

Annual Report 2022



The GSMA is a global organisation unifying the mobile ecosystem to discover, develop and deliver innovation foundational to positive business environments and societal change. Our vision is to unlock the full power of connectivity so that people, industry, and society thrive. Representing mobile operators and organisations across the mobile ecosystem and adjacent industries, the GSMA delivers for its members across three broad pillars: Connectivity for Good, Industry Services and Solutions, and Outreach.

Connectivity for Good engages members, governments and civil society, to advance positive policy and spectrum outcomes, facilitate digital innovation to reduce inequalities in our world, and tackle today's biggest societal challenges such as digital inclusion, climate change and sustainability.

Industry Services and Solutions underpins the technology and interoperability that make mobile work. Via our projects, working groups and promotional activities we facilitate the industry's focus on areas such as 5G, Mobile IoT, fraud and security. And our technical services offer tools, data and resources to enable even more efficient and robust mobile experiences for users.

Outreach provides the world's largest platform for convening and informing the mobile ecosystem at MWC Barcelona, Shanghai, Las Vegas, Africa and the M360 series, and through Mobile World Live and GSMA Intelligence with breaking news, insights and expert analysis.

For more information, please visit the GSMA corporate website at www.gsma.com.

Follow the GSMA on Twitter: [@GSMA](https://twitter.com/GSMA)

Contents

Chairman's message	4
Director General's message	5
Chapter 1 Strategy	6
Chapter 2 Our people – Diversity, equity and inclusion	8
Chapter 3 Governance	12
Chapter 4 Highlights from the year	22
Chapter 5 Operational review	28
5.1 INFLUENCE – Advancing supportive policy	34
5.2 PROSPERITY – Facilitating investment	44
5.3 STRENGTH – Uniting the industry	54
5.4 GROWTH – Extending access	62
5.5 SPEED – Accelerating the future	70
Chapter 6 Looking ahead	84
Contact the GSMA	86



Chairman's Foreword

There is perhaps no other industry in the past 25 years that has contributed as much to the welfare, productivity and expansion of economies as the mobile industry. Since 1987, the GSMA has brought this industry together, providing a platform for us to speak with one voice. And today that platform serves over 5.4 billion people around the world. It is an absolutely incredible achievement.

This year I was honoured to take on the role of Chairman of the GSMA, the first time the position has been held by a Spanish company, and it has been a privilege to work together on the year's biggest challenges. From doing our part to respond to the conflict in Ukraine, to envisioning the future of the industry in a Web 3.0 and metaverse era, the work of the GSMA is all encompassing and its impact is felt around the globe.

I was particularly proud of the MoU for GSMA Open Gateway to standardise the interface between the developing virtualised applications and the connected physical networks. As of February 2023, 21 mobile operators had signed the MoU, and I look forward to continuing this work in 2023.

I must also highlight a new WeCare initiative agreed to work with governments to close the usage gap. I look forward to seeing the initiative take off in 2023, and believe the learnings will be incredibly valuable for us all as we work to close the usage gap around the world.

As we head into 2023, this report gives us an opportunity to reflect on the multiple achievements and learnings from 2022, providing an even stronger foundation for the GSMA in the year ahead.

José María Álvarez-Pallete López

GSMA Chair and Chairman & CEO of Telefónica

Director General's Foreword

2022 was the year that we were finally back together, meeting colleagues and partners in person again with renewed energy, and I am very proud of the GSMA's performance over the past year. In the face of growing global uncertainty, we delivered to an incredibly high standard, mobilising the industry around complex topics, from the conflict in Ukraine to climate change, from open APIs to the usage gap, and many more in between.

The year commenced with a successful MWC Barcelona. With over 61,000 attendees from 183 countries, and 1,900 exhibitors, the value of meeting in person was abundantly clear. And the momentum of Barcelona continued throughout the year with successful M360 events in Riyadh, Singapore and Mexico City, and the launches of our inaugural MWC Las Vegas and MWC Africa. In total, over 75,000 people attended GSMA events during 2022.

Our global technology working groups held over 1,200 meetings and released or updated approximately 200 industry-essential documents. Our team developed industry positions on Fair Share, 6GHz spectrum, and age assurance for family online safety, and successfully represented our industry at ITU conferences and with multilateral organisations. The launch of a first of its kind industry ESG reporting framework, with common metrics and agreed industry ambitions on the circular economy, was also a significant milestone.

This year's impact ran wide and deep, and continues to cement our reputation as an industry leader in the era of intelligent and meaningful connectivity.

A sincere thank you to every member of the GSMA team for the impact achieved from January to December 2022, as well as our members, partners and stakeholders. And a special word of gratitude for the continued support of our Board and to our Chairman Mr José María Álvarez-Pallete López.

Mats Granryd

Director General, GSMA



Chapter 1

Strategy



Delivering positive impact

The GSMA's vision is to unlock the full power of connectivity so that people, industry and society thrive.

Today's societal, economic, and environmental challenges are more complex than ever, and the mobile industry's ongoing investment and innovation are crucial for affordable, accessible, and sustainable solutions across all geographies.

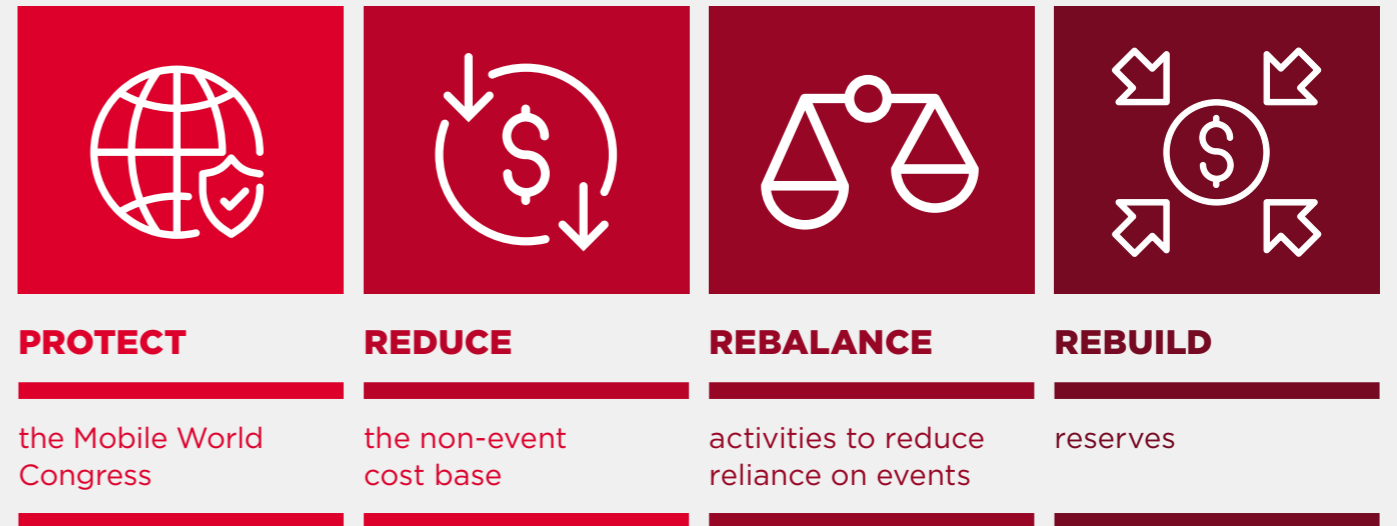
In representing the mobile industry, the GSMA operates across three pillars - **Connectivity for Good, Industry Services and Solutions, and Outreach**, with threefold organisational KPIs - engagement, impact, and financial.

Financial Strategy

The GSMA Group is overall not-for-profit and relies on contributions from events, managed services and membership fees to provide funding for its activities.

On 31 January 2020, the World Health Organisation declared the novel coronavirus Covid-19 as a Public Health Emergency of International Concern and on 12 February the GSMA cancelled its flagship event, Mobile World Congress 2020 ("MWC20") in the interests of

the safety of staff, attendees and the citizens of Barcelona. The cancellation of MWC20 had an unprecedented impact on the immediate and ongoing financial performance of the GSMA and a 3-year financial recovery strategy was developed:



Throughout these three years, the GSMA successfully delivered a series of MWC events, culminating with MWC23 in February 2023 which convened over 88,500 attendees from 202 countries and territories, including policymakers and business leaders from the mobile ecosystem and beyond.

An immediate cost reduction programme yielded significant savings across the business, and the

launch of new diversified products and services enabled a more balanced funding profile with less reliance on event funding.

As the organisation enters its third and final year of the financial recovery plan in 2023, financial forecasts are on track to rebuild reserves to above pre-pandemic levels providing a stable foundation for future growth and impact.

Chapter 2

Our people: Diversity, equity and inclusion



DREAM BIG
BE BOLD OWN IT
LOVE WHAT YOU DO
SHOW RESPECT
WORK AS A TEAM
DO THE RIGHT THING
CHAMPION DIVERSITY, EQUITY AND INCLUSION
We are only as good as our talented people

Our people: Diversity, equity and inclusion

As a global organisation representing an industry that covers 95% of the world’s population, it is the GSMA’s imperative to build a team that is truly diverse and inclusive. The GSMA unites a global ecosystem and leads by example, working with the wider industry to make commitments and strive for best practice in diversity and inclusion across the world.

Diversity, Equity and Inclusion (DEI) is an essential part of the GSMA’s culture, and the organisation strives to produce tangible results that bring about long-term sustainable change through a DEI agenda with three core principles:

- **Transparency:** Open reporting of diversity data and progress internally and externally
- **Inclusive Culture:** Creating an environment of psychological safety through investment in the DEI agenda and education
- **Accountability:** Removing bias and empowering GSMA leaders to drive the DEI agenda





Ensuring we deliver on our actions

The **Steering Committee** provides direction in developing the DEI strategy and promotes the DEI agenda within the organisation.

		
Louise Easterbrook Chief Financial Officer UK	John Giusti Chief Regulatory Officer UK	Lizzie Chilton HR Director UK

The **GSMA DEI team** ensures that the GSMA has appropriate tools and support to deliver the DEI strategy and goals to promote a diverse and inclusive working environment.







		
Fiona Onochie Head of Recruitment and Diversity, Equity & Inclusion UK	Lavinia Zecca HR Business Partner UK	Nadia Mastantuono DEI & Wellbeing Advisor UK

OneGSMA Co-chairs. OneGSMA is an employee-led forum that engages staff to get involved in delivering the DEI strategy and goals. They are key in fostering a truly inclusive culture by understanding where we can improve through grassroots interventions.

		
Ankur Vashishtha Facilities Manager INDIA	Radhika Gupta Head of Data Acquisition INDIA	Carol Gitobu Market Engagement Manager, M4D Mobile for Humanitarian Innovation KENYA

GSMA Board 2021 – 2022

The GSMA Board is comprised of Group CEOs, CEOs and C-level representatives from the world's leading mobile operators. Collectively they set the GSMA's strategic direction, ensuring its work is fully aligned with the needs of mobile operators and their customers across the world. The Board ensures that the GSMA's resources are focused on activities where collective action can deliver significant benefits to the mobile industry's customers, beyond those that individual operators could achieve through their own pursuits. Board members serve a 2-year term.

		
José María Álvarez-Pallete López Telefónica & GSMA Chair	Rima Gureshi Verizon & GSMA Deputy Chair	Mats Granryd GSMA
		

			
Carlos M. Jarque América Móvil	Susan Johnson AT&T	Hans Wijayasuriya Axiata	Gopal Vittal Bharti Airtel
			

			
Gao Tongqing China Mobile	Liu Guiqing China Telecom	Mai Yanzhou China Unicom	Dominique Leroy Deutsche Telekom
			

			
Christian Salbaing Hutchison Whampoa Europe	Makoto Takahashi KDDI	Hyeonmo Ku KT	Jens Schulte-Bockum MTN
			

			
Vyacheslav Nikolaev MTS	Motoyuki li NTT DOCOMO	Michaël Trabbia Orange	Mathew Oommen Reliance Jio
			

			
Yuen Kuan Moon Singtel	Olayan Alwetaid STC	Pietro Labriola TIM	Sigve Brekke Telenor
			

		
Andrew Penn Telstra	Kaan Terzioğlu Veon	Ahmed Essam Vodafone
		

The GSMA Board election process for the 2023/24 Board term completed during Q4 2022, electing José María Álvarez-Pallete López, Chairman and CEO of Telefónica, as Chair, and Gopal Vittal, CEO of Bharti Airtel, as Deputy Chair.

Board updates throughout 2022

AT&T: Susan Johnson, Executive Vice President, Global Connections and Supply Chain, served as AT&T representative to the Board until September 2022. Igal Elbaz, Senior Vice President, Network CTO, was appointed to the Board as AT&T representative on 14 September 2022.

Axiata: Izzaddin Idris, Group CEO, served as Axiata representative to the Board until May 2022. Dr Hans Wijayasuriya, CEO Telecommunications Business & Joint Acting Group CEO, was appointed to the Board as Axiata representative on 20 June 2022.

Orange: Stéphane Richard, Chairman & CEO, served as Orange representative to the Board and GSMA Chair until January 2022. Michaël Trabbia, Chief Technology and Innovation Officer, was appointed to the Board as Orange representative on 7 February 2022.

Telefonica: Julio Linares López, Member of the Board of Telefónica, served as Telefónica representative to the Board until January 2022. José María Álvarez-Pallete López, Chairman & CEO, was appointed to the Board as Telefónica representative and GSMA Chair on 31 January 2022.

Telstra: Andrew Penn, CEO, served as Telstra representative to the Board until September 2022. Vicki Brady, CEO, was appointed to the Board as Telstra representative effective 1 January 2023.

TIM: Luigi Gubitosi, CEO and General Manager, served as TIM representative to the Board until November 2021. Pietro Labriola, CEO and General Manager, was appointed to the Board as TIM representative on 7 February 2022.

GSMA Leadership Team

As a member of the Board, the Director General is responsible for the day-to-day management of the GSMA. The Director General is supported by a leadership team comprising individual officers, each responsible for specific aspects of the GSMA's work.



Mats Granryd
Director General



Lara Dewar
Chief Marketing Officer



Louise Easterbrook
Chief Financial Officer



John Giusti
Chief Regulatory Officer



John Hoffman
CEO and Director, GSMA Ltd.



Alex Sinclair
Chief Technology Officer



Committees



The Board delegates specific responsibilities to the following boards and committees:

- The **Audit and Risk Committee** is responsible for overseeing the GSMA’s financial controls, risk management and financial performance.
- The **Compensation Committee** is responsible for determining the compensation of the Director General and the GSMA Leadership Team and the compensation policies and practices of the GSMA.
- The **Nominations and Governance Committee** is responsible for managing the process of nominating, appointing and electing members to the Board, its committees and its expert groups and for overseeing and managing the governance processes of the GSMA Board, Committees and Groups.
- The **GSMA Mobile for Development Foundation Inc. Board** is responsible for oversight of the GSMA Mobile for Development Foundation donor-funded programmes. A dedicated in-house compliance team provides oversight of all grant-funded programmes to ensure that the specific contractual requirements of each donor are met.

Four groups, each chaired by a member of the Board, act as advisors to the Board:

- The **Strategy Group** supports the Board by developing and proposing strategies for overall strategic focus and direction of the GSMA, the industry, and matters of strategic importance to the operator community.
- The **Policy Group** advises the Board on specific issues relating to public policy, regulation, spectrum management, industry reputation, advocacy and the use of mobile technology to achieve scale in delivering developmental and social goals.
- The **Technology Group** provides expert advice to the Board on matters relating to products and technology architecture evolution, including interoperability.
- The **Business Advisory Group** provides advice to the Board on specific issues relating to events and other commercial activities of the GSMA to convene or support the mobile industry.



Membership

In 2022, the GSMA’s member-base stood at 1,107 members, comprising mobile operators and ecosystem players.

Operator Member	664
Industry Member	344
Rapporteur	57
Parent Company Member	17
Sector Member	13
5G IN Sector Member	8
Telecommunications Administration Member	4
Total	1107

Working Groups

The GSMA operates 158 global technology Working Groups and Sub-Groups, with over 5,500 member participants.

Permanent Working Group	Acronym	Members December 2022*
Wholesale Agreements and Solutions Group	WAS	2338
eSIM Group	eSIM	491
Fraud and Security Group	FASG	1279
Networks Group	NG	625
Interoperability Data Specifications and Settlements Group	IDS	387
Terminal Steering Group	TSG	293
Internet Group	IG	238
Intellectual Property Rights Working Group	IPR	12

*Individual participants

Risk Management

The Risk and Compliance Committee is responsible for the provision of effective and appropriate internal governance relating to risk management and compliance. The Committee has oversight of the organisation's risk management, internal controls and related compliance activities. Comprised of the GSMA's Leadership Team, and supported by senior advisors from the finance, human resources, information technology and legal functions, the Risk and Compliance Committee reports on its activities to the Audit and Risk Committee.

The Risk and Compliance Committee is responsible for:

- Ensuring effective operation of the risk management framework
- Reviewing the organisation's principal risks
- Reviewing the quality, adequacy and effectiveness of the internal controls and mitigation plans
- Monitoring emerging and future principal risks
- Reviewing any material risk materialisation

In January 2023, the Risk & Compliance Committee assessed the principal risks of the GSMA as follows:

Consequence \ Likelihood	Rare	Unlikely	Possible	Likely	Almost Certain
Catastrophic					
Major			4 11	2 3 7	
Moderate			5 6 8 9 10 1		
Minor					
Insignificant					

- 1 Impact of pandemic on events
- 2 Reliance of GSM Association on MWC Barcelona
- 3 Intercompany interdependencies
- 4 Compliance with antitrust law
- 5 Safety and Security at GSMA
- 6 Management of donor funds
- 7 Data Protection, Information Security & Cybersecurity
- 8 Third party reliance
- 9 Maintaining GSMA's impact within the industry
- 10 Regulatory changes/scrutiny impacting GSMA
- 11 Impact of Geopolitical developments on the GSMA

RISK MOVEMENT

● Increased Risk ● Stable Risk ● Reduced Risk

Note: Numbers in the key are for reference only and do not imply a ranking of risks.



Chapter 4

Highlights from the year



Connectivity for Good

Engaging public and private sectors to advance positive policy and spectrum outcomes, and tackle today's biggest societal challenges

Positive advocacy results in over 25 markets relating to taxation, spectrum access, deployment fees and regulation

Published first of its kind industry ESG reporting framework with common metrics, and agreed industry ambition on circular economy

Industry positions established on network investment and Fair Share, 6GHz spectrum, and age assurance for family online safety; and successful representation of operator interests at ITU Conferences and with multilateral organisations

£15.5 million secured from the UK's Foreign, Commonwealth and Development Office, for digital humanitarian response

50 operators accounting for 63% of the industry by revenue committed to cutting their carbon emissions over the next decade, an increase of 19 operators since last year

55+ million women reached since 2016 through the Connected Women Commitment Initiative, with 43 mobile operators committed to accelerating digital and financial inclusion for women



Industry Services and Solutions

Underpinning the technology and interoperability that makes mobile work - via global working groups, communities, Foundry projects, industry services and promotional activities

Over 92% of members agreed that the GSMA focuses on the most significant technology topics to advance the mobile industry

Advanced an Open 5G Era by driving initiatives including standard open APIs via GSMA Open Gateway and associated MoU, 5G Advanced & 5G mmWave, Telco Edge Cloud, Identity & Data and Security & Privacy

Global technology working groups, with a combined total of 158 sub-groups and over 5,500 member participants, held over 1200 meetings and released or updated approximately 200 industry essential documents

Created essential connections between the mobile industry and key customer markets via the GSMA's Telecommunications, Fintech, Manufacturing, Smart Mobility and Aviation communities

Our 30+ industry services delivered essential capabilities to over 1,900 industry customers

Delivered GSMA Foundry cross-industry collaboration and business development projects, 15 completed following over 100 ideas

Outreach

Convening and informing the mobile ecosystem

Over **75,000** in-person attendees at GSMA events

170+ reports from GSMA Intelligence, forecasting the future with **50 million data points**

138,000+ media and social media mentions at MWC22 Barcelona

First **MWC in Las Vegas** and **MWC Africa in Rwanda** expanding the series

First **M360 in Riyadh**, followed by successful **M360 APAC and LATAM** - convening policymakers, regulators and business leaders to advance industry interests

Mobile World Live daily news to **170,000+** tech and telecoms professionals

Mobile World Live Unwrapped series launched



Regions



Carlos Bosch
Head of North
America

With an incredibly diverse region, we focused on facilitating the communication and collaboration of the ecosystem, working on common challenges, sharing best practices while taking into consideration the individualities of each organisation.



Lucas Gallitto
Head of Latin
America

With several Presidential Elections taking place across Latin America, and 5G ramping up, this year we focused on Industry priorities for new governments to accelerate universal access. We also expanded our strategy to highlight the importance of spectrum as a tool for inclusion and innovation.



Daniel Pataki
Head of Europe

This year our highlights included: the European CEOs meeting with EU Commissioner Breton, important legislative discussions on the topics of Fair Share, market structure, Digital Services Act and Digital Markets Act, spectrum, green deal, supporting members with Ukraine response activities and finally convening European members for in-person events and meetings.



Jawad Abbassi
Head of Middle
East and North
Africa

This year we successfully hosted the first M360 Riyadh bringing together stakeholders from ministries, regulatory bodies and the broader mobile ecosystem, to explore how technology will shape the future, create a sustainable industry, and examine what is next for mobile connectivity.



Angela Wamola
Head of Sub-
Saharan Africa

Through our regional advocacy efforts, we have positively influenced favourable policy outcomes such as: mobile money levy reduction in Tanzania; Quality of Service sanctions reduction in Senegal; Corporate taxes, Customs Duty, and Excise duty reductions in Zambia. Our inaugural in-person MWC Africa, headlined by the President of the Republic of Rwanda, is set to become the most influential tech event in the region.



Sihan Chen
Head of Greater
China

Despite ongoing Covid measures, the team continued to engage with the progressive 5G ecosystem in the region. We launched the GSMA's first 5G IN Sector Membership for start-ups, and started cross-regional expansion of 5G IN (5G Innovation and Investment Group) activities in Asia and Europe.



Julian Gorman
Head of Asia
Pacific

The APAC 5G Industry Community and Digital Transformation Acceleration Forum spearheaded ecosystem engagement expanding our influence and reach in healthcare, manufacturing, and logistics. Meanwhile, work continued in the Leading Nations portfolio to modernise policy and regulation in order to advance industry sustainability for future 5G journeys.

Chapter 5

Operational review

Leadership and Innovation

- Smart Production
- EdgeCloud Tech Horizon
- Inclusion Smart Transportation Data Privacy
- Sustainability Blockchain Telco Cloud
- Sensors 5G Connect Metaverse FinTech
- AR/VR Industry 4.0 Telco Cloud Digital Twins
- Advancing AI Inclusion Internet of Everything
- Diversity CloudNet Digital Transformation
- Private Networks Security NFTs
- Regulation Big Data

AN EVENT OF MOBILE WORLD CAPITAL BARCELONA


MWC #MWC22

GSMA 28 / 90




Global impact

INFLUENCE



NIGERIA
MTN and Airtel issued with substantive **Payment Service Bank licenses**




BRAZIL
Law of Positive Silence passed, enabling installation of antennas and **expansion of 5G**


PROSPERITY

NEW MID-BAND SPECTRUM
released in Belgium, India, Jordan, Kenya and Zambia


SPAIN
reasonable price and access conditions prioritised for 26 GHz **spectrum auction**



ECUADOR
Special taxes on mobile consumption and mobile operators eliminated




STRENGTH




1,107
members

>5,500
participants in GSMA technology working groups




17 operator members to pilot GSMA ESG metrics framework in **ESG reporting**



GROWTH


'State of Mobile Internet Connectivity 2022 Report'



viewed **2,800** times in first month

£364 million


raised from private investors by 68 organisations in low- and middle-income countries, after GSMA Innovation Fund invested donor funds, **43 times** the initial investment



SPEED


GSMA Foundry

>100 ideas received




GSMA Intelligence draws from


50 million data points for industry forecasts and analyses



15 projects completed



Technology working groups released or updated **200 industry-essential documents**



2022 Reality

2022 was marked by global polarisation. As all countries and regions emerged from the pandemic, with different approaches and at different paces, the world also continued to fracture politically and economically.

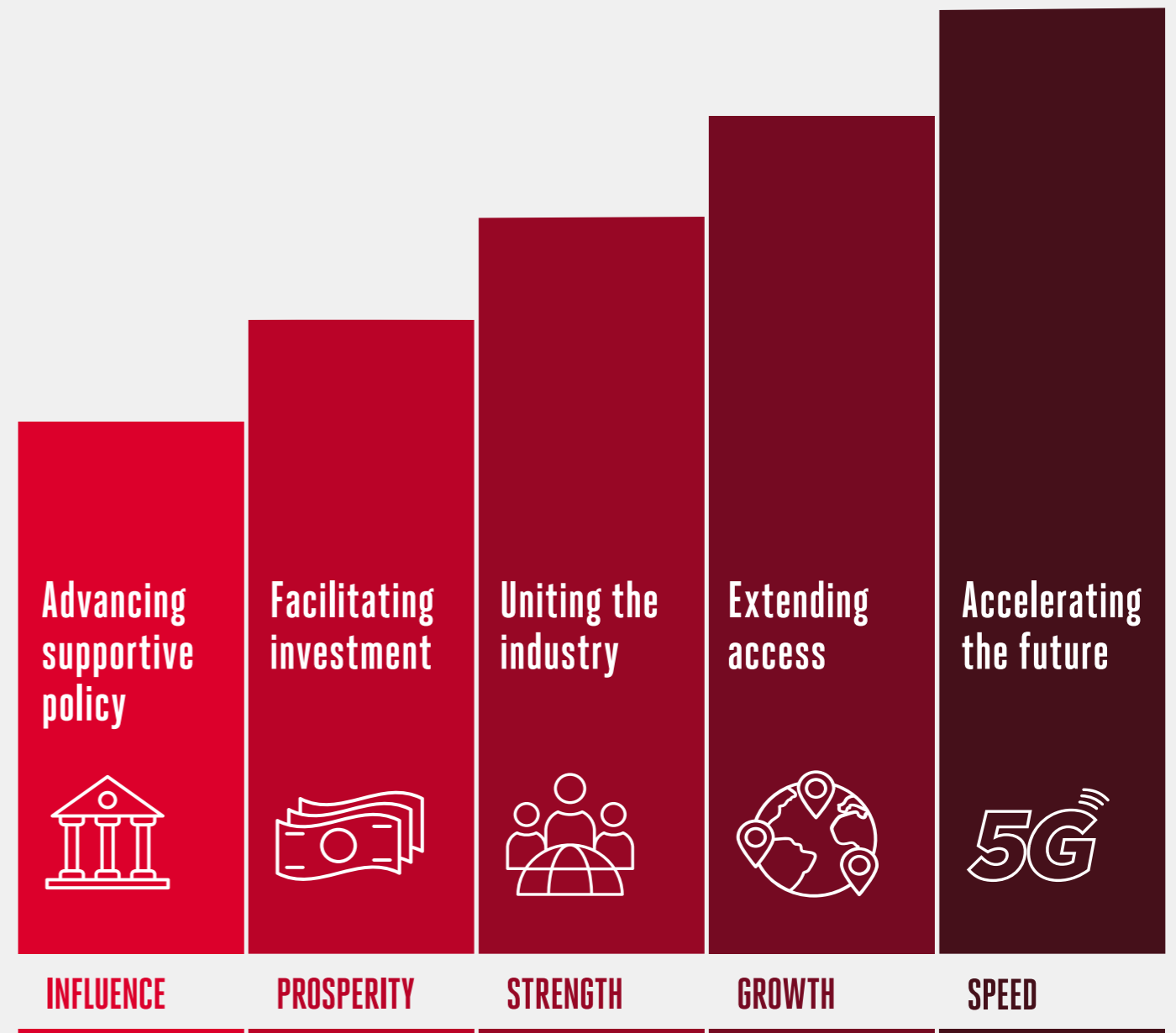
The conflict in Ukraine affected the entire world, putting pressure on critical supply chains, driving prices upwards across products and services alike, and driving the Big Tech sector to start mass layoffs. 2023 starts under the shadow of inflation and recessions.

Public and private sectors alike continue to recognise that mobile connectivity was the all-important steadying hand during the total uncertainty of the pandemic, and they now increasingly look to the mobile industry for direction on how to move even faster with much-needed digital transformation.

Positive impact

This operational review highlights how the GSMA specifically delivered on its impact KPIs – producing positive and significant impact for members, industry and ecosystem.

Impact is demonstrated across five areas of value to the mobile industry – advancing supportive policy, facilitating investment, uniting the industry, extending access, and accelerating the future.



5.1 INFLUENCE

Advancing supportive policy

Today, mobile connectivity is essential in the lives of more than 5.4 billion people and contributes US\$5.2 trillion to global GDP. Supportive public policy is foundational if mobile operators are to continue investing, operating and innovating at the level that today's consumers, business sectors and governments demand.

Progress in supportive policy and regulation is achieved by consistent long-term engagement with governments and regulatory authorities, drawing from detailed in-country experience and a broad understanding of regional and global trends and perceptions. Under the auspices of the global and regional Policy Groups, the GSMA balances a well-informed global view, ongoing engagement with members and governments,

and the ability to address in-country urgencies with agility. Dependent on political and budget cycles, positive outcomes are generally the result of multi-year efforts.

Traditionally, efforts to advance supportive public policy are travel-intensive, and thankfully 2022 brought a return to face-to-face meetings as travel became possible in all but a few regions.

Today, mobile connectivity is essential in the lives of more than



5.4 BILLION PEOPLE
and contributes



\$5.2 TRILLION
to global GDP



Working with governments

The GSMA's regulatory and policy expertise was highly solicited in 2022, and was backed by GSMA primary data, analysis and facilitated industry positions on the issues that most occupied national governments.

The Ministerial Programme at MWC Barcelona was again a vital cornerstone of GSMA policy and regulatory engagement, convening 124 countries, 50 ministers and 88 heads of regulatory authorities. Regional Policy Leaders Forums also took place at Mobile 360 Asia Pacific, with 15 delegations attending, and MWC Africa, attracting five ministers and 18 heads of regulatory authorities.



Asia Pacific

- The GSMA responded to **public consultations** in India (spectrum auction in frequency bands for IMT/5G, spectrum for train control systems, use of street furniture for small cell deployment, new legal framework for telecommunication, EMF, leveraging AI, and Big Data), Pakistan (broadband policy), Bangladesh (spectrum auction and Quality of Service), and Singapore (EMF).
- In India, the GSMA's efforts influenced the Ministry of Electronics and Information Technology to keep non-personal data out of scope from the draft Data Protection Bill, aimed at **protecting individuals' privacy**, and the proposed clause was withdrawn.
- Targeted media outreach for the GSMA's report 'India: On the road to a **digital nation**'¹ achieved over 100 articles across major business newspapers, mainstream media and trade press.
- In Pakistan, the GSMA formed cooperation agreements with the Pakistan Telecoms Authority and the Ministry of Information Technology and Telecoms, to reduce the mobile gender gap by improving **digital and financial inclusion for women**.
- In Indonesia, Thailand and Vietnam, the GSMA made advances in influencing and supporting policymakers in developing **5G spectrum roadmaps**.
- Through engagement via UN ESCAP, Asia Pacific Telecommunity (APT) and the Pacific Islands Telecommunications Association (PITA), the GSMA expanded its influence in government engagement for the policy reforms required for **digital transformation** across APAC.
- The GSMA established a thought leader position on the Metaverse, by releasing 'Exploring the **Metaverse** and the digital future',² engaging with policymakers in APAC, and the signing of an MoU with the Korean Ministry of Science and ICT to cooperate and develop Metaverse strategies nationally and internationally, and to identify opportunities and issues related to policies, standards and commercially-sustainable business models.
- In engagements with policymakers in ASEAN Member States, the GSMA shared how pan-industry collaboration on **children's rights** contributed to the mobile sector being a frontrunner in the creation of a digital world that serves children's best interests.

1. <https://www.gsma.com/asia-pacific/resources/india-digital-nation/>

2. <https://www.gsma.com/asia-pacific/wp-content/uploads/2022/02/270222-Exploring-the-metaverse-and-the-digital-future.pdf>

Europe



- 2022 required advocacy expertise across **key EU legislative files**, including the EU Digital Decade targets, cybersecurity, AI, the Data Act, eCall, Green Deal, spectrum policy, roaming, state aid, combatting child sexual abuse, and digital identity.
- As the future of telecoms, the internet value chain and Fair Share started to gain momentum at EU level, the GSMA took a leading role in this debate, resulting in an **EU consultation on the future of the electronic communications sector** and its infrastructure being launched in early 2023.
- The GSMA raised the **profile of the mobile industry** in Brussels/EU by holding regular events and engaging in focused PR on priority policy topics.
- The European Union formally adopted the Digital Services Act and the Digital Markets Act, establishing new rules for **fair and competitive digital markets**, which align to key aspects of the GSMA's advocacy position and multi-year efforts on digital platforms.
- The GSMA took an active part in organising its **member response to the Ukraine conflict**, facilitating the 'Joint Statement from EU and Ukrainian operators to help refugees from Ukraine stay connected', and engaged with the EU Commission and BEREC on the policy response, including sanctions and content blocking, funding and equipment donations. The GSMA also ran a number of campaigns to showcase the Ukraine humanitarian support actions of mobile operators.
- The GSMA advanced the industry's position on age assurance and an age-appropriate design code by engaging directly with key players including Ofcom, Google, TikTok and Yubo at the **Family Online Safety Institute 2022 European Forum**.

Greater China



- The China Administration endorsed the GSMA's proposal to study **mid-band spectrum needs** for Asia Pacific countries beyond 2025 at the APT Wireless Group, despite strong opposition from satellite and Wi-Fi communities.
- The GSMA facilitated the creation of best practices, including policy levers and support for operators on voluntary **infrastructure sharing**, to help governments and mobile operators to optimise 5G deployment costs.



Latin America

- In Brazil, the government passed the Law of Positive Silence, enabling **uninhibited installation of antennas** when corresponding bodies do not respond to requests within the 60-day period, and which is an important step in the expansion of 5G. This follows long-standing advocacy by the GSMA, including during the 2018 and 2022 presidential elections.
- The GSMA released three **presidential election** advocacy documents, for Brazil, Colombia and Costa Rica, to support member operators in each country.
- New in 2022, to strengthen **public-sector soft advocacy**, the GSMA introduced a government-targeted newsletter to enhance and reinforce industry positions.



MENA

- In Jordan, the grand settlement on **revenue share** and 5G was signed, a direct result of seeds sown by the GSMA in 2016.
- In Egypt, the GSMA shared the GSMA's **Mobile Connectivity Index** and Mobile Money Regulatory Index with the telecoms regulator.
- In Oman, the GSMA, Ooredoo, and the Telecoms and Digital Technologies Academy (TDTA), held a Digital Economy and Cloud Adoption workshop, to discuss and advance **data protection legislation**.

North America



- The GSMA continued to engage on the issue of **robocalling** (or scam and nuisance calls), including measures that would potentially inhibit international roaming. In a May order, the FCC referenced previous GSMA comments and further clarified requirements for international participation in its Robocall Mitigation Database.
- The GSMA engaged with a consortium of Caribbean regulators to implement a **VoLTE** strategy to ensure that Caribbean networks and devices remain interoperable internationally.
- In collaboration with CANTO and 5G Americas, the GSMA hosted a Caribbean Roundtable at MWC Las Vegas, with regulators from five island nations, to discuss issues specific to **small island nations** including spectrum and investment issues.
- In collaboration with Telecommunications Authority of Trinidad and Tobago (TATT), CANTO and the Instituto Dominicano de las Telecomunicaciones (INDOTEL), the GSMA held **Tech4Girls** workshops, which benefited more than 400 young women from across 14 island nations and territories.





Sub-Saharan Africa

- In Chad, the GSMA advocated for private investments in fibre infrastructure to accelerate mobile broadband adoption, which led to the Prime Minister making a decree with regard to the government liberalising the **fibre infrastructure** networks.
- After GSMA advocacy with the Communication Authority of Kenya, National Communication Secretary and mobile operators on the importance of releasing **harmonised spectrum** bands to support evolving consumer demand and technology evolution, the regulator assigned the 26 MHz band to Safaricom and Airtel, 60 MHz each, with a 15-year license duration.
- In Ethiopia, the collection of **Universal Access Funds** (UAF) was delayed by three years to allow the industry to adjust to the changes brought about by the liberalisation process, and the government adopted best practices in the final UAF directive in line with GSMA recommendations. The UAF contribution rate will be reduced should 75% of funds collected not be disbursed in two consecutive years, thus avoiding the accumulation of non-disbursed funds. The Framework allows for “pay or play” as an option for UAF contribution. These measures are in place to ensure the funds meet the intended objectives including demand stimulation through digital literacy initiatives and relevant content. Mobile operators will have a seat on the UAF Board to provide oversight in the management of the fund.
- In Senegal, the GSMA, in collaboration with members and local stakeholders, advocated for the removal of **Quality of Service** (QoS) fines, in line with best practice. This led to an 84% reduction in the amount to be paid to the Treasury, from US\$32.5 million to US\$5 million. Mobile operators also committed to making additional efforts to invest US\$36.7 million by December 2023.
- In Zambia, the GSMA held a workshop with the Regulatory Authority and the Ministry of Technology and Science, mobile operators and other government authorities, to share the GSMA Mobile Connectivity Index and the impact of fiscal policy decisions on **broadband adoption**.
- In Nigeria, MTN and Airtel were issued with substantive Payment Service Bank licenses, bringing the number of **Payment Service Bank Mobile Money services** in operation to five. The GSMA commenced engagement with Nigerian authorities to this end in 2014, and over eight years held meetings with the Vice President, the Minister of Communications and Digital Economy and the Central Bank of Nigeria, and secured support from the UK’s FCDO.
- In the DRC, GSMA engagement with the Budget Committee of the Senate led to the removal of the 3%-5% increase in annual licence fee, proposed by the 2023 Finance Act adopted by the National Assembly. During advocacy efforts, the GSMA highlighted the negative socio-economic impact of the proposed increase and the need to maintain a favourable investment climate within the DRC.

2022 was a successful year for GSMA Capacity Building, which brings best practise to regulators and policy makers around the world. **Twenty-six courses** are now available and were delivered to over **600 policy makers and regulators**, via **1,500 training days**, in **61 countries**. **Four new international partnerships** were formed to deliver training.



After taking this course, I will review policies made concerning mobile big data in Nigeria and recommend areas/sections that should be modified based on knowledge gained through this course”

Participant, Big Data course



The concepts learned will be considered in my role as adviser for the CRC. Regulation requires deep understanding of technical aspects of mobile networks and knowledge of technological trends”

Participant, 5G course



The training material has improved my knowledge and understanding on extending coverage to the rural areas. And it’s very relevant with my line of work. I will apply the learnings from the course in evaluating the effectiveness of current policies applied on improving the rural network connectivity”

Participant, Unlocking Rural Mobile Coverage course



The topic is really related to my daily tasks. Learning about privacy from a specific sector really helps in broadening my view since currently my country is drafting comprehensive regulations regarding the protection of personal data”

Participant, Principles of Mobile Privacy course

Working with multilateral organisations

Given the large-scale influence of international organisations, the GSMA continued to engage with these entities on 2022’s most pressing topics. Similar to engagement with national governments, impact is best achieved through consistent multi-year efforts.

In September, the GSMA participated in the **UN General Assembly** in New York, to highlight the impact of the mobile sector on societies and economies, outlined in the annual **‘Industry SDG Impact Report’**.³ Supported by targeted PR, the GSMA also worked to rebuild relationships and visibility after the pandemic. The agenda included a C-suite roundtable to introduce the private sector to the newly appointed UN Tech Envoy, Amandeep Gill, high-level bilateral meetings, including with the ITU, UNHCR, UN Chief of Communications, Global Compact, and the President of Rwanda, and active participation at the Broadband Commission and EQUALS annual meetings.

The GSMA secured Sanda Ojiambo, Assistant Secretary-General and CEO, United Nations Global Compact, to speak at the launch of the **‘Mobile Net Zero: State of the Industry on Climate Action’** report⁴ in May, and in the opening keynote at MWC Africa in October.

ITU engagement was particularly intense during 2022. Negotiations at the **ITU World Telecom Standardisation Assembly** resulted in the industry successfully limiting negative outcomes. Specifically, proposals that would have expanded the remit of the ITU to cover new technologies, such as AI and Open RAN, and to establish a global ITU database of counterfeit devices (already covered by the GSMA IMEI database) were not adopted. The GSMA also represented the industry at the **ITU World Telecom Development Conference**, which saw the adoption of international resolutions reflecting a human-centred approach to closing the digital divide and a focus on the internet usage gap. Finally, the GSMA participated in the

ITU Plenipotentiary Conference, and successfully negotiated resolutions on priority policy issues, and also welcomed the election of Doreen Bogdan Martin, as the new ITU Secretary General. This was well-received news, with the ITU World Radiocommunication Conference (WRC-23) taking place in UAE at the end of 2023.

The GSMA also continued to engage with the ITU on climate issues, with a new memorandum of understanding to co-develop a methodology for measuring the carbon emissions of the whole value chain (scope 3) of ICT companies. The GSMA provided strategic input to help shape the **World Bank’s ‘Catalysing the Green Digital Transformation’**⁵ released at COP27, and provided data and advice to the International Energy Agency on their latest ICT publication. And most significantly, the GSMA provided a part-time seconded Mobile Sector Lead to the team of the High Level Climate Champions, creating deeper engagement and profiling of the sector at COP27.

Closing the digital divides remains a high priority and the GSMA was very active in ensuring that mobile operators’ voices were heard in multilateral discussions, particularly to raise awareness of the strong strides achieved to close the coverage gap and to shift focus to the usage gap, including the **UN Digital Cooperation Roadmap** which is shaping the UN Framework for Meaningful Connectivity. The GSMA provided members of the EDISON Alliance – private and public sector – with access to GSMA Capacity Building and the Mobile Digital Skills Training Toolkit. The GSMA continues to actively collaborate with the **World Bank** through the Digital Development Partnership to influence policy recommendations.

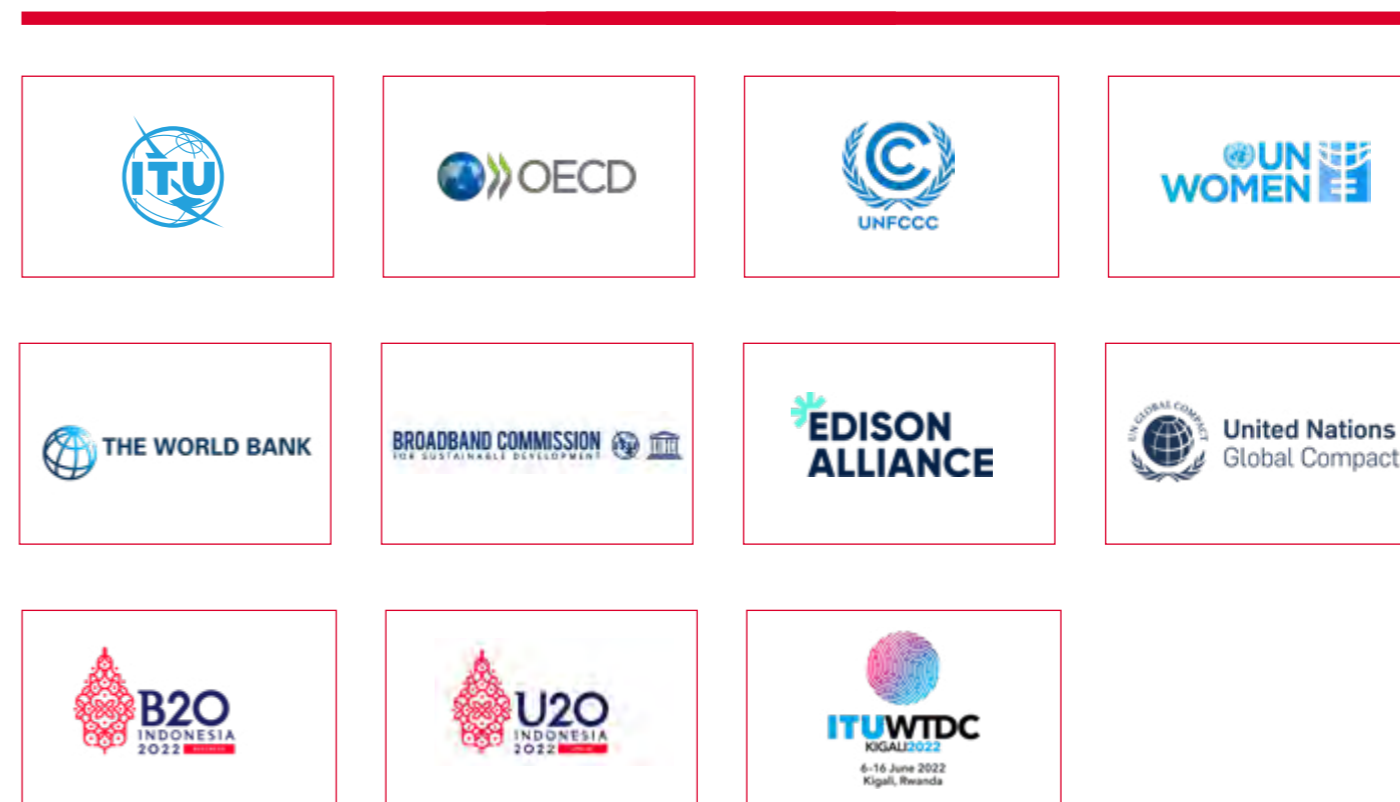
Throughout 2022, the GSMA closely engaged in activities of the **Broadband Commission**, particularly in the Working Group on Smart Devices (co-chaired by Vodafone, the ITU and UN-OHRLLS), to drive the development of a landmark report on smartphone affordability which contains messaging fully aligned to the GSMA proposition. The Broadband Commission’s Fall Meeting approved the launch of a new Working Group on Making Connectivity work for Micro, Small and Medium Enterprises, co-chaired by the GSMA and the International Trade Centre (ITC).

In 2022, the GSMA increased its participation in the **OECD** working groups on digital infrastructure, AI and data governance. It influenced the OECD report ‘Developments in Spectrum Management for Communication Services’ and drove explicit acknowledgement that spectrum costs can be carved out from the taxable base in a new G20/OECD Pillar 2 implementation proposal. The GSMA also submitted policy input to the OECD Digital Ministerial Summit and Ministerial Declaration, and secured a place at the summit in December.

Following the appointment of the GSMA as Co-Chair of the W20 Working Group on Rural Women, the GSMA’s work on digital inclusion for women was endorsed in the **W20 Communiqué for G20 Indonesia** in July, with a target to reduce the mobile internet gender gap by half. The GSMA was also elected as Co-Chair of the Skills Coalition of the EQUALS Global Partnership for Gender Equality in the Digital Age, alongside the ITU for a two-year mandate.

Testament to the value of the GSMA’s forward thinking and expertise in addressing multiple stakeholders and audiences across the public and private sectors, experts from all levels of the organisation are continually invited to speak at events. In 2022, Mats Granryd and the leadership

team received more than 100 invitations to speak, including from governments and multilateral organisations.



3. <https://www.gsma.com/betterfuture/2022sdgimpactreport>
 4. <https://www.gsma.com/betterfuture/resources/mobile-net-zero-state-of-the-industry-on-climate-action-2022-report>
 5. <https://www.digitaldevelopmentpartnership.org/knowledge.html?ddp=kn-pb-22-t1-10>

5.2 PROSPERITY Facilitating investment

The mobile connectivity that the world now completely relies on is made possible by the continual large-scale investment by mobile operators – with industry capital expenditure (capex) forecasts at US\$620 billion between 2022 and 2025, of which 85% will be in 5G networks. The innovation that is built on mobile connectivity brings considerable benefits to consumers, other business sectors, and governments.

With the growing need to build out 5G, mobile operators are exploring many ideas and opportunities, including a shift towards Open RAN. Opening up proprietary elements and interfaces in the Radio Access Network (RAN)

will diversify the network equipment and software ecosystem, bring in new suppliers and additional market competition, lower the cost base and allow investment to go further.

Securing spectrum capacity

Long-term planning and clarity on spectrum access is crucial for mobile development and a priority for the GSMA to support widespread, affordable access to mobile connectivity. The GSMA's work to ensure spectrum certainty continued in 2022, both through international harmonisation, including at the ITU, and with individual governments.

At a global level, the GSMA focused on low and mid-band spectrum. Engagement on priority WRC-23 bands (600 MHz, 3.5 GHz, 6 GHz) intensified in 2022 through ITU, regional and bilateral meetings. Progress on priority bands passed an important milestone with the successful completion of technical studies at the ITU. With WRC-23 upcoming, technical work will continue but political advocacy and marketing activity will now increase. Ongoing engagement with regional groups – APT, ASMG, ATU, CEPT, CITELE and RCC – will remain central to the WRC-23 campaign.

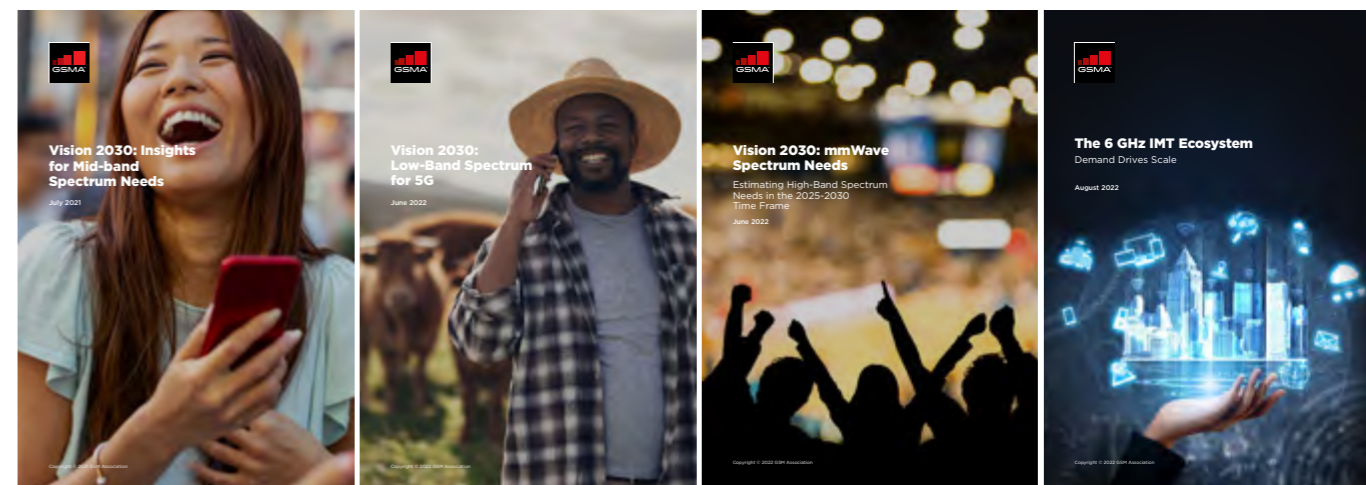
After agreeing the industry position on 6 GHz, the GSMA's Spectrum Strategy Management Group created a special coordination group on 6 GHz to advocate its use for mobile against intense opposition from Big Tech. **'The 6 GHz IMT Ecosystem: Demand Drives Scale'**⁶ was published, which, alongside existing economic impact analyses, forms part of the mobile industry political advocacy on the band.

In support of industry objectives for WRC-23, the GSMA released analysis of **'Spectrum Needs in Low,⁷ Mid-⁸ and High⁹ Bands for 5G'** to maximise socio-economic impact, as part of its Vision 2030 series, and shared it with spectrum regulators in a global webinar. Economic analysis published in 2022 forecast that 5G will generate US\$960 billion in GDP in 2030, with 63% of this coming from mid-bands. Additional low-band analysis was developed for release at the start of 2023.

At a national level, the GSMA's 2022 priorities included securing additional spectrum in low and mid-bands, and the release of high-band mmWave spectrum to operators. There were a number of country-specific results:

- Belgium, India, Jordan, Kenya and Zambia released new mid-band spectrum
- India moved in a more positive direction on spectrum pricing, the telecom framework and the amount of spectrum available
- Colombia and Panama reduced spectrum fees

2022 brought repeated allegations of harmful interference between 5G in the 3.5 GHz range and aviation altimeters, which continued to be discussed in regulatory circles and in the media. With the Spectrum Policy Working Group, the GSMA released a strong rebuttal of the allegations with a fact sheet on coexistence between the two services. The GSMA continues to work with governments to encourage fact-based decision making, allowing 5G and aviation altimeters to continue using adjacent spectrum efficiently, and this has assisted continued development of the 3.5 GHz band for mobile.



6. <https://www.gsma.com/spectrum/wp-content/uploads/2022/08/6-GHz-IMT-Ecosystem.pdf>
 7. <https://www.gsma.com/spectrum/wp-content/uploads/2022/07/5G-Low-Band-Spectrum-1.pdf>
 8. <https://www.gsma.com/spectrum/wp-content/uploads/2022/07/5G-Mid-Band-Spectrum-Needs.pdf>
 9. <https://www.gsma.com/spectrum/wp-content/uploads/2022/06/5G-mmWave-Spectrum.pdf>

In addition to preparation for WRC-23, there were important advancements for ongoing work:



Asia Pacific

- GSMA engagement and analysis on **'India's 5G Future - Maximising Spectrum Resources'**,¹⁰ helped improve conditions for mobile operators in India's multi-band auction in July, including a reduction on **reserve prices**, and came after broader reforms to the telecoms market.
- In Bangladesh, the auction of **legacy mid-bands** 2.3 GHz and 2.6 GHz was successfully finalised, with new pricing strategies and revised obligations from the first proposals. This auction elevated national spectrum availability, which previously lagged behind the regional average, as highlighted by the GSMA in its engagement with Bangladesh.



Europe

- In Belgium, the GSMA worked towards the availability of the right amount of spectrum and the **avoidance of large set-asides**. Auctions took place of 700 MHz and 3.5 GHz for 5G, as well as left-overs in 900 MHz, 1800 MHz and 2100 MHz. Five operators acquired part of the spectrum, which will shape the country's mobile telecoms landscape for the next 20 years.
- Following the GSMA's **mmWave** campaign, the Spanish government announced a 26 GHz spectrum auction in November and prioritised reasonable price and access conditions.



Greater China

- The GSMA's **6 GHz** IMT ecosystem report¹¹ highlighted China as a key proponent for 6 GHz IMT. As the first industry research with a comprehensive overview of the state of the 6 GHz IMT ecosystem, it reinforced China's support for, as well as the mobile industry's readiness towards, 6 GHz IMT.

Latin America

- In Colombia, a 50% reduction in the **licence renewals process** was approved after extensive work by the GSMA. This included a reduction in pre-established prices, technology upgrade recognition, and payment schedule adjustments.
- In Panama, the government approved an additional **AWS spectrum assignment**, adjusted the cost methodology, and reduced the price per MHz from US\$3.1 million to US\$1.2 million, after intense multi-year engagement between the GSMA and the regulator.
- In Chile, the government revised an initial decision to use 1200 MHz for **unlicensed services** in the 6 GHz band, taking into account specific points addressed by the GSMA in workshops, letters and engagements with local authorities.



MENA

- In Jordan, a **license extension** of 10 years for all current spectrum licenses, at no extra cost, was implemented, lengthening licences from 15 to 25 years with the possibility of a further five-year extension at a suitable fee. 100 MHz in the 3.5 GHz band was also made accessible to each mobile operator for 25 years, with the target of deploying in 18 months to ensure that 50% of the population is covered and reached within four years. As a result, there is now very little unused spectrum in Jordan.



North America

- Continued advocacy for more **mid-band spectrum** in North America was successful. In the United States, the 2.5 GHz auction was finalised and closed, while Canada added more 3.5 GHz spectrum into its plans.



10. <https://www.gsma.com/spectrum/resources/indias-5g-future-depends-on-affordable-spectrum/>

11. <https://www.gsma.com/spectrum/wp-content/uploads/2022/08/6-GHz-IMT-Ecosystem.pdf>



Sub-Saharan Africa

- In Zambia, the **800 MHz and 2600 MHz bands** were made available to operators following GSMA engagement and best practice sharing.
- The GSMA's long-term engagement in Kenya supported the assignment of the **2600 MHz** band to operators – 60 MHz each for MTN and Airtel – with a 15-year license duration.
- After intensive work by the GSMA for almost half a decade, with members, RURA and the Ministry, the Rwandan government reversed its decision to depend on a Single Wholesale Network for 4G, 5G and future technologies. A new broadband policy opens the door for **better 4G penetration** in all parts of the country and the future launch of 5G, supporting competition in the national fibre backhaul market, and ensuring continued investment. The policy also seeks to address the usage gap, with targets to address digital literacy and smartphone adoption i.e. achieve 85% digital literacy in the adult population and achieve 85% of smart devices in the adult population by 2024.
- Finally, a successful multi-band auction was held in South Africa. This was one of the GSMA's longest-standing goals and has seen a number of sub-optimal policies eventually avoided over a 14-year engagement period. During that time, 12 different ministers have suggested a variety of policies requiring engagement from the GSMA including the single wholesale network decision, which has now been overturned. The spectrum auction was successful and heralded widespread **5G growth** in South Africa.
- In Nigeria, continued advocacy for the award of much needed 5G spectrum in the **mid-band range** culminated with the regulator awarding, through an auction in December 2022, one of two 100 MHz lots in the 3.5 GHz band. The remaining spectrum is available on a first-come-first-served basis.
- In Cote d'Ivoire, the GSMA was involved in the drafting of a spectrum roadmap including a **5G implementation** timeline, which was validated and published by the government. The GSMA conducted a spectrum workshop for 60 participants in July, with the collaboration of the CIV Chamber of Telecoms (UNETEL), which led to amendments in 5G implementation planning.
- In Tanzania, advocacy efforts on the foundation for 5G led to a spectrum auction and the assignation of **mid-band and sub-1GHz** to mobile operators. 5G trials have since been launched.
- In Senegal, the GSMA contributed to a consultation of the NRA (ARTP) on **5G implementation** before the end of 2023.
- In Congo, the Regulatory Authority (ARPCE) released the 3.5 GHz band for 5G in October 2022, making 200 MHz available to the two operators present, following the GSMA's recommendations on 5G spectrum bands and **international best practice**.



Reforming taxation

The GSMA promotes best practice principles of taxation, creating greater affordability of mobile services for consumers and facilitating investment in networks by operators. The GSMA produces research and analysis on mobile sector tax reforms, highlighting the corresponding benefits of broader internet adoption, economic growth and social inclusion.

In 2022, the GSMA contributed to the achievement of important advancements in several markets:



Latin America

- In Brazil, the National Congress passed a law classifying telecoms, among other services, as **essential goods and services**, meaning that the ICMS value-added tax applied may not exceed 18%, resulting in an average tax reduction of 10%. The GSMA has advocated for a digital inclusion fiscal reform at every stage of its development since 2019, including the 2020 report **'Mobile taxation in Brazil: Supporting digital transformation.'**¹²
- In Ecuador, special **taxes on mobile consumption** and mobile operators, and a market concentration fee, were eliminated after four years of GSMA engagement and campaigns, including a GSMA/EY tax report in 2018 and the 2022 report **'The path to a digital Ecuador'**.¹³



12. <https://www.gsma.com/latinamerica/resources/mobile-taxation-in-brazil-supporting-digital-transformation/>

13. <https://www.gsma.com/latinamerica/es/resources/el-camino-hacia-un-ecuador-digital/>



Sub-Saharan Africa



- In Tanzania, the 2022 national fiscal budget further reduced the **mobile money transactions levy**. The move comes in direct response to GSMA advocacy over the 12-month period after the introduction of the tax in July 2021. The 2022 changes effectively reduce the impact on the mobile money levy by 80% on the maximum fee applicable.
- In Chad, GSMA advocacy on taxation and the affordability of mobile devices led to an **import duties and tax exemption** being granted on telecoms equipment for five years, which will lead to improved connectivity and adoption.
- The Government in Nigeria acquiesced to the GSMA's advocacy messaging and engagement, and retracted plans to introduce a 5% **excise duty** on telecommunications services.
- In Guinea, the GSMA contributed to a consultation on the removal of the March 2021 **tax on national off-net and on-net voice calls**, analysed with the country's operators. As a result, the ICT Ministry removed the tax.
- In Zambia, the GSMA successfully advocated for industry-friendly inclusions in the national budget for FY2023, leading to a reduction in **corporate taxes** imposed on operators, the zero-rating of import duties on telecommunications equipment, and the zero-rating of VAT on certain telecommunications equipment.

Network investment and Fair Share

Mobile connectivity is needed to deliver the products and services that consumers, business sectors and governments increasingly depend on and openly demand. Mobile networks continue to be financed and built by mobile operators. Between 2022 and 2025, mobile operators are forecast to invest US\$620 billion in mobile infrastructure, of which 85% will be in 5G networks.

The online services segment saw a 19% increase in annual revenue in 2020¹⁴ and paid-for online services will soon exceed US\$1 trillion in revenues, driving huge capacity demand on global mobile operator networks. Meanwhile, internet access providers, including fixed and mobile network operators, are generating returns on capital of between 6% and 11%. This is a fundamental market imbalance because the entire ecosystem, especially the content players, is completely reliant on mobile connectivity for growth to continue.

Unless operators are sufficiently incentivised to invest in infrastructure by the ability to make a fair return, the whole internet-based ecosystem will stall. Today, more than half of all internet traffic is generated by only six global internet companies, and exponential growth in this traffic will require more and more network investment. It is only fair that the companies generating the largest amounts of internet traffic should contribute to the required infrastructure investment.

The GSMA is focused on finding solutions, with government and other stakeholders, to address the imbalance, and ensure that every segment of the internet ecosystem has the ability to make fair returns.

In 2022, the GSMA participated in the Fair Share debate in Brussels, by organising events to discuss network investment and convening key decision makers, including BEREC Chair Annemarie Sipkes; MEPs Josianne Cutajar and Tsvetelina Penkova; representatives of EU Member States, including Petr Ocko, Deputy Minister for Digitalisation and Innovation of the Czech Republic (EU Presidency); Pearse O'Donohue, European Commission; GSMA members; and industry representatives.

'The Internet Value Chain 2022'¹⁵ was published at an event that convened over 280 participants, generating over 1,050 media hits, and coverage in target media outlets, including TelecomTV, Telecoms.com, Mobile World Live, Telecompaper, Telecom Lead and Euractiv.

The GSMA released statements on fair contribution, including one with National Telecom Associations, which facilitated a meeting between European member CEOs and EU Commissioner Thierry Breton, and focused on active PR.

The GSMA's 'Mobile Economy 2022: Europe'¹⁶ was also utilised to highlight the investment gap in EU telecoms infrastructure and reinforce the industry position on the Fair Share debate, and generated 164 pieces of news coverage.

The GSMA continues to work with interested members in different EU markets to develop policy solutions to address the Fair Share challenge. In early 2023, this work resulted in the European Commission launching a consultation on the future of the electronic communications sector and its infrastructure, including an open dialogue with all stakeholders about the potential need for all players benefitting from the digital transformation to fairly contribute to the required investments.

Additional analysis and evidence related to the investment gap — focusing on connectivity funds (e.g. USFs) in Latin America and on mobile-specific taxation in sub-Saharan Africa — are also in the pipeline.

In 2022, the GSMA also continued its active participation in the Broadband Commission Working Groups, after the recommendations made in '21st Century Financing Models for Bridging Broadband Connectivity Gaps' published in 2021 – to broaden the base of contributors to investment in connectivity, to reform universal service funds so that they are more effective financing mechanisms, and to earmark ICT sector contributions to governments so that they are spent on initiatives supporting connectivity and adoption goals.

Crowding in

In low- and middle-income countries, the GSMA is focused on attracting large-scale investment to increase the impact of digital solutions on the lives of underserved populations and bolster innovation and commercial viability for mobile operators.

Governments and institutions provide donor funding to the GSMA Mobile for Development Foundation, which runs thematic programmes that research impact opportunities, engage on the ground in target countries, and provide advocacy expertise to partners.

Donor funding is also used to provide direct funding to innovative local entrepreneurs, who are, by nature, early-stage higher-risk investments. Through the GSMA Innovation

Fund, the GSMA supports these start-ups on their path to sustainability and scale, facilitating partnerships with mobile operators and connections with investors.

Between 2017 and 2022, the GSMA Innovation Fund, funded by donors via the GSMA Mobile for Development Foundation, invested in 68 local low- and middle-income based organisations that have gone on to raise £364 million in additional funding from private investors, equivalent to 43 times the investment made by those donors up to November 2022.

In May 2022, the GSMA Innovation Fund start-up, Free Town Waste Transformers, which turns organic waste into electricity, replacing diesel generators with green technology to reduce the cost and increase the reliability of energy, raised US\$3.9 million to scale its energy solution.



Free Town Waste Transformers

14. <https://www.gsma.com/publicpolicy/resources/internet-value-chain>

15. <https://www.gsma.com/publicpolicy/resources/internet-value-chain>

16. <https://www.gsma.com/mobileeconomy/europe/>

5.3 STRENGTH Uniting the industry

The GSMA's brand proposition is The Thriving Society, which speaks to delivering value to members, communities, and the world. Measuring GSMA mentions on social media channels versus mentions of a selection of relevant trade associations, the "brand share of voice" achieved in 2022 was 85%, 21 percentage points above target.

In 2022, a newly-evolved GSMA brand was launched, underpinned by a leadership brand strategy, and a premium re-designed MWC brand identity and design system was launched across all marketing channels. These efforts

created more modern and memorable brands to attract new members and audiences, and ultimately, to bring the GSMA brand proposition and vision to life.



Serving the needs of members

In 2022, the GSMA's member-base stood at 1,107 members, comprising mobile operators and ecosystem players. Focused efforts in 2022 reduced churn to less than 10%, resulting in an increase of 64 members in the year.

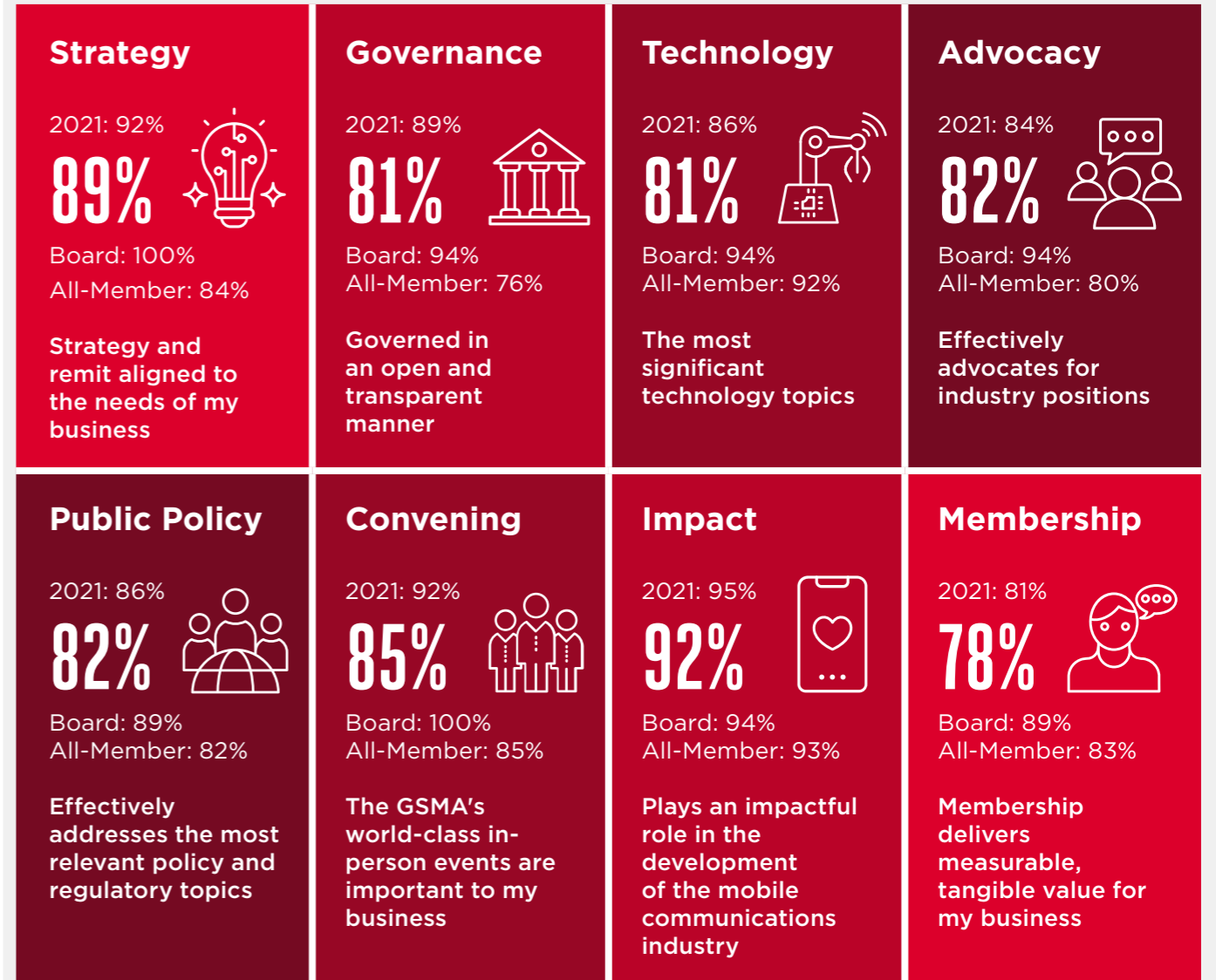
The 2022 survey of operator member CEOs revealed a positive NPS score of 38, and reflected Heads of Regions' efforts in engaging with and responding to local CEOs' priorities, promoting working group participation and increasing regional C-level meetings and communications.



GSMA is crucial in bringing key industry stakeholders together! We are very pleased to be a member of that community, and to benefit from our involvement in Working Groups and GSMA Services, sharing, receiving and contributing important fraud & security information as well as undertaking VoLTE testing."

Jean Michel Henrard, CEO, Dust Mobile

CEO Survey





Through GSMA Working Groups we, the industry, are driving how future technology is deployed. It's vital that operators get involved so they can direct the impact these new technologies will have whether as a consumer or to drive the solutions that complement their strategy."

Kathleen Leach, Director, Technology Development & Strategy, T-Mobile; GSMA Working Groups Chair – WAS

In 2022, the GSMA's global technology Working Groups, comprising 158 groups and sub-groups and over 5,500 member participants, held more than 1,200 meetings. These groups updated or released approximately 200 essential documents, covering all aspects of system specifications, including interoperability, roaming and interconnect.

Supporting roaming business operations remains a key service provided to members through Working Groups. In 2022, over 200 members distributed Inter-Operator Tariff (IOT) files to their Roaming Partners, 218 organisations distributed Operational Data (contact information) files, and 478 organisations distributed IR.21/IR.85 (technical network settings data) files to their Roaming Partners. The GSMA also made improvements to the online roaming services that support operator business operations, and the updated service will launch early in 2023 with a new identity, the GSMA Roaming Gateway. As well as the existing RAEX functions, the Roaming Gateway will support Roaming Partner management, distribution list management for IOTs and IR.21 files, and also TADIG code management.

2022 brought the first physical **Wholesale Agreements and Solutions Group (WAS)** event in three years, hosted by MTN GlobalConnect in Cape Town in September, with 881 in-person attendees. The next WAS event took place in March 2023 in Vancouver, hosted by TELUS.

During the summer of 2022, VoLTE, VoLTE roaming and emergency calling in networks that had retired both 2G and 3G networks gained attention. GSMA Working Group documentation was updated to clarify, educate, and provide guidance on VoLTE and VoLTE roaming, with an increased focus on emergency calling scenarios. The new Working Groups Digest email, with the objective of increasing Working Group participation amongst members, featured VoLTE and VoLTE roaming in November.

The GSMA published the first release of the 5G Stand Alone (SA) Implementation Guide, and work is ongoing for a new roaming agreement template for 5G SA and beyond. This is the first update to roaming agreement templates since they became 'technology neutral' nearly 20 years ago.

The Operator Platform Group (OPG) is a recent creation to address the need for an operator-provided platform supporting Edge Compute and APIs for 5G scenarios, including capabilities to support AR/VR use cases. In 2022, OPG has made significant progress in defining an interoperable, federated Operator Platform and updates now enable operators to offer network-as-a-service (NaaS) type capabilities to their enterprise customers such as quality of service (QoS) controls.



Wonderful to reconnect in person and discover how much the rapidly evolving roaming world has changed over the last few years."

Richard Eisner, International Roaming Senior Product Commercial Specialist, Telstra Corporation Limited

During 2022, **the eSIM group** held over 150 virtual, physical or hybrid gatherings, awarded the first GSMA eUICC Security Assurance certification, and granted over 65 products GSMA eSIM Product Compliance.

The Fraud and Security Group (FASG) covers mitigation of fraud and security risks for mobile technology, networks, devices and services, to help operators protect consumers. In 2022, FASG evolved 5G roaming and interconnect security specifications, developed guidelines on risks related to AI technology, and refined requirements for updating mobile devices with security critical software patches to enhance protection for mobile and connected device users. The GSMA also actively engaged with the EU Agency for Cybersecurity (ENISA) on 5G Cybersecurity Assurance, driving for a pragmatic and achievable approach, based on existing GSMA assurance schemes that meet the needs of all stakeholders.

An emerging problem for operators is identifying what actions need to be taken to make their networks safe from the forecasted capabilities of quantum computers to break current cryptographic protection of data, including customer data. **The Post Quantum Telecommunications Networks task force** was established in 2022 to work across industry and supply chains to address this problem. The need to ensure communications remains 'quantum safe' is important and can also apply to encrypted data and communications eavesdropped on before quantum computers are deployed. The Task Force will issue an initial report in Q1 2023.



Addressing global and regional challenges

The scale of mobile connectivity, and its importance in the lives of more than 5.4 billion people every day, means that it is uniquely placed to help address our world's biggest societal and economic challenges – including climate action, digital inclusion and gender equality – targeted by the United Nations Sustainable Development Goals (SDGs). The GSMA continues to unite the industry in multiple ways to address pressing world challenges.

Climate

At the forefront of current world challenges is the climate crisis. In May, the GSMA released its second annual report **'Mobile Net Zero: State of the Industry on Climate Action 2022'**,¹⁷ highlighting how the mobile industry is progressing against its ambition to be net zero by 2050. To date, 50 operators representing 63% of the industry by revenue and 44% by connections have committed to rapidly cutting their emissions over the next decade, with 19 operators committing in 2022.

The GSMA was very active with members in the run-up to COP27 in Egypt, with a focus on access to renewable electricity. Attendance at COP27 was leveraged to raise awareness of the challenges mobile operators face in accessing clean electricity in some parts of the world, and the potential for the industry and governments to invest in renewables to achieve their net zero targets. Today, around 18% of the electricity used globally by mobile operators comes from renewable sources, but this will need to reach at least 50% by 2030 for operators to meet targets. In Europe specifically, a #GSMAconnected event on **'How the Mobile Industry can help Europe reach its ambitious climate goals?'** was held earlier in the year, with EU policymakers and members.

Environmental, social and governance

The advancement of industry sustainable business practice remains a GSMA priority. In 2022, the GSMA defined the environmental, social and governance (ESG) industry position by publishing the first-of-its-kind industry-wide **ESG reporting metrics framework**.¹⁸ This framework was delivered in close collaboration with a taskforce of mobile operators and partners EY and the Yale Center for Business and the Environment. From September, the GSMA worked with members to pilot the metrics in their ESG reporting, and initial interest was received from 17 operators to take this forward in 2023. In February 2023, Telefónica became the first operator to start reporting against the GSMA ESG metrics.



17. <https://www.gsma.com/betterfuture/resources/mobile-net-zero-state-of-the-industry-on-climate-action-2022-report>
 18. <https://www.gsma.com/betterfuture/resources/esg-metrics-for-mobile>



Circular economy

The GSMA, with a taskforce of mobile operators, also defined a position and long-term vision on how the mobile industry can increase the circularity of its supply and production chains for network equipment and mobile devices. This resulted in two papers, the **'Strategy Paper for Circular Economy: Mobile devices'**¹⁹ published with Tele2 and Ethos and the **'Strategy Paper for Circular Economy: Network equipment'**²⁰ published with Orange, which then activated a media campaign.

Child online safety

Activities supporting child online safety accelerated during 2022. The GSMA engaged with **Child Helpline International** and its members to provide guidance to helplines in Ukraine and neighbouring countries. The GSMA also organised its first **post-Covid Mobile Alliance** meeting to discuss challenges and activities relating to child protection and combatting online child sexual abuse and exploitation.

Artificial intelligence


In 2022, the GSMA concluded the AI for Impact opt-in project with the publication of a **Mobile Industry AI ethics playbook and online self-assessment tool**,²¹ together with an operator blueprint on how to develop data-driven products and services estimating transport-related greenhouse gas emissions. Following the end of this project, the GSMA was able to relaunch the Global AI Task Force of operators and to maintain strategic work focusing on AI ethics and policy developments worldwide.

19. <https://www.gsma.com/betterfuture/resources/strategy-paper-for-circular-economy-mobile-devices>
 20. <https://www.gsma.com/betterfuture/resources/strategy-paper-for-circular-economy-network-equipment>
 21. <https://www.gsma.com/betterfuture/resources/ethicsplaybook>

Shaping media narratives

The GSMA commenced 2022 with a cautiously optimistic approach to communications, sensitive to changes in the Covid-19 landscape, as countries emerged from the pandemic at different paces. The 2022 PR strategy was based on three objectives:

1



Develop a robust communications framework, built around industry and organisational priorities

2



Establish a unifying narrative that tells a positive story for the mobile industry

3



Create a simple and actionable plan, to be executed with limited resources

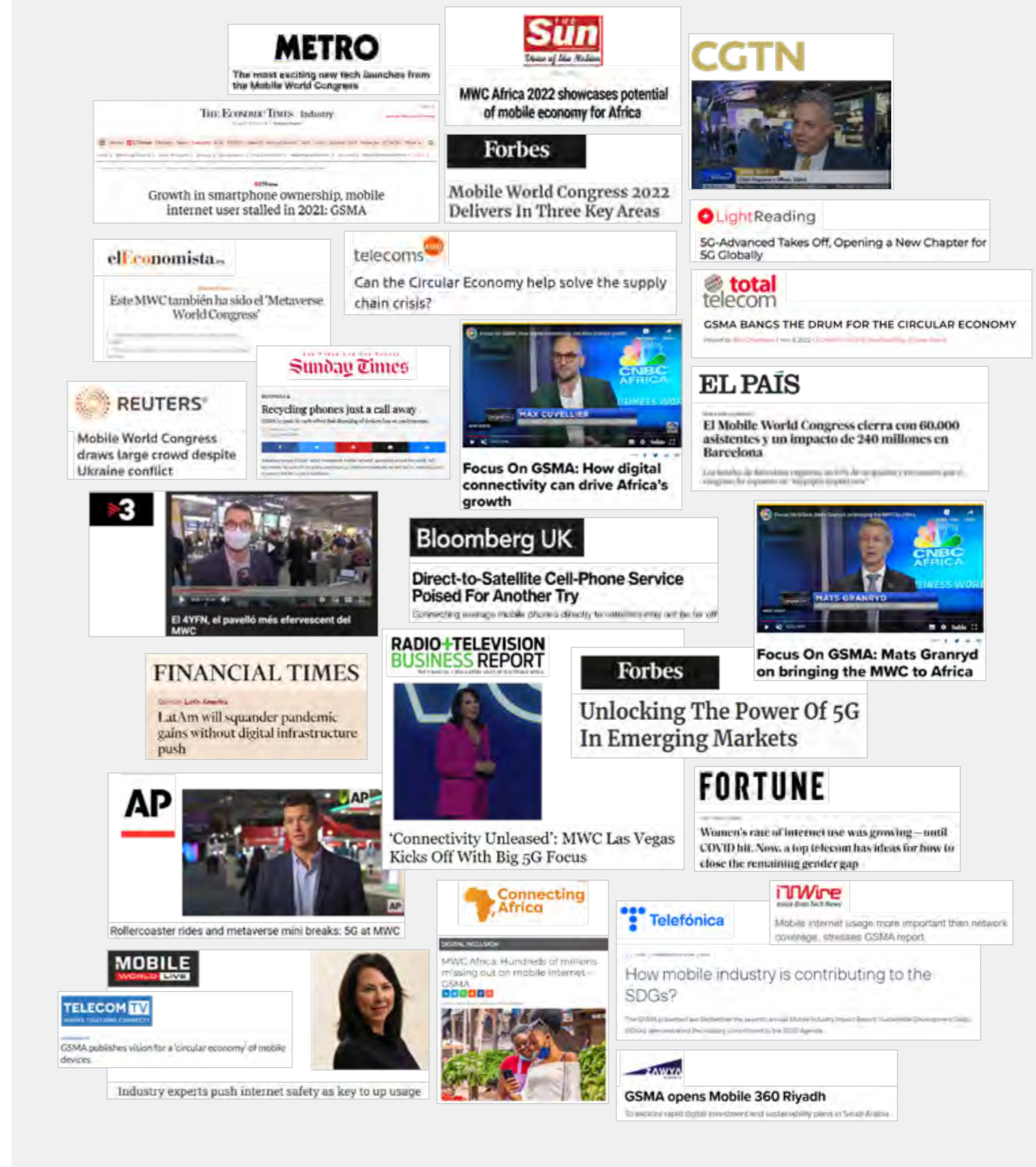
The GSMA's PR effort takes into account more than 1,100 members, across almost 200 markets, all facing different challenges and priorities, as well as the organisation's 40+ programmes, initiatives and working groups, all vying for attention. High-volume activity is naturally clustered around programmes' timelines and milestones and GSMA events, supporting the multiple best interests of the mobile industry, and world news is monitored continually.

Importantly, the sentiment of the news mentions was highly positive – with attendees expressing their excitement ahead of the event and then reflecting positively on the show's execution and its impact on industry leaders.

The PR plan for all MWCs and Mobile 360s established clear guidelines on what media would be able to do and see on-site, evolved the messaging following the restrictions of 2021, and leveraged the GSMA's knowledgeable spokespeople and experts.

In 2023, the GSMA foresees a growing interest from vertical organisations and press outside of the telecoms sector to learn more about the organisation. As social media continues to grow, consumers will want to engage with more long-form and personalised media, such as podcasts and video interviews.

As international business emerged from remote-only working, MWC Barcelona messaging focused on the in-person nature of the event. Communications highlighted MWC as the place to be for business networking, and an annual industry milestone. This approach was successful and the media reception and coverage of MWC Barcelona was extensive and positive. In total, 2,197 journalists registered, GSMA spokespeople gave 50 media interviews, and 68,927 media mentions and 69,470 social media mentions were achieved.



5.4 GROWTH Extending access

The GSMA helps drive innovation in digital technology to reduce inequalities in our world, and in particular in low-and middle-income countries. This work is singularly positioned at the intersection of the mobile ecosystem and the development sector, and stimulates digital innovation to deliver both sustainable business and large-scale socio-economic impact for the underserved.

This work is funded substantially by donors, via the GSMA Mobile for Development Foundation (“GSMA Foundation”).



Addressing digital divides

Digital inclusion

Mobile internet adoption and usage brings with it information and opportunity, by placing everyday services within easy reach, for the benefit of individuals, their families and communities.

With 95% of the world’s population already covered by a mobile broadband network, addressing the usage gap – the 40% of the global population covered by a mobile broadband network, but not using the internet – is the main challenge. While important progress has been achieved in increasing internet adoption and usage, there is a growing digital divide between and within countries.

The GSMA, together with the GSMA Foundation programmes, supports the mobile industry by prioritising the usage gap, conducting research and analysis, engaging with governments, intergovernmental organisations and partners, and advocating across all channels. In October, the GSMA released ‘**The State of Mobile Internet Connectivity 2022 Report**’,²² to guide the industry. In the first month, the report achieved 900 downloads and over 2,800 page views, reinforcing the importance of this work.

The GSMA also provided country-level data in the ‘**2022 GSMA Mobile Connectivity Index**’,²³ a tool which measures the performance of 170 countries against the key enablers of mobile internet adoption: infrastructure; affordability; consumer readiness; and content and services. This Index is integral to the mobile industry’s commitment to drive mobile internet connectivity and accelerate digital inclusion.

In-country work continued in 2022. As an example, in July the GSMA and UNCDF Uganda, with the attendance of the Uganda Communication Commission and Ministry of ICT, formed a partnership to improve mobile internet use and increase beneficiary numbers through digital skilling and research, advocacy and stakeholder engagement.

In the 12 months to June, a further 28 million people were impacted by GSMA Foundation usage gap projects, led by mobile operators, primarily by MTN, and other digital players.



USAGE GAP:

In the **12 months** to June, a further

28m

PEOPLE

were impacted by GSMA usage gap projects

22. <https://www.gsma.com/r/somic/>
 23. <https://www.mobileconnectivityindex.com/>

GSMA Innovation Fund

The GSMA Foundation currently supports 34 local innovators across 16 low- and middle-income countries²⁴ through the GSMA Innovation Fund, funded by the UK’s Foreign, Commonwealth and Development Office (FCDO) and the Swedish International Development Cooperation Agency (Sida), providing catalytic funding and technical support for innovative digital solutions with a positive socio-economic impact or climate/environmental impact.

The Fund’s strategic focus is mobile internet adoption and digital inclusion, assistive tech solutions that target persons with disabilities, digital urban services that provide access to energy, water, sanitation and promote plastic recycling and waste management.

Africa and Asia are projected to account for 90% of global urban growth from now until 2050, where providing basic urban services poses unique challenges to municipalities and state-

owned utilities, and climate change intensifies those challenges.

In April, the GSMA Foundation announced the Innovation Fund for Digital Urban Services, funded by FCDO, which received 335 applications from 43 countries, with ten start-ups funded and £1.3 million awarded. The solutions funded encompass plastics management, clean cooking water provisioning, safe sanitation, organic and solid waste collection, and productive use of utility assets.

In November at COP27, the GSMA Foundation announced the latest cohort of 12 innovators²⁵ who are using technology to build climate resilience for vulnerable people and communities. This cohort is funded by FCDO and Sida.

The gender gap

The GSMA continues to measure the persistent mobile gender gap – women in low- and middle-income countries are estimated to be 7% less likely to own a phone than men, and 15% less likely than men to use mobile internet. In June, the GSMA released the annual ‘**Mobile Gender Gap Report 2020**’,²⁷ and convened seven top-tier Indian and Kenyan national newspapers and business publications to a media roundtable. The press release achieved 30+ articles, including Fortune, The Finance Express, Africa.com and Quartz. Promotion through all available channels achieved over 2,500 downloads and over 7,000 page views by the end of the year. After years of progress towards women’s digital inclusion, the report warned that momentum appears to have stalled, and explored the key barriers to equal mobile ownership and mobile internet use in low- and middle-income countries. Key messages from the report were shared at the Broadband Commission Annual Spring Meeting, the World Telecommunication Development Conference and the Commonwealth Heads of Government Meeting 2022, and were cited by the IFC, GE and Devex.

To advance against the gender gap, partnerships are ongoing and long term. Since 2016, the GSMA, through the GSMA Foundation Connected Women Programme and funded by FCDO and Sida, has forged partnerships with over 40 operator members who have brought mobile internet and mobile money to more than 55 million additional women, including 9.7 million women in the 12 months to June 2022.



<p>Ensibuuko</p> <p>In Uganda, Ensibuuko²⁶ is driving financial inclusion by deploying technology solutions to community-based savings and loans organisations, so that they can efficiently reach and serve unbanked and underserved communities in Africa with affordable and relevant financial services.</p>	<p>Janajal</p> <p>In India, Janajal delivers safe and affordable drinking water to slums in Delhi through the launch of 25 Water on Wheels – IoT-enabled three-wheelers that operate on compressed natural gas and can distribute 3,000 litres of water per day. Each Water on Wheels offers real-time monitoring of water quality, volume dispensed, and customer orders. Customers can purchase water using various digital wallets and interfaces.</p>	<p>Benea</p> <p>In Egypt, Benea is tackling the problem of poor access to safe sanitation services for remote rural communities, to overcome health-related issues and contamination of water, soil and agricultural products. Benea uses an IoT system in decentralised treatment units, to monitor and analyse the quality of treated wastewater and the concentration of nutrients in it, and to rapidly respond to any problems encountered. Farmers receive information on nutrients in their water and advice on optimal fertilisers, through a mobile app.</p>

24. In Asia – Bangladesh, India, Nepal, Pakistan, Philippines, and in Africa – Egypt, Ethiopia, Kenya, Liberia, Nigeria, Sierra Leone, South Africa, Tanzania, Uganda, Zambia, Zimbabwe
 25. <https://youtu.be/VB5wsrFYADk?t=1258>
 26. <https://www.gsma.com/mobilefordevelopment/resources/gsma-innovation-fund-start-ups-ensibuuko/>

SINCE 2016, PARTNERSHIPS WITH OVER

40 OPERATOR MEMBERS have brought mobile internet and mobile money to more than

55m ADDITIONAL WOMEN

Including **9.7 million women** in the 12 months to June 2022

27. <https://www.gsma.com/r/gender-gap>



Humanitarian preparedness, response and recovery

The GSMA Foundation's humanitarian work, funded by FCDO, has now reached over 10 million people with improved access to and use of life-enhancing mobile services during humanitarian preparedness, response, and recovery.

Global humanitarian needs continue to sharply rise, with more than 300 million in need of humanitarian assistance and protection. Communities affected by natural hazard disasters, food insecurity, conflict and displacement continue to use digital technology to communicate with loved ones, seek and share crucial information, and to access humanitarian assistance.

The GSMA's Mobile for Humanitarian Innovation Fund has provided more than 20 grants, totalling over £6 million, to projects being implemented across 27 countries.²⁸ In 2022, grantee Sesame Workshop, released research demonstrating how the mobile component of their early childhood development programme helped support

psychosocial needs of young people affected by the conflict in Syria.

In 2022, the GSMA Foundation facilitated 13 new partnerships between mobile operators and humanitarian organisations, adding to a total of 41 partnerships that have generated 53 partnership projects to date.

The GSMA conceptualised and led the development of humanitarian positioning strategies for mobile operators. This initiative, unique to the GSMA, generated eight B2B partnerships and 11 live projects. These humanitarian strategies have become one of the key approaches for driving the acceleration and adoption of digital humanitarian assistance, adopted and implemented in markets such as Kenya, Somaliland, and Burundi.

In February, the GSMA Foundation secured an additional £15.5 million grant, until 2027, from the UK's FCDO, to focus on key digital humanitarian trends – cash and voucher assistance, disaster preparedness and response, forced displacement, food insecurity and addressing the climate crisis.

2022 brought a new humanitarian crisis, affecting the whole world – the conflict in Ukraine. In February, the GSMA prompted relevant Board members to ensure a coordinated industry response, focusing on:

- Keeping networks up and running, engaging with the industry and the European Commission on the provision and donation of network and consumer equipment, and facilitating information to parties interested in providing telecoms equipment to Ukraine.
- Safeguarding against cyber threats, creating a closed regional subgroup for the European Economic Area (EU 27, Iceland, Liechtenstein and Norway) plus the UK, focused on identifying and sharing cybersecurity threats in Ukraine and the European region.
- Engaging the EU on its policy response, working directly with Commissioner Thierry Breton's team on policy issues to support connectivity for displaced Ukrainian citizens in the EU, including the joint statement by the EU and Ukrainian operators.²⁹
- In July, the European Commission asked European and Ukrainian mobile operators to extend the original joint statement on connectivity to support Ukrainian refugees, and signatories continued to voluntarily and bilaterally lower wholesale roaming charges and wholesale charges for terminating international calls.
- Supporting humanitarian assistance, including facilitating connections between GSMA humanitarian partners, such as UNHCR and the World Food Programme, and mobile operators active in the region since the beginning of the crisis.



We have, thanks to GSMA who has proactively bridged the communication gap, been able to include, integrate and leverage the presence of MNOs in the UNHCR Emergency response coordination structure (RETS). Most operators have since then engaged with us, our partners and the extended humanitarian community, shared critical information and data and allowed us to respond more efficiently by enabling our business on the ground in border areas.”

Nizar Zeidan, Global IT Emergency Coordinator, Division of Information Systems & Telecommunications, UNHCR

28. <https://www.gsma.com/mobilefordevelopment/resources/mobile-for-humanitarian-innovation-fund-portfolio-2017-2022/>

29. <https://www.gsma.com/gsmaeurope/ukraine-reposnse/joint-statement/>

Financial inclusion

Financial inclusion remains a GSMA priority, as 1.4 billion people remain unbanked globally, without access to safe, secure and affordable financial services.

Mobile money continues to be a major catalyst driving financial inclusion, contributing to 15 of the 17 SDGs and connecting millions to formal financial services. Mobile money is often a key service in markets with high financial exclusion. It offers individuals, especially underrepresented groups, such as women, access to life changing products.

In March, the GSMA released the tenth edition 'State of the Industry Report on Mobile Money',³⁰ showing the continued growth of the industry, and its role as a mainstream financial service across low- and middle-income countries. Today, there are over 1.35 billion registered accounts, and the industry is processing over US\$1 trillion annually, equating to almost US\$2 million transacted per minute. The report was downloaded 6,690 times and received over 120 unique pieces of coverage across prominent publications, including BBC Africa, Quartz Africa, Forbes, and The Financial Times.

By the end of 2022, some 10.5 million lives have been impacted through projects run by the GSMA Foundation Mobile Money Inclusive Tech Lab, funded by The Bill and Melinda Gates Foundation, and there were 225 million registered financial accounts that are now covered by GSMA Mobile Money Certified providers.



MOBILE MONEY:

THERE ARE OVER

1.35bn 

REGISTERED ACCOUNTS,
and the industry is processing over,

US\$1 trillion 

ANNUALLY, equating to almost

US\$2m transacted
per minute

30. <https://www.gsma.com/sotir/>



5.5 SPEED Accelerating the future

The mobile industry builds infrastructure and therefore is inherently future-focused.

As investment continues at pace to meet the digital ambitions of governments and the private sector alike, the GSMA continues to facilitate the mobile industry's future investment in multiple ways - including membership, working groups and communities, the development of industry-standard specifications, ecosystem engagement

and cross-sector collaboration, access to the GSMA Foundry, global events, and analysis and insights from proprietary data. GSMA expertise across these areas helps inform the business strategy and decision making of members in an ever more complex world.

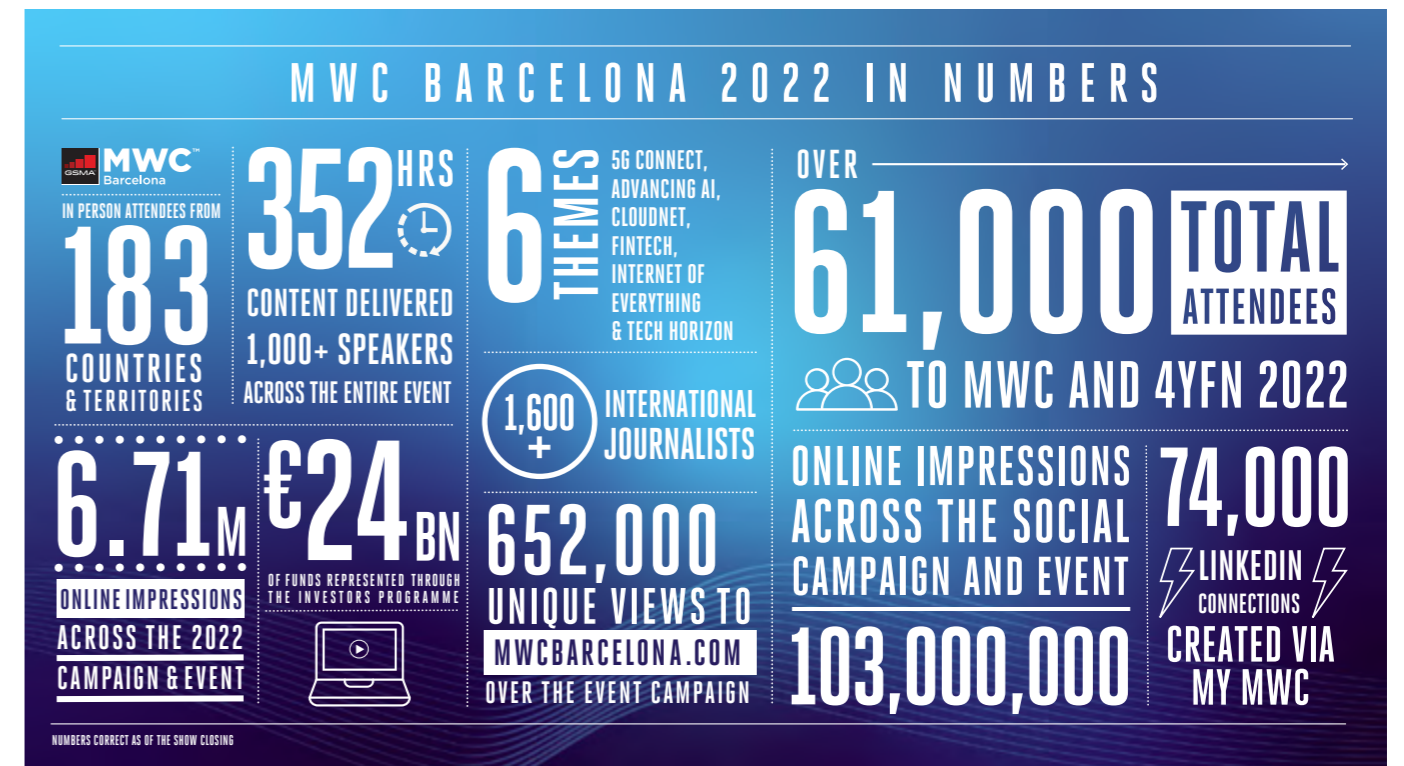


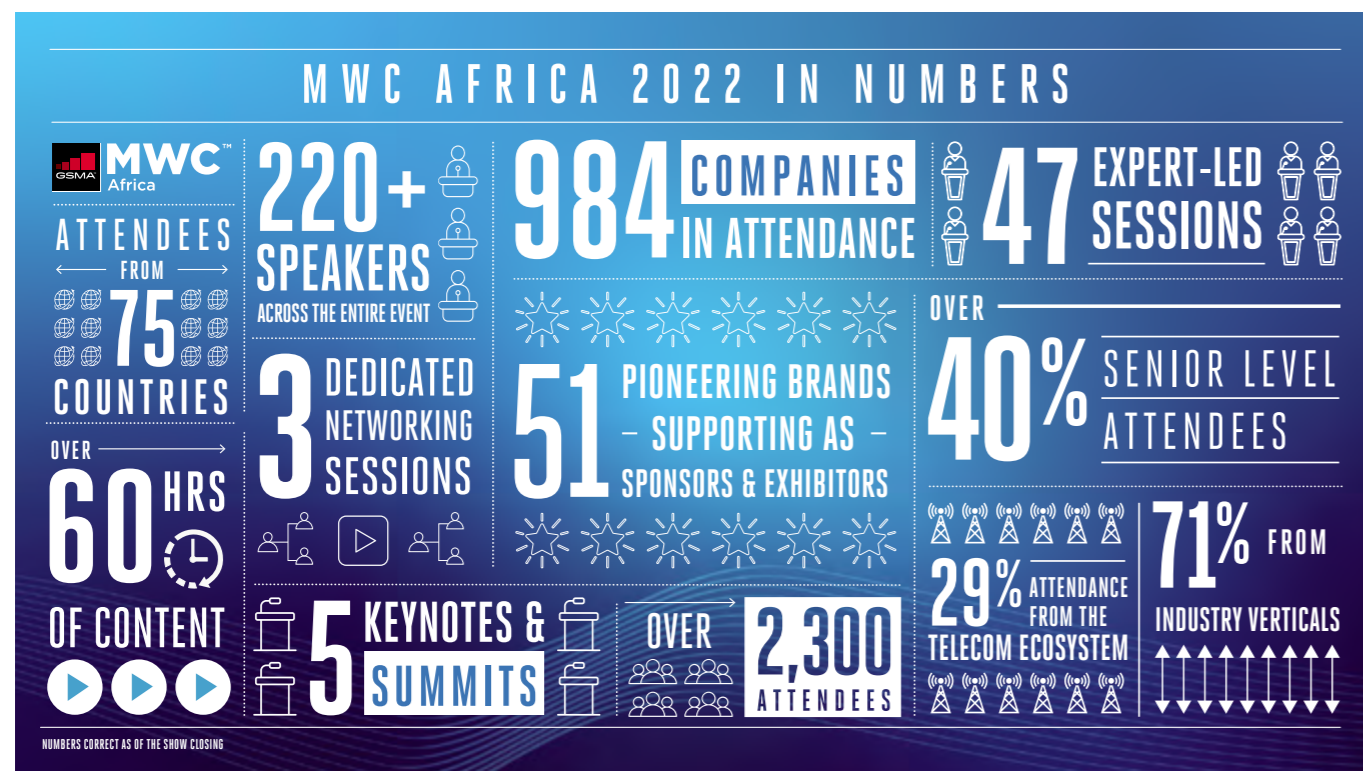
Convening for the future

The convening power of the GSMA is central to its full value to members and its impact on society. GSMA events afford the private and public sectors alike the opportunity to easily meet with partners across other sectors and regions.

In addition to three MWC events, in 2022 the GSMA convened business leaders, policymakers and heads of regulatory authorities to regional Mobile 360s in Riyadh, Singapore and Mexico City.

In 2022, there was a determined effort to increase the percentage of female speakers and non-mobile industry speakers at GSMA events. Female speakers increased from 24% (2018, 2019 and 2021 three-year average) to 35% in 2022, for MWC Barcelona and MWC Las Vegas. Non-mobile industry speakers increased from 11% to 19% year on year for MWC Barcelona.







Forecasting the future

GSMA Intelligence remains the definitive source of mobile industry data, insights, forecasts and research, leveraged by operators and the broader technology ecosystem worldwide.

In 2022, GSMA Intelligence produced more than 176 reports – 25% more than 2021 – while

extending the depth and breadth of its mobile and fixed industry data to include 50 million data points, up from 30 million data points just a few years previously. The content agenda focused on mobile operator strategies, priorities and market opportunities, and built out commercial content modules on enterprise digital transformation, digital consumer trends, spectrum trends, and fixed broadband, as well as key industry and organisational priorities, including digital inclusion, sustainability, and mobile network transformation strategies.



Initiatives that drove growth in 2022:

- Custom consulting for external clients grew by nearly 45%, supporting 37 companies. Two-thirds of revenue derived from repeat customers.
- 2021 energy benchmarking, with a handful of leading operators on a paid opt-in basis, was confirmed for a second iteration, increasing participation by 30%, and providing a leading marker for industry progress on network energy efficiency in the 5G era.
- All key market metrics forecasts were extended from 2025 to 2030, providing guidance on long-term industry trajectories.
- As operators launch mmWave 5G, the GSMA delivered critical insights into 2030 mmWave spectrum needs, the role of mmWave spectrum in supporting FWA use cases, and consumer demands for high-quality services in dense environments.
- As regulators in many markets consider whether to allocate 6 GHz spectrum to Wi-Fi or IMT services, the GSMA provided important insights on the state of the 6 GHz IMT ecosystem, and in-depth cost-benefit analysis of 6 GHz IMT.



Mobile World Live (MWL) continued to play a forward-reaching role by bringing daily breaking news, expert analysis and intelligence to industry professionals. In-house editorial and production specialists worked directly with brand partners to produce bespoke strategic content and deliver it to a global audience via MobileWorldLive.com and media channels.

In 2022, MWL launched a new digital event series called Unwrapped, which generated significant sponsorship opportunities from its client base. Unwrapped is a week-long focus on a specific market theme, deep diving into topics via live studio broadcasts from the GSMA London office, CxO-level keynote interviews, panel discussions and webinars.

MWL's flagship daily newsletter steadfastly continued to serve a global community of over 170,000 mobile, tech and telecommunications professionals, with strategic emphasis on curating engaging editorial content for its audience.

As the lead media partner for the GSMA, MWL played an active role across GSMA events. At MWC Barcelona, MWL TV live streamed keynotes, CxO interviews, show floor features and the GLOMO Awards, making all content available on-demand immediately on MobileWorldLive.com. This generated more than 27,000 live views and nearly 5,000 hours of viewing time. MWL also streamed the Mobile 360 event series to attract a wider audience, and provided MWC Las Vegas with live keynote streaming, analysis review programmes and onsite interviews.

Driving the future

GSMA Foundry - shaping the future

The GSMA Foundry, launched in 2021, fosters cross-industry collaboration and business development, where GSMA members and industry players come together to rapidly develop real-world solutions to industry challenges, nurture new ideas through initial commercial trials, and scale proven solutions at a regional and global level to forge the digital future.

The Foundry utilises the GSMA's global power and reach, to convene, engage, and unify the end-to-end connectivity ecosystem. Foundry projects advance key technologies, such as next-generation mobile networks, IoT, fraud and security, identity and data, energy efficiency, mobile internet, roaming and interconnect and artificial intelligence.

2022 was a pivotal year for the Foundry - 105 new ideas were submitted by the industry for consideration, 15 projects were completed and there remains a strong pipeline of new projects.

Six Foundry projects were showcased in the GSMA Pavilion at MWC Barcelona, including the 5G Transformation Hub. The Autonomous Drone Flight with AI Analytics, featuring the Foundry project 5G Autonomous Drones with Telefónica and Unmanned Life, attracted the most attention in the Pavilion, and four GSMA Excellence Awards were allocated to Foundry

projects at a Foundry Networking Reception, which attracted over 200 attendees. At MWC Las Vegas, a networking breakfast convened over 100 interested professionals, and promotion of the 5G Foundry Challenge attracted new project entries.

As part of the 5G Advanced Foundry project, which was completed in 2022, China Mobile, Ericsson, Huawei and Orange shared valuable insights in a September webinar - which was viewed over 2,000 times - about how 5G Advanced will enhance network performance and unlock the potential of the Metaverse.

Enterprise Authentication for Financial Mobile Applications, with Jazz Pakistan, was also successfully completed in 2022. It tests the technical feasibility of providing a seamless authentication of a user, without human intervention, by leveraging the features of mobile network. The proof of concept looks to establish ways to reduce the need for customer intervention, improve the user experience, and remove the risk of fraud due to PIN hijack.

Through the 5G Transformation Hub, the GSMA published over 40 quality case studies in 2022.

In 2023, the GSMA Foundry aims to increase the number of quality projects by attracting new partners to resolve industry challenges, using focused marketing campaigns, targeting new audiences, with stronger engagement with priority regions, and the continuous showcasing of the successful results generated by projects to date.



Industry communities - engaging with key customer markets

Beyond the traditional working groups, the GSMA engages with organisations to build essential connections between the mobile market and key customer markets. Industry communities focus on key customer vertical markets - telecommunications, fintech, manufacturing, smart mobility and advanced air mobility - and enabling technologies - IoT, telco edge cloud, and identity and data. This focused industry engagement enables the mobile industry to better understand market requirements and inform these key markets about the capability and value of new mobile technology. This helps scale the mobile market for the benefit of our members, their customers and the world.

Identity and Data

The deployment of mobile-enabled identity services continues to gain scale. Veon announced over one million users³¹ at MWC Barcelona, and in Europe in particular mobile operators are increasingly offering identity services to businesses. These mobile identity services support fraud prevention, risk management and identity verification for digital services across industry verticals. All major operators in Germany, UK, France and the Netherlands are live with 3 or more aligned products, and operators are jointly promoting number verification API, with ten MNO/MNO groups live and featured on a shared website.³² To further enable growth, the GSMA continues to facilitate collaboration in and across markets, and collaboration between the UK mobile operators and UK Finance, the banking and finance association, which led to the development of an innovative product to fight fraud involving authorised push-payment.

Data protection is a key consideration built into identity services. Collaboration between operators has increased in this area, with expanded toolkits and resources to drive high standards in identity services' data protection implementations.

European mobile operators are shaping the next generation of EU Digital Identity - sharing the mobile industry view,³³ responding to the European Commission consultation on the proposed architecture, and presenting industry proposals for the EU ID Toolbox to the eIDAS Expert Group.

In 2022, the GSMA convened four community meetings, which were attended by 93 organisations. Expert partners from Liminal, UL and AuthenticID shared trends in identity and technology innovations, and EnStream and Turkcell shared the paths to their successful identity deployments.

FinTech

After the 2021 launch of FinTech as a key customer market, in 2022 it was incorporated into MWC key themes. FinTech Summits at GSMA events explored fraud, payments, digital assets, disruption, Metaverse, open APIs and super apps, and the GSMA FinTech Forum was launched.

In 2022, work in the UK created a new fraud prevention solution, to help defend against social engineering attacks where consumers are persuaded by fraudsters to make payments, believing the recipient to be genuine. This delivered a successful minimum viable product, with plans for rollout in development, and also opened doors to new cross-industry groups in Spain and the US, to start to explore market relevance in both.

Security

Continuing the crucial work around security, T-ISAC continued to grow and welcomed more than 200 new users in 2022. A regional group was established to cover EEA and the UK, in response to regional challenges, including the Ukraine/Russia conflict. Throughout 2022, the GSMA Coordinated Vulnerability Disclosure (CVD) programme worked with researchers, mobile operators, suppliers and standards bodies on 13 vulnerability cases, to develop fixes and mitigating actions to protect customers' security and trust in the mobile communications industry.

Digital Industries

As the fourth industrial revolution continues towards digitalisation and intelligent connectivity, the Digital Industries community is focused on identifying the benefits of 5G-enabled technologies for the industrial sector through regular forums, webinars and events, including Manufacturing Summits and MWC. More than 120 attendees, representing 59 organisations from industrial enterprises, mobile operators and the wider ecosystem, joined the GSMA Digital Industries Forum in 2022 to share knowledge, lift the barriers to digital transformation in the sector, and identify innovation and collaboration opportunities.

Advanced Air Mobility

In 2022, the GSMA strengthened partnerships between the mobile and aviation industries to open up future opportunities on aerial mobile connectivity. The Advanced Air Mobility community grew to over 65 members (a 15% increase on 2021). It comprises the Drone Interest Group and the Aerial Connectivity Joint Activity,

a cooperation with the Global Uncrewed Traffic Management Association. In 2022, the Advanced Air Mobility website³⁴ increased its total users by over 15%, to more than 4,500, which generated over 5,800 page views and 10,100 calls-to-action, through increased social media, material and topics, including experts' sessions.

Two important documents were published:

- **'ACJA Leveraging 3GPP Cellular Network Mechanisms to Support UAS Operations'**³⁵ - detailing how cellular networks and related services can be leveraged to support UAS operations, including Networked Remote ID, UAV connectivity for command and control, location and flight tracking, and security, and also in relation to existing aviation standards.
- **'Reference Method for assessing Cellular C2 Link Performance and RF Environment Characterization for UAS'**³⁶ - providing a reference method for assessing the performance of a particular drone type's cellular C2 link across varying operational environments throughout the lifespan of the drone system.

In addition, as part of a Foundry project with Telefónica and partner Unmanned Life, the GSMA published two use cases, 'Digital Eyes in the Sky'³⁷ and 'Rising to the Connectivity Challenge',³⁸ demonstrating the benefits of cellular services for indoor and outdoor solutions.

The work produced by the ACJA group was referenced in the EU Drone Leaders Group Report³⁹ and in the EU Drone Strategy 2.0.⁴⁰

The GSMA was invited to participate in the ICAO Panel on the Trust Framework - which is a first for an organisation from the mobile industry.



31. <https://www.gsma.com/identity/veons-mobiledid-gains-momentum>
 32. <https://www.numberverify.org/>
 33. <https://www.gsma.com/gsmadeurope/whats-new/gsma-policy-note-on-eidas/>



The Advanced Air Mobility community grew to over

65 members



34. <https://www.gsma.com/iot/aviation/>
 35. <https://www.gsma.com/iot/resources/acja-leveraging-3gpp-cellular-network-mechanisms-to-support-uas-operations/>
 36. <https://www.gsma.com/iot/resources/aerial-connectivity-joint-activity-work-task-2-reference-method-for-assessing-cellular-c2-link-performance-and-rf-environment-characterization-for-uas/>
 37. <https://www.gsma.com/iot/resources/gsma-foundry-case-study-digital-eyes-in-the-sky/>
 38. <https://www.gsma.com/iot/resources/case-study-rising-to-the-connectivity-challenge/>
 39. <https://ec.europa.eu/transparency/expert-groups-register/core/api/front/document/82698/download>
 40. https://ec.europa.eu/info/law/better-regulation/have-your-say/initiatives/13046-A-Drone-strategy-20-for-Europe-to-foster-sustainable-and-smart-mobility_en

IoT Community

Led by the 20-member 5G IoT Strategy Group, the evolution to 5G IoT continues with the enhancements to LTE-M and NB-IoT, both components of 5G, preparations for the launch of Massive IoT and requirements needed for commercial launches. Action Groups will continue to resolve customer needs, such as provisioning, SIM, security, and capacity management. Engagement expanded in 2022, with the creation of the 5G IoT Forum attracting a larger and wider membership of 49 companies with 70 participants, to build on the impact of the 5G IoT Strategy and participate in the action groups to grow customer deployments.

Key achievements:

- Publication of Roaming Parameters for Mobile IoT for 49 Networks, which allow all ecosystem players to quickly deploy international customer solutions
- Energy Efficiency Best Practices and Guidelines used by the industry, which will improve customer satisfaction and QoS
- Publication of the ‘No Harm to Network’ whitepaper, which demonstrates best practice for devices operating in LPWAN
- IoT Summit at MWC Barcelona, which attracted 250 attendees and 18 speakers
- First large mobile operator deals outside of China for Mobile IoT, such as Telia (one million smart meters) and Telstra (three million smart meters)
- New Mobile IoT Deployment Guidelines released in October, detailing the practical experience of 170 commercial network deployments to help new operators to deploy more quickly
- Second 5G IoT Forum was held in October, to get members involved in the new action groups for 2023
- Restarted the IoT Marketing Group in November, with 30 members, to disseminate and promote the outputs of the action groups

Advancing the 5G era

5G has been the fastest adopted technology generation, with over 200 networks already launched across 75 markets, that will support a forecasted 2.2 billion 5G connections by 2025. Eighty 5G standalone networks have been launched in 45 markets, providing enterprises with dedicated and secure connectivity.

As 5G capacity demands are now a near-term planning consideration for mobile operators, the GSMA continued its 5G mmWave Accelerator² Foundry project, holding 5G mmWave Summits at MWC Barcelona and MWC Las Vegas, and publishing ‘5G mmWave Deployment Best Practices’⁴¹ and ‘5G mmWave Coverage Extension Solutions’.

To advance 5G standardisation and take advantage of the 5.5G technology innovation of 3GPP Release 18, the GSMA undertook a Foundry project to provide guidelines on the benefits and requirements for 5G Advanced, publishing the ‘Advancing the 5G Era’⁴² whitepaper, and undertaking real-life case studies in broadband, IoT, XR and VPN, providing evidence for 5G-Advanced benefits.

Open APIs

In 1987, an MoU was signed by 13 countries to drive the standardisation of GSM technology to increase the interoperability and reach of mobile voice communications. That MoU established the GSMA, and the mobile industry has since created the largest ever connectivity platform, with over five billion subscribers and over 10 billion connections.

With the emergence of Web 3.0 and the use cases defined by the Metaverse, in 2022 the GSMA Board again embarked on an MoU with GSMA Open Gateway, to harmonise the interface between the developing virtualised applications – The Cloud – and the connected physical networks – The Earth. The MoU was signed by 20 of the world’s largest and most innovative mobile operators in 2022, to monetise the exposure of network capabilities through open application programmable interfaces (APIs) and the interconnection or federation of these standardized APIs in 2023. The launch of the initiative took place at MWC23 in Barcelona.



Operator Platform for Telco Edge Cloud (TEC)

During 2022, significant progress was made in the Operator Platform Group (OPG) in defining the concept of an interoperable, federated Operator Platform through which operators can offer services that rely on the capabilities of, and within, their networks to enterprise customers. Those enterprises can then use those services to enable or enhance the services they provide to their customers.

While the initial focus of the group was to expose edge compute resources, the two updates in requirements and architecture for the Operator Platform, which were published in 2022, enable operators to offer network-as-a-service (NaaS) capabilities to their enterprise customers, such as quality of service (QoS) controls. These updates also cover more advanced scenarios such as subscribers using applications that rely on services offered through the Operator Platform, while they are on the move. This would require their application to switch to a different edge cloudlet to maintain optimal service or the management of the application’s QoS requirements during handovers from 5G to 4G.

2022 also saw the Operator Platform concept moving beyond defining requirements and

architecture into the specification of the APIs needed for the platform’s interfaces. For the platform’s Northbound interface, this was in cooperation with Linux Foundation’s CAMARA project which launched publicly at MWC22 Barcelona. Operators and telco vendors can work jointly with enterprise customers on the definition of aligned service APIs, to access the telco network’s capabilities and that address the needs of the telco customers. To this end, the Operator Platform API subgroup (OPAG) adopted an operating model allowing them to contribute to these APIs in the CAMARA project.

Next to the APIs for the Northbound Interface, OPAG also defined an API for the East/Westbound interface, enabling the Operator Platform’s federation model, and identified the APIs needed to support the Southbound Interface to the operator’s core network resources to support, manage QoS, and receive mobility triggers.

The Telco Edge Cloud Forum was formed as a body that monitors and guides the developments in the TEC and associated services (IaaS, PaaS, CaaS, NaaS), and aims to promote compatibility, portability, and interconnection of parallel deployments. The TEC Forum currently consists of 24 operators and platform providers.

41. <https://www.gsma.com/futurenetworks/resources/5g-mmwave-deployment-best-practices-whitepaper/>

42. <https://www.gsma.com/futurenetworks/resources/advancing-the-5g-era-benefits-and-opportunity-of-5g-advanced-whitepaper/>

GSMA Services

GSMA Services help operators, device manufacturers, services providers and aggregators do business together more effectively, ultimately leading to better customer experiences. GSMA Services deliver key capabilities to the industry in the areas of device information, SIMs, fraud and security, networks and interconnect and blockchain roaming, all operating 24x7, with high availability.

Some services are based on the accurate and comprehensive collated mobile device data gathered by the GSMA, some rely on the GSMA acting as a data exchange for the common good and other services underpin important interoperable service functions, ensuring the

mobile ecosystem runs smoothly, such as VoLTE testing and remote SIM provisioning. The services portfolio⁴² is in continual expansion and two new services were launched in 2022.

In addition, the GSMA updated the NESAS certification scheme to help increase the resilience of telecommunications assets to cyber-attack. The scheme offers two authorised auditors and seven authorised test labs for scheme members to select from to build resilience in 5G security. The GSMA encourages all operators to stipulate, within procurement processes, that their network equipment suppliers participate in GSMA NESAS.



We have always said that a simple process for the customer, like GSMA eSIM Discovery, is the easiest way.”

Markus Kröber,
Squad Lead, Deutsche Telekom Technik



GSMA Device Database Customer

With Device Database, we can identify the current model that our customers have. Depending on age and type, we target them with an option for upgrading their current model.”

Mireille Muscat, Head of Marketing Melita Ltd, Mobile Network Operator



GSMA Device Database Customer

Device Database provides a rich set of device statistics such as 5G frequency bands, IoT & eSIM capable devices, which helps operators make better informed decisions for launching new services and adopting new technologies.”

Ibtissam Hajjar,
Co-Founder Invigo, Service Provider

BLOCKCHAIN AND ROAMING



Next generation blockchain technology streamlining inter-operator commerce.

GSMA eBusiness Network

A distributed ledger-based telco network enabling inter-operator business processes.

GSMA Node

An all-in-one toolkit to run applications on the GSMA eBusiness Network. Includes API access and hosting.

GSMA Settlement

Streamlined clearing and settlement processes, for speedier wholesale roaming billing.

GSMA Negotiator

Digital budgeting, forecasting, analysis, negotiation and signing of roaming agreements.

DEVICE- INFORMATION



Unique datasets to help optimise networks and service provider delivery.

GSMA Device Database

Direct access to TAC showing device and band performance-based attributes.

GSMA Device Map

TAC data overlaid with 150+ curated attributes, to assist with advanced customer insights.

GSMA TAC Allocation

Industry appointed issuer of TAC for all connected devices to identify unique mobile equipment types.

eSIM



Services to support the global adoption of eSIMs.

GSMA eSIM Discovery

Enable seamless eSIM provisioning with industry standard service.

GSMA eUICC Identity Scheme

The industry appointed issuer of EINs so manufacturers can create their own EIDs.

GSMA eUICC Security Assurance

Principles and procedures to evidence industry security standards are met to instil confidence.

FRAUD PREVENTION AND SECURITY



Tools to reduce traffic fraud and mobile device crime.

GSMA Device Check™

Remove the risk of handling stolen or fraudulent devices, by checking a device's status.

GSMA Device Registry

Be part of the collective fight against device crime. Flag fraudulent and stolen devices.

GSMA IRSF Prevention Services

A global database of international revenue share fraud numbers to enable preventative action.

GSMA Network Equipment Security Assurance Scheme

Facilitates improvements in network equipment security and resilience levels.

NETWORK AND INTERCONNECT



Helping devices, the internet and operator 4G and 5G networks interconnect optimally.

GSMA Interoperability Testing

Tests to demonstrate that networks and devices are VoLTE capable for both non-roaming and roaming scenarios.

GSMA Network Settings Exchange

One location housing all device network settings for OEMs to retrieve so services run reliably.

GSMA PathFinder™

Access 8.6+ billion numbers to route important and timely customer service messages.

GSMA Root DNS

Private inter-operator internet to enable roaming of packet-based network services.

TAC: Type Allocation Code,
EID: eUICC Identifier
EIN: EUM Identification Number

42. <https://serviceshowsite.gsma.com/gsma-services-showcase/>

Chapter 6

Looking ahead

The GSMA starts 2023 stronger from the experience of 2022, continually adjusting expertise and capability for an ambitious and evolving mobile industry, and operating in a challenging world that is constantly in flux.

In 2022, the GSMA operated under a targeted financial investment decision-making model, aimed at ensuring delivery of the financial recovery strategy and building a more resilient organisation for the future. Financial performance in 2022 was strong and the GSMA is ahead of its targets for financial recovery, meaning the organisation enters 2023 with more confidence as to its ability to deliver on members' needs.

Key priorities for 2023 include open APIs, Fair Share, spectrum, the usage gap and VoLTE roaming. The GSMA will also continue to convene the global mobile ecosystem at leading events, providing un-paralleled conditions for public and private sectors to advance large-scale digitisation.

The GSMA operates with the agility and dexterity that will best ensure continued positive impact in support of the mobile industry – combining a unique understanding and ability across Connectivity for Good, Industry Services and Solutions, and Outreach – to advance supportive policy, facilitate investment, unite the industry, extend access, and accelerate the future.

Contacts

Contact the GSMA



GSMA Location	Address
Atlanta	165 Ottley Drive NE, Suite 203, Atlanta, GA30324, USA
Barcelona	Avda. Reina Maria Cristina, s/n, Hall 1, 08004 Barcelona, Spain
Beijing	Level 24, Tower 3, China Central Place, 77 Jianguo Road, Chaoyang District, Beijing, China, 100025
Brussels	Boulevard du Regent, 35, 1000 Brussels, Belgium
Buenos Aires	Av. Del Libertador 6810, 15th Floor, C1429BMO, Ciudad Autónoma de Buenos Aires, Argentina
Delhi	11th Floor, Hindustan Times House, 18-20 KG Marg, Barakhamba, New Delhi, 110001, India
Hong Kong	46/F, Lee Garden One, 33 Hysan Avenue, Causeway Bay, Hong Kong
London	1 Angel Lane, London, EC4R 3AB, UK
Nairobi	Floor 2, Delta Corner Annex, Ring Road, Westlands Lane, PO Box 45651-000100, Nairobi, Kenya
Shanghai	1801, 18/F, Kerry Parkside Offices, 1155 Fangdian Road, Pudong, Shanghai, China, 201204

Auditors	Bankers	Solicitors
KPMG LLP Chartered Accountants 15 Canada Square London E14 5GL	HSBC BANK PLC London Corporate Banking Centre Level 6, 71 Queen Victoria Street London EC4V 4AY, UK	HOMBURGER RECHTSANWÄLTE Prime Tower, Hardstrasse 201, 8005 Zurich, Switzerland



www.gsma.com

GSMA Head Office

1 Angel Lane

London

EC4R 3AB

United Kingdom

Tel: +44 (0)20 7356 0600

Fax: +44 (0)20 7356 0601

