organisation for Economic Co-operation and Development.

OHSAS 18001

OHSAS 18001 is an international occupational health and safety management system specification.

Open innovation

Innovation that is enriched with outside expertise, through partnerships with the academic world and by shareholdings in start-ups, either directly or via investment funds.

Operational deleveraging

Reduction of liabilities (net debt or provisions) through operational performance only, i.e. excluding impacts from acquisitions and divestitures, as well as remeasurement impacts (changes of foreign exchange, inflation, mortality and discount rates).

Organic growth

Growth of Net sales or underlying EBITDA excluding scope changes (related to small M&A not leading to restatements) and forex conversion effects. The calculation is made by rebasing the prior period at the business scope and forex conversion rate of the current period.

OSHA

United States Occupational Safety and Health Administration.

PA

Polyamide, Polymer type.

PP

Unit of percentage points, used to express the evolution of ratios.

PPA

Purchase Price Allocation (PPA) accounting impacts related to acquisitions, primarily for Rhodia and Cytec.

Pricing power

The ability to create positive net pricing.

PSM

Process safety management.

PSU

Performance Share Unit.

Product stewardship

A responsible approach in managing risks throughout the entire life cycle of a product, from the design stage to the end of life.

Research & innovation

Research & development costs recognized in the income statement and as capital expenditure before deduction of related subsidies, royalties and depreciation and amortization expense. It measures the total cash effort in research & innovation, regardless of whether the costs were expensed or capitalized.

Research & innovation intensity

Ratio of research & innovation / net sales.

PVC

Polyvinyl chloride, Polymer type.

REACH

REACH is the European Community Regulation on chemicals and their safe use (EC 1907/2006). It deals with the registration, evaluation, authorization, and restriction of chemical substances. The law entered into force on June 1, 2007.

Responsible care®

Responsible Care® is the global chemical industry's unique initiative to improve health, environmental performance, enhance security, and to communicate with stakeholders about products and processes.

Result from legacy remediation and major litigations

It includes:

- The remediation costs not generated by on-going production facilities (shut-down of sites, discontinued productions, previous years' pollution), and
- The impact of significant litigations.

Results from portfolio management and major restructuring

It includes:

- Gains and losses on the sale of subsidiaries, joint operations, joint ventures, and associates that do not qualify as discontinued operations;
- Acquisition costs of new businesses;
- One-off operating costs related to internal management of portfolio (carve-out of major lines of businesses);
- Gains and losses on the sale of real estate not directly linked to an operating activity;
- Restructuring charges driven by portfolio management and by major reorganization of business activities, including impairment losses resulting from the shutdown of an activity or a plant;
- Impairment losses resulting from testing of Cash Generating Units (CGUs).

It excludes non-cash accounting impact from amortization and depreciation resulting from the purchase price allocation (PPA) from acquisitions.

Revenue from non-core activities

Revenues primarily comprising commodity and utility trading transactions and other revenue, considered to not correspond to Solvay's know-how and core business.

RII

Reportable Injury & Illness: work related injury or illness resulting from an accident with severity above first aid, according to US OSHA 29 CFR 1904.

RIIR

Reportable Injury & Illness rate): number of reportable injury or illness per 200,000 work hours.

ROCE

Return on Capital Employed, calculated as the ratio between underlying EBIT (before adjustment for the amortization of PPA) and capital employed. Capital employed consists of net working capital, tangible and intangible assets, goodwill, rights-of-use assets, investments in associates & joint ventures and other investments, and is taken as the average of the situation at the end of the last 4 quarters.

ROE

Return on equity.

Safety data sheets

Safety Data Sheets are the main tool for ensuring that manufacturers and importers communicate enough information along the supply chain to allow safe use of their substances and mixtures.

SAELs

Solvay Acceptable Exposure Limits

SBTI

Science Based target initiative

SDG

United Nations Sustainable Development Goals.

Seveso regulations

The Control of Major Accident Hazards Involving Dangerous Substances Regulations. These regulations (often referred to as "COMAH Regulations" or "Seveso Regulations") give effect to European Directive 96/82/EC. They apply only to locations where significant quantities of dangerous substances are stored.

SOCRATES

Global tool for industrial hygiene management.

SOLVAY WAY

Launched in 2013 and aligned with ISO 26000, Solvay Way is the sustainability approach of the Group. It integrates social, societal, environmental, and economic aspects into the Company's management and strategy, with the objective of creating value shared by all of its stakeholders. Solvay Way is based on an ambitious and pragmatic framework serving as a tool of both measurement and progress. Solvay Way lists 49 practices – practices that reflect the Solvay Way's 22 commitments and are structured on a four-level scale (launch, deployment, maturity, performance).

SOP

Stock Option Plan.

SPM

The Sustainable Portfolio Management tool is integrated into the Solvay Way framework (linked to five practices). It serves as a strategic tool for developing information on our portfolio and analyzing the impacts of sustainability megatrends on our businesses.

SVHC

Substance of Very High Concern (SVHC) is a chemical substance, the utilization of which within the European Union has been proposed to become subject to legal authorization under the REACH regulation.

TCFD

Task Force on Climate-related Financial Disclosure.

Underlying

Underlying results are deemed to provide a more comparable indication of Solvay's fundamental performance over the reference periods. They are defined as the IFRS figures adjusted for the "Adjustments" as defined above. They provide readers with additional information on the Group's underlying performance over time as well as the financial position and they are consistent with how the business' performance and financial position are reported to the Board of Directors and the Executive Committee.

Underlying net debt

Underlying net debt reclassifies as debt 100% of the perpetual hybrid bonds, considered as equity under IFRS.

Underlying tax rate

Income taxes / (Result before taxes – Earnings from associates & joint ventures – interests & realized foreign exchange results on RusVinyl joint venture) – all determined on an Underlying basis. The adjustment of the denominator regarding associates and joint ventures is made as these contributions are already net of income taxes. This provides an indication of the tax rate across the Group.

Voluntary pension contributions

Contributions to plan assets in excess of Mandatory Contributions to employee benefits plans. These payments are discretionary and are driven by the objective of value creation. These voluntary contributions are excluded from free cash flow as they are deleveraging in nature as a reimbursement of debt.

WACC

Weighted Average Cost of Capital.

Velocity

Total number of shares traded during the year divided by the total number of listed shares, using the Euronext definition.

Velocity adjusted by free float

Velocity adjusted as a function of the percentage of the listed shares held by the public, using the Euronext definition.

WBCSD

World Business Council for Sustainable Development.

YOY

Year on year comparison.

Shareholders' diary

MAY 4, 2023

First quarter 2023 results

MAY 9, 2023

Ordinary General Shareholders' meeting

MAY 14, 2023

Ex-coupon date

MAY 17, 2023

Final dividend: payment date

AUGUST 3, 2023

First half 2023 results

NOVEMBER 3, 2023

Nine months 2023 results

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Ce rapport est également disponible en français. Dit jaarverslag is ook beschikbaar in het Nederlands.
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Celebrating 160 years of Solvay

This year, we kicked off our 160th anniversary celebration, which gives us the chance to look back at our 160-year legacy, while appreciating the value of passing it on.
In fact, that's the theme of the anniversary: "For generations to come."

Since Solvay was founded in 1863, we have reinvented ourselves time and again, while always maintaining our relentless passion for human progress and business performance.
Our project to create two new, independent companies is not the end of our story, but the beginning of an exciting new chapter,
inspired and enabled by Solvay's 160-year history of reinventing progress.

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