

Pace of Change: Energy, Climate, and Innovation

40th Executive Conference in review March 7-11, 2022 | Houston, Texas

ceraweek.com

Welcome note – CERAWeek 2022

The 40th CERAWeek welcomed over 5,000 participants from 87 countries back to Houston, Texas, for one of the first live, in-person energy industry events in close to three years. Over 900 speakers, 50 ministers, and 680 sessions addressed the theme of "Pace of Change: Energy, Climate, and Innovation." The discussions and sessions were timely and focused on the twin challenges of energy security in the wake of the Ukraine crisis as well as the continued imperatives of the energy transition. Great challenges, opportunities, and work lie ahead for industry, policy, and investment decision-makers.

CERAWeek featured signature achievements this year. Many formal and informal dialogues focused on responses to growing global geopolitical and energy tensions, and market volatility, including an industry pledge to reduce methane to almost zero by 2030, exceeding national mandates; the launch of the new Net Zero Producers Forum that included signatures by ministers from five major producing countries; and a Next Gen session with 350 participants from companies, startups, universities, and CERAWeek Future Energy Leaders sharing ideas and excitement about their future in the energy industry.

CERAWeek's Innovation Agora, our marketplace for ideas, solutions, and connections, included a remarkable assembly of thought leaders and innovators, including 100+ startups. Agora sessions ranged from our new, highly interactive Hydrogen and Carbon Management Hubs to digital transformation to clean power technologies, mobility and the built environment, and diversity, inclusion, and future of the industry workforce.

CERAWeek 2022 underscored the importance and vitality of the CERAWeek community. We are deeply thankful to our speakers, Partners, and participants for their engagement and contributions to making CERAWeek 2022 a success.

Sincerely,

Maniel Yergin

Co-Chairman, CERAWeek Vice Chairman, S&P Global Am Rosefiel

Jamey Rosenfield

Founder & Co-Chairman, CERAWee Senior Vice President, S&P Global

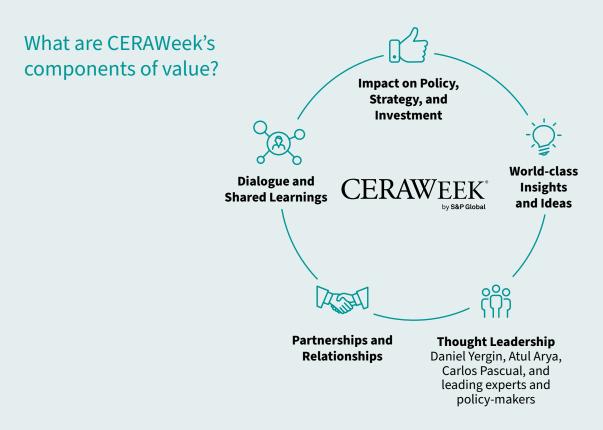
About CERAWeek

Executive Conference

For 40 years, CERAWeek has provided an integrated framework for understanding what's ahead for global energy markets, geopolitics, investment, and technology. Participants include senior executives, government officials, thought leaders, academics, technology innovators, NGOs, and financial leaders.

Our Mission

CERAWeek brings together global leaders to advance new ideas, insights, and solutions to the biggest challenges facing the future of energy and the environment. CERAWeek is widely considered to be the most prestigious annual gathering of CEOs and Ministers from global energy and utilities, as well as automotive, manufacturing, policy, technology, and financial communities.



CERAWeek 2022 Highlights

Speakers		Sessions		Community	
	900+ Speakers	<u>^</u>	680+ Sessions	°°°	5,000+ Delegates
	50 Ministers & Top Officials		40 Private Forums and Summits		1,300+ Companies
8	600+ C-Suite Executives		8 Book Signings		87 Countries
			130 Agora Pods		75 Partners
			40+ Lyceum Labs/ Workshops		100+ Startups
					7 Agora Houses

CERAWeek 2022 Media Coverage

17K+ 108B+ 144 mentions global countries readership \$200M+ 26% 322 advertising accredited international equivalent journalists journalists

"From an energy perspective, this is the best week ever."

— **Hon. Sen Lisa Murkowski,** United States Senator, Alaska "On the diary, the stand-out event will be CERAWeek in Houston, where the biggest names in energy will assess the global turmoil and offer perspectives on what is to come."

— Bloomberg News

CERAWeek 2022 Media



Bloomberg interview with **H.E. Mohammad Sanusi Barkindo,**Secretary General, OPEC



Hon. Lisa Murkowski, United States Senator, Alaska with media



Hon. Joe Manchin, United States Senator, West Virginia & Chairman, U.S. Senate Energy and Natural Resources Committee, walking with reporters



Bloomberg interview with H.E. Chief Timipre Sylva, Minister of State for Petroleum Resources, Federal Republic of Nigeria

Government (select)



Hon. Jennifer M. Granholm, Secretary of Energy, United States Department of Energy



Hon. Iván Duque Márquez, President, Republic of Colombia



Hon. Joe Manchin United States Senator, West Virginia & Chairman, U.S. Senate Energy and Natural Resources Committee



H.E. Tarek El Molla Minister of Petroleum & Mineral Resources, Ministry of Petroleum & Mineral Resources, Egypt



H.E. Magzum Mirzagaliyev Advisor to the President, Republic of Kazakhstan



Hon. Lisa Murkowski United States Senator, Alaska



H.E. Dr. Alparslan Bayraktar Deputy Minister of Energy & Natural Resources, Ministry of Energy & Natural Resources, Turkey



Minister Martín Maximiliano Guzmán Minister of Economy, Ministry of Economy, Argentine Republic



Hon. Hagiuda Koichi Minister of Economy, Trade and Industry, Ministry of Economy, Trade and Industry, Japan



Barkindo Secretary General, Organization of the Petroleum Exporting Countries (OPEC)

H.E. Mohammad Sanusi



Hon. Jonathan WilkinsonMinister of Natural Resources,
Canada

Government (select)



The Right Hon. Greg Hands MP

Minister of State (Minister for Energy, Clean Growth and Climate Change), Department for Business, Energy & Industrial Strategy, Government of the United Kingdom



Hon. Michael S. Regan

Administrator, United States Environmental Protection Agency



Hon. Tom Alweendo

Minister of Mines and Energy, Ministry of Mines and Energy, The Republic of Namibia



H.E. Diego Mesa Puyo

Minister of Mines and Energy, Ministry of Mines and Energy, Colombia



Gerardo Erguiza

Undersecretary, Department of Energy, Republic of the Philippines



H.E Gabriel M. Obiang Lima

Minister of Mines and Hydrocarbons, Equatorial Guinea



Hon. Richard Glick

Chairman, United States Federal Energy Regulatory Commission



Hon. John Kerry, Special Presidential Envoy for Climate, United States



Hon. January Makamba, Minister of Energy, Ministry of Energy, Tanzania



H.E. Dr. Matthew Opoku Prempeh, Minister of Energy, Ministry of Energy, Ghana



Hon. Sonya Savage, Minister of Energy, MLA for Calgary-North-West, Government of Alberta

Oil, Gas & Chemicals (select)



Mike Wirth
Chairman & Chief Executive
Officer, Chevron Corporation



Patrick Pouyanné Chairman of the Board & Chief Executive Officer, TotalEnergies



Ryan LanceChairman & Chief Executive
Officer, ConocoPhillips



Scott Sheffield Chief Executive Officer, Pioneer Natural Resources



Josu Jon Imaz Chief Executive Officer, Repsol



Anders Opedal President & Chief Executive Officer, Equinor



John Hess Chief Executive Officer, Hess Corporation



Gretchen WatkinsPresident, Shell USA Inc.



Felipe Bayón Chief Executive Officer, Ecopetrol S.A.



Amin H. Nasser, President & Chief Executive Officer, Saudi Aramco



Vicki Hollub, President & Chief Executive Officer, Oxy



Darren W. Woods, Chairman & Chief Executive Officer, Exxon Mobil Corporation

Oil, Gas & Energy (select)



Tengku Muhammad Taufik, President & Group Chief Executive Officer, PETRONAS



Oritsemeyiwa Eyesan, Group General Manager Corporate Planning & Strategy, Nigerian National Petroleum Corporation (NNPC)



Jim Fitterling, Chairman & Chief Executive Officer, Dow



Mark Little
President & Chief Executive
Officer, Suncor Energy



Hunter HuntChairman & Chief Executive
Officer, Hunt Energy



Ernie Thrasher
Chief Executive Officer & Chief
Marketing Officer,
Xcoal Energy & Resources



Toby RicePresident & Chief Executive
Officer, EQT Corporation



Mark Lashier President & Chief Operating Officer, Phillips 66



Hajime Wakuda President, Japan Oil, Gas and Metals National Corporation (JOGMEC)



Andy BrownChief Executive Officer,
Galp



Dr. ABC (Bryant) Orjiako Chairman & Co-Founder, Seplat Energy Plc



Nick Dell'Osso President & Chief Executive Officer, Chesapeake Energy Corporation

Thought Leaders (select)



Charif Souki

Executive Chairman of the Board, Tellurian Inc.



Yi Cui

Director of Precourt Institute for Energy, Professor of Materials Science and Engineering, Stanford University



Meghan O'Sullivan

Jeane Kirkpatrick Professor of the Practice of International Affairs & Director of the Geopolitics of Energy Project, Harvard University's Kennedy School



Dr. Ernest Moniz

Founder & Chief Executive Officer, Energy Futures Initiative



Scott Tinker

Angela Stent

Endowed Chair Professor & Director of the Bureau of Economic Geology, Texas University, Austin

Director, Center for Eurasian,

Studies, Georgetown University

& Author of Putin's World: Russia

Against the West and with the Rest

Russian and East European



Peter Rodriguez

Dean, Jones Graduate School of Business, Rice University



Arun Majumdar

Jay Precourt Professor, Professor of Mechanical Engineering, Stanford University



Yukon Huang

Senior Fellow Carnegie Endowment for International Peace and Former World Bank Director for China



Dr. Maria Zuber, Vice President for Research & E. A. Griswold Professor of Geophysics, Massachusetts Institute of Technology and Co-Chair, The President's Council of Advisors on Science and Technology



Walter Isaacson, Leonard Lauder Professor of American History and Values, Tulane University & Author

Finance, Investment & Risk Management (select)



Musabbeh Al Kaabi

Chief Executive Officer, UAE Investments Platform, Mubadala **Investment Company**



Jan Laubjerg

Global Head of Natural Resources, HSBC



Lance Uggla

Chief Executive Officer, BeyondNetZero



Chad Michael

President, Tudor, Pickering, Holt & Co



Jaime Caballero

Chief Financial Officer, Ecopetrol S.A.



Dr. Katharina Beumelburg

Chief Strategy & Sustainability Officer, Schlumberger



Dr. Helen Currie

Chief Economist. ConocoPhillips



Marcel van Poecke

Head & Managing Director, Carlyle International Energy Partners, The Carlyle Group



Rodrigo Araujo

Chief Financial Officer & Investor Relations Officer, Petrobras



Margaux Moore

Head of Energy Transition Research Group, Trafigura





Steve Pattyn

Founder & Chief Investment Officer, Yaupon Capital Management



Jeffrey Currie

Global Head of Commodities Research, Global Investment Research, Goldman Sachs International



John Doerr, Chairman, Kleiner Perkins



David M. Rubenstein, Co-Founder & Co-Chairman. The Carlyle Group



Dr. Pratima Rangarajan, Chief Executive Officer, **OGCI Climate Investments**



Tim Perry

Chairman of Global Energy & Infrastructure Investment Banking and Capital Markets, Credit Suisse

Technology & Business Transformation (select)



Barbara Burger
Vice President, Innovation &
President, Chevron Technology
Ventures, Chevron Corporation



Carri Lockhart
Executive Vice President,
Technology, Digital & Innovation,
Equinor ASA



Giulia ChierchiaExecutive vice president, strategy & sustainability, bp p.l.c.



Ahmad O. Al Khowaiter Chief Technology Officer, Saudi Aramco



John Markus Lervik
Co-Founder & Chief Executive
Officer, Cognite



Lorenzo Simonelli Chairman & Chief Executive Officer, Baker Hughes



Darryl WillisCorporate Vice President, Energy Industry, Microsoft Corporation



Peter Herweck Chief Executive Officer, AVEVA Group plc



Dr. Peter TerwieschPresident, Process Automation &
Member of the Group Executive
Committee, ABB



Adam Selipsky, Chief Executive Officer, Amazon Web Services (AWS)



Dr. Barbara Frei, Executive Vice President, Industrial Automation, Schneider Electric



Olivier Le Peuch, Chief Executive Officer, Schlumberger

LNG, Midstream & Infrastructure (select)



Marco Alverà
Chief Executive Officer,
Snam



Michael Sabel CEO, Executive Co-Chairman & Founder, Venture Global LNG



AK SinghManaging Director & Chief
Executive Officer, Petronet LNG Ltd.



Alan S. ArmstrongPresident & Chief Executive
Officer, Williams



Michael Smith Chairman, CEO & Founder, Freeport LNG



Steven KobosPresident & Chief Executive
Officer, Excelerate Energy



Cynthia Hansen
Executive Vice President &
President, Gas Transmission and
Midstream, Enbridge Inc.



Octávio Simões
President & Chief Executive
Officer, Tellurian Inc.



Kjetel DigreChief Executive Officer,
Aker Solutions



Jack Fusco, President & Chief Executive Officer, Cheniere Energy



Fatema Al Nuaimi, Chief Executive Officer, ADNOC LNG, Abu Dhabi National Oil Company



Dan Brouillette, Former United States Secretary of Energy and President, Sempra Infrastructure

Power & Renewables (select)



Nick Akins Chairman, President & CEO, American Electric Power



Maria Pope
President & Chief Executive
Officer, Portland General Electric



Tim HoltMember of the Executive Board & Labor Director, Siemens Energy



Mario Azar President, Energy & Process Industries, Black & Veatch



John Berger Chairman, President & CEO, Sunnova Energy International



Didier HolleauxPresident, Eurogas & Executive
Vice President, ENGIE



Tania Ortíz MenaPresident for Mexico,
Sempra Infrastructure



H.E. Mohamed Al Hammadi Managing Director & Chief Executive Officer, Emirates Nuclear Energy Corporation



Juan Ignacio Rubiolo Executive Vice President & President, International Businesses, AES Corporation



Patricia Poppe, Chief Executive Officer, PG&E Corporation



Jean-Bernard Lévy, Chairman & Chief Executive Officer, Électricité de France (EDF)



André de Ruyter, Group Chief Executive, Eskom Holdings SOC Ltd.

Climate, Cleantech & Mobility (select)



James D. Farley, Jr., President & Chief Executive Officer, Ford Motor Company



CJ Warner, President & Chief Executive Officer, Renewable Energy Group



RJ Scaringe, Chief Executive Officer, Rivian



Mohamed Jameel Al Ramahi Chief Executive Officer, Masdar



Reinhard Fischer
Senior Vice President, Strategy
for VW NAR and VW Group,
Volkswagen Group of America



María Victoria Zingoni Executive Managing Director, Client and Low-Carbon Generation, Repsol



Fred Krupp
President, Environmental
Defense Fund



David HardyChief Executive Officer, Ørsted
Offshore North America, Ørsted



Bill NewsomPresident & Chief Executive
Officer, Mitsubishi Power Americas



Otto Waterlander Chief Commercial Officer, TES-H2



Tim RomerChief Financial Officer,
Project Canary



Dr. Samir J. SerhanChief Operating Officer, Air
Products & Chemicals, Inc

Metals & Mining and Supply Chain (select)



JB Straubel Founder & Chief Executive Officer, Redwood Materials



Paul Vining
Chairman of the Board,
Westmoreland Mining LLC



Jim GrechPresident & Chief Executive
Officer, Peabody Energy



Jesse Parrish Chief Executive Officer, Blackhawk Mining



Martín Pérez de Solay Managing Director & Chief Executive Officer, Allkem, Ltd.



Benjamin Jones Lead Economist, Anglo American



Jonathan Evans
President & Chief Executive
Officer, Lithium Americas Corp.



Morgan Bazilian
Director, Payne Institute &
Professor of Public Policy,
Colorado School of Mines



Jose W. Fernandez
Undersecretary for Economic
Growth, Energy and the
Environment, United States
Department of State



Richard Adkerson, Chairman of the Board & CEO, Freeport-McMoRan



Bold Bataar, Chief Executive, Copper, Rio Tinto



Julien Rolland, Head of Power and Renewables, Trafigura

The Leadership & People Agenda for Energy & Environment (select)



Amanda Eversole

Executive Vice President & Chief Operating Officer, American Petroleum Institute



Gavin Rennick

Vice President, Human Resources, Schlumberger



Art Dubose

Executive Vice President, Chief Human Resources Officer, Sunnova Energy International



Sunita Narain

Director General, Centre for Science and Environment



Florencia Garrido

Vice President & Lead Counsel, Siemens Energy



Julie Sweet

Chair & Chief Executive Officer, Accenture



Cheryl D'Cruz-Young

Senior Client Partner, ESG & CPO COE, Korn Ferry



Bernard Looney, Chief executive officer, bp p.l.c.



Geraldine Richmond, Undersecretary for Science and Innovation, United States Department of Energy

More Energy, Lower Emissions (35 sessions)

How will the industry respond to the challenge of helping achieve COP26 commitments to net-zero emissions? What are the fundamental shifts needed in investment, regulatory policy, and technology? What are the fuels of the future and how will centers of production and demand evolve? What role will natural gas play in the energy transition?

Sessions included:

- Africa: Power to the people
- Bringing Green Hydrogen to Fuels Markets
- Company Strategies: From lower carbon to net-zero carbon
- Delivering on Methane
- Downstream Strategies Beyond Crude & Oil Products
- Erupting Conflicts & Green Upheaval: Where energy transition & geopolitics collide
- Eurasia's Hydrocarbon Producers & the Energy Transition
- Europe Taxonomy & Carbon Border Taxes
- Frontiers for Energy Industry Innovation
- Future of the Oil & Gas Industry
- Global Gas Markets: Rising to the challenge
- Global Pathways to Net Zero & Beyond



Future of the oil and gas industry with Daniel Yergin (Chair), Vice Chairman, S&P Global and Ryan Lance, Chairman & Chief Executive Officer, ConocoPhillips

- Hard-to-abate Sectors: Role of hydrogen & CCUS
- How Are Low-carbon Fuel Standards Delivering?
- Innovation & the Future of Gas
- Is Offshore Wind the New Juggernaut?
- Large-scale Renewables: What are the emerging issues?
- Making the Connection: Renewables & the grid
- Next-gen Biofuels: What's the potential?
- Nuclear & a Low-carbon World
- Partnerships in the Asia Energy Transition
- Pathways for Canadian Oil Sands in a Decarbonizing World
- Pathways for Industrial Transformation

- Procuring Clean Electricity at Scale
- Reimagining the Energy Future
- Reinventing the Downstream
- Role of Gas in Decarbonization
- Scaling-up Carbon Sequestration: CCUS hubs
- Solar Power: Maintaining the growth curve?
- Strategies to Get to Net Zero
- Sustainability & Circularity: The changing world of chemicals & plastics
- The Dual Challenge: Economic growth & energy transition
- The Future of Upstream: Charting the course
- The Oil & Gas Field Reimagined: The impact of technology
- Will Hydrogen Deliver—and When?

Competitive Landscape and Energy Transition

(50 sessions)

What strategies are being adopted and how will environmental imperatives alter the competitive playing field and structure of the energy industry? How will the industry continue to invest in the supplies needed for the energy demands of post-pandemic economic growth and geopolitical disruptions while meeting low-carbon objectives?

Sessions included:

- Africa Upstream: Where will the investment go?
- An Era of Advantaged Petroleum

for the energy transition

- Asia Gas Market Liberalization: Speed versus stability
- Balancing Act: Latin American oil & gas future?
- Big Shovels: Copper & commodities required
- Building Energy Infrastructure for Tomorrow
- · Can Gas Compete in Latin America?
- Challenges for Security, Development & Sustainability
- Changing the Fuel Mix: Energy transition or energy addition?
- Changing Upstream Strategies for the Future
- Coal in the Global Energy Mix
- Company Strategies, Climate Disclosures & ESG Performance
- Creating Reliable & Resilient Power Markets & Systems
- Developing Low-carbon Generation
- Distributed Energy: Balancing flexibility, reliability & resilience
- Driving Transport's Future



Oll & Gas Company Models for the Future with Dan Pratt, Vice President, S&P Global; Oritsemeyiwa Eyesan, Group General Manager Corporate Planning & Strategy, Nigerian National Petroleum Corporation (NNPC); Armando Zamora, President, National Hydrocarbons Agency (ANH); Mark Gunnin, President, Hunt Energy; Tim Perry, Chairman of Global Energy & Infrastructure Investment Banking and Capital Markets, Credit Suisse; and Mustafa Sanalla, Chairman, National Oil Corporation of Libya

- Electric Power: Seeking opportunities in a growth business
- · Electrification of Everything: How far can it go?
- Energy Security in Europe
- Energy Transition: Smooth or turbulent?
- Energy, Climate Change & ESG: Navigating the future
- Evolving E&P Models & Opportunities
- EVs Moving into the Fast Lane: What's the impact on oil?
- Global Gas & Power Strategies
- Global LNG: Where in the cycle?
- Global Oil & Gas Production: A new geography?
- How Are Digital Technologies Accelerating Decarbonization?
- How to Manage Carbon: New business models
- Luncheon & Dialogue with RJ Scaringe, Chief Executive Officer, Rivian
- Luncheon & Dialogue: Energy Markets in Upheaval
- Ministerial Plenary
- Navigating the Risks & Rewards in Latin American Power Markets
- New Business Strategies for Net Zero

- New Configurations: America's gas & power in net zero
- North America Shale: Balancing growth & investor returns
- North American Gas Market Outlook: More volatility ahead?
- OII & Gas Company Models for the Future
- · Power Generation for the Future
- Power Strategies for the 21st Century
- Reflections—Pace of Change: Energy, Climate and Innovation
- Reinventing Energy
- Repowering Texas' Energy Future
- Special Dialogue: Asia's Energy Transition & the Role of Gas
- Strategies for a Low-carbon Future
- Technologies for Zero Carbon
- The People Agenda for the Energy Transition
- Unlocking Africa's Oil & Gas Resources
- Upstream Strategies for the Energy Transition
- Valuing Flexibility & Firm Capacity in the Power System: Battery, gas, or others?

Geopolitics and Energy Markets (29 sessions)

The war in Ukraine, recent election outcomes, the pandemic, growing nationalism, cross-border carbon taxes, and trade friction all create considerable risks and uncertainties for global energy. What is the emerging new map of geopolitics? The US–China relationship, central to the global economy, remains tense. How will growing rifts impact energy trade, risk management, and capital flows?

Sessions included:

- Africa's Energy Future: Transition—How & to what?
- Assuring Stability in Energy Markets
- Atlantic Basin Coal: Supply & demand challenges
- Canada's Energy Future
- Climate & Energy Leadership Dialogue
- Electric Power: Shock to systems in transition
- Energy Industry Post-COP 26: From what to how?
- Energy Markets in Turmoil: Disruptions, blackouts & price spikes
- Focus on Egypt: Forging partnerships for the energy transition
- Future of Global Economy



Geopolitics: World in Turmoil with Carlos Pascual (Chair), Senior Vice President, Global Energy, S&P Global; Angela Stent, Author of *Putin's World: Russia Against the West and with the Rest*, Director, Center for Eurasian, Russian and East European Studies at Georgetown University; Meghan O'Sullivan, Jeane Kirkpatrick Professor of the Practice of International Affairs and Director of the Geopolitics of Energy Project, Harvard Kennedy School; Yukon Huang, Former World Bank Director for China and Senior Fellow, Carnegie Endowment for International Peace; and Frederick Kempe, President & Chief Executive Officer, Atlantic Council

- Geopolitics: World in turmoil
- How Fast Can Innovation Scale?
- How Governments & Businesses Align on Net Zero
- Hydrogen & Renewable Gas: How competitive & when?
- India's Energy Future: Multiple transitions
- Luncheon & Keynote Address with Hon.
 Jennifer M. Granholm, Secretary of Energy,
 United States Department of Energy
- Managing Hydrocarbon Emissions Across the Value Chain
- Middle East Geopolitics: Regional prospects in a changing energy landscape

- Ministerial Dialogue: Energy Access, Energy Transformation—Latin American Strategies
- Oil Market Outlook: Turbulence or stability?
- Regulatory Dialogue
- Resilience, Climate & the City of the Future
- Roadmaps for Energy Transition
- Sanctions, Cyber & the Ukraine Crisis
- Special Address with Hon. Iván Duque Márquez, President, Republic of Colombia
- Thermal Assets: Supply gap for power generation?
- US Energy Policy & the Climate Opportunity
- What's Ahead in Washington?

Supply Chains (4 sessions)

The post-pandemic economic recovery, combined with the requirements of scaling renewables and emerging netzero technologies, are placing great focus on supply chains. How will supply chains adjust and scale, and what are the risks of disruption?

Sessions included:

- Battery Supply Chain: Meeting the electrification challenge
- Renewable Ambitions: Can supply chains deliver?
- Solar & Wind Supply Chain Disruptions: Increasing costs?
- The Great Supply Chain Disruption



Renewables Ambitions: Can supply chains deliver? with Eduard Sala de Vedruna (Chair), Vice President, Climate & Sustainability, Clean Energy Technology, S&P Global; Helaina Matza, Director, Office of Energy Transformation, United States Department of State; Tim Holt, Member of the Executive Board & Labor Director, Siemens Energy; Georgios Papadimitriou, Chief Operating Officer, Renewables & New Businesses, Galp

"CERAWeek brings the energy world together and remains unprecedented in terms of reach and caliber."

-CBC

"Best gathering of senior energy executives anywhere on the planet."

— **Hunter Hunt,** Chairman & Chief Executive Officer, Hunt Energy, LLC

"...the most important and insightful conference in the energy industry."

— **Thomas Leurent**, Chief Executive Officer, Akselos



JB Straubel, Founder & Chief Executive Officer, Redwood Materials

Financing the Energy Future: The capital transition (12 sessions)

Recalibrating the world's energy system to meet net-zero targets and to ensure energy production will meet demand will require trillions of dollars of investment. These investment needs come as the global economy faces a fragile post-pandemic recovery and growing ESG demands. How will investors navigate these risks and opportunities?



The Dual Challenge: Economic growth & energy transition with Atul Arya (Chair), Senior Vice President & Chief Energy Strategist, S&P Global; Sunita Narain, Director General, Centre for Science and Environment (CSE); Maynard Holt, Founder & Chief Executive Officer, Veriten; and Jose W. Fernandez, Undersecretary for Economic Growth, Energy, and The Environment, United States Department of State

"...an important gathering of folks from every aspect of the energy sector."

 Hon. John Kerry, Special President Envoy on Climate, United States

"...one of the largest and most influential global energy forums."

— Xinhua

Sessions included:

- Aftershock: Financing the European energy transition
- · Carbon Offsets: What's next?
- Financial Innovation's Growing Role in Climate & Cleantech
- Financing the Transition

- Funding Future Oil & Gas Supply: Preemptive underinvestment?
- Future of Carbon Markets After COP26
- Future of North American Oil & Gas Supply: Returns, growth, or both?
- Green Capital: Finding value in the energy transition

- How Is the Capital Transition Changing the Energy Business?
- Luncheon & Dialogue with David M.
 Rubenstein, Co-Founder & Co-Chairman,
 The Carlyle Group
- Mapping the Capital Transition
- The Future of Gas

Workforce of the Future: Fostering diversity, equity, inclusion and next generation skills (30 sessions including special programs)

Attracting and retaining talent will be a critical source of competitive advantage. What skills are needed for the energy industry of the future? How can the industry attract next-generation workers? How can industry remain in-step with society's evolving values on ESG, race, diversity, and inclusion?

Right: Advancing Diversity, Equity & Inclusion in the Energy Industry



Amanda Eversole, Executive Vice President & Chief Operating Officer, American Petroleum Institute (API)



Florencia Garrido, Vice President & Lead Counsel, Siemens Energy



Gavin Rennick, Vice President, Human Resources, Schlumberger



Art Dubose, Executive Vice President, Chief Human Resources Officer, Sunnova Energy International

Sessions included:

- Advancing Diversity, Equity & Inclusion in the Energy Industry
- Dinner & Dialogue: Women in Energy
- Future Energy Leaders Program
- Professional Development Program
- The People Agenda for the Energy Transition
- · Women in Energy Program



Future Energy Leaders Breakfast with **Kenneth Medlock**, Senior Director, Center for Energy Studies, Baker Institute for Public Policy, Rice University

Special Initiatives at CERAWeek

Clean Energy Demand Initiative Letter of Intent agreement signing ceremony

The Philippines Department of Energy welcomed the partnership with US companies with the signing of the Letter of Intent (LOI) under the Clean Energy Demand Initiative (CEDI). Facilitated by the US Department of State headed by Senior Bureau Official Harry Kamian, CEDI helps advance clean energy procurement to accelerate the energy transition in the Philippines. CEDI initiative partner companies include Amazon, Apple, IKEA, Ralph Lauren, Lululemon, RIFE International, WeWork, and others.



Helaina Matza, Director, Office of Energy Transformation, US Department of State; Harry Kamian, Senior Bureau Official & Principal Deputy Assistant Secretary, Bureau of Energy Resources, US Department of State; Miranda Ballentine, Chief Executive Officer, Clean Energy Buyers Alliance; a virtual stream for the CEDI partner companies to witness the ceremony; Gerardo Erguiza, Undersecretary, Department of Energy, Republic of the Philippines; Michael O. Sinocruz, OIC-Director - Energy Policy & Planning Bureau, Philippines Department of Energy; and Marco Angelo Felix Lopez, Vice Consul, Philippine Consulate General in Houston

"I was blown away by the content, attendee list and energy."

— **Rebecca Kruger,** Managing Director, Goldman Sachs

"CERAWeek by S&P Global draws Big Oil CEOs, Cabinet officials, foreign energy ministers, tech and power giants and everything in between."

Special Initiatives at CERAWeek

Mining & Supply Chain discussions

Mining executives joined the net-zero carbon and supply chain conversations at CERAWeek as part of the Copper and Critical Minerals Initiative.

Copper is "the oxygen of decarbonization."

— **Bold Bataar,** Chief Executive, Copper, Rio Tinto



Big Shovels: Copper & commodities required for the energy transition with **Daniel Yergin, Vice** Chairman, S&P Global; **Richard Adkerson,** Chairman of the Board & CEO, Freeport-McMoRan; **Julien Rolland,** Head of Power and Renewables, Trafigura; and **Bold Bataar,** Chief Executive Officer, Copper, Rio Tinto

Aiming for Zero Methane Emissions Initiative

The Oil and Gas Climate Initiative (OGCI) launched Aiming for Zero Methane Emissions Initiative, supported by 12 of the world's biggest oil & gas producers (Aramco, bp, Chevron, CNPC, Eni, Equinor, ExxonMobil, Oxy, Petrobras, Repsol, Shell, and TotalEnergies). The Initiative calls for an all-in approach to reach near-zero methane emissions from the companies' operated oil & gas assets by 2030.

First CERAWeek by S&P Global

S&P Global completes merger with IHS Markit, creating a leading information services provider with a unique portfolio of highly complementary assets.

CERAWeek 2022 was the first major global gathering of the combined company.



Saugata Saha, President, Commodity Insights, S&P Global, on stage at CERAWeek 2022.

Special Initiatives at CERAWeek

Partnership Launches

Energy Ministers from Canada, Qatar, and the United States introduced the **Net-Zero Producers Forum** (NPF) at CERAWeek. Collectively representing 40% of global oil and gas production, the Net-Zero Producers Forum consisting of Canada, Norway, Qatar, Saudi Arabia, and the United States, are cooperating to develop pragmatic net-zero emission strategies.

"The world's biggest gathering of energy industry leaders"

- Reuters

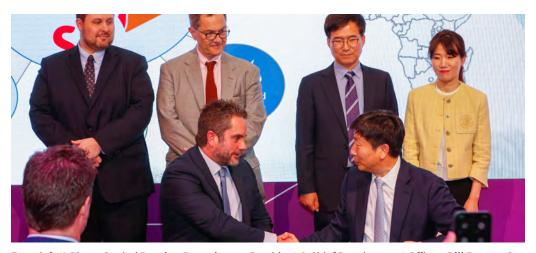
8 Rivers and SK Group held a joint venture agreement signing ceremony. This agreement represents one of the largest single private investments in a carbon capture solutions provider to date.

"It is so great that CERAWeek is back doing what we all need to do, talking about the important issues."

- Hon. Daniel Sullivan, United States Senator, Alaska



Hon. Jonathan Wilkinson, Minister of Natural Resources, Canada; **Hon. Jennifer M. Granholm,** Secretary of Energy, United States Department of Energy; and **H.E. Saad Sherida Al-Kaabi,** Minister of State for Energy Affairs, Qatar



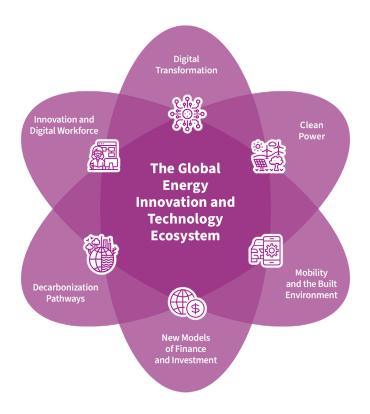
From left: 8 Rivers Capital **Damian Beauchamp**, President & Chief Development Officer; **Bill Brown**, Co-Founder & Executive Chairman; and **Cameron Hosie**, Chief Executive Officer; SK Inc. Materials: **Young Wook Lee**, President & CEO, SK Inc. Materials; **Ki Seon Park**, Vice President; and **Eun Kyung Sung**, Vice President, Investment & Environment

Innovation Agora @ CERAWeek

The Innovation Agora @ CERAWeek fosters energy innovation and advances solutions to the world's greatest energy and sustainability challenges. The Agora is a marketplace for ideas, dialogue, new experiences, and connections. This exciting community of startups, technologists, investors, academics, energy companies, and government officials are all dedicated to shared learning and exploration.

The program features unique formats, interactive dialogue, and conversations about the global energy innovation and technology ecosystem.

Agora Studios and Voices of Innovation included thought leaders, executives, and technologists driving change in the industry.









ooo 34 partners

Decarbonization Pathways (70 sessions*)



Shifting Strategies in CCS: Implementing the "Hub" concept with Carolyn Seto (Chair), Director, Upstream Technology & Innovation, S&P Global; Rod Christie, Executive Vice President, Turbomachinery & Process Solutions, Baker Hughes; Chris Powers, Vice President, Carbon Capture, Utilization, & Storage (CCUS), Chevron New Energies; and Jane Norman, Chief of Staff & Vice President of Strategy, Santos Ltd.



Advancing Energy Innovation: Growth of the ecosystem with Robin Millican, Director, U.S. Policy & Advocacy, Breakthrough Energy; Barbara Burger, Vice President, Innovation & President, Chevron Technology Ventures, Chevron Corporation; Emily Reichert, Chief Executive Officer, Greentown Labs; and Atul Arya (Chair), Senior Vice President & Chief Energy Strategist, S&P Global

Sessions included:

- Achieving Net Zero Through Biomass Fuels: Wood, crops, manure?
- Advancing Energy Innovation: Growth of the ecosystem
- Breakthroughs in Naturebased Solutions: Afforestation & reforestation
- Carbon Management: Building net zero
- Carbon Markets: Working with offsets
- Climate Advocates & the Energy Industry: Finding common ground

- Decarbonization Challenges & Technology Pathways
- Decarbonizing Industry: Critical technologies for energy transition
- Digital & Emerging Technologies & the Low-carbon Future
- Direct Air Capture: What will it take to scale up enough?
- Driving Low-carbon Innovation: Criteria for investing in earlystage companies
- Energy Transition: Big ambitions, hard realities

- Globalizing CCUS Deployments
- How Can Al Applications Keep the Grid Stabilized?
- How to Accelerate the Energy Transition Across Multiple Sectors
- Meeting the Methane Challenge: Incorporating measurement methods
- Natural Carbon Sinks: Plants, oceans, soil
- Shifting Strategies in CCS: Implementing the "Hub" concept

- Sustainable Transport: Growing biofuels & green fuels production
- Technologies to Reduce Scope 1 & Scope 2 Emissions in Downstream & Midstream

Clean Power (80 sessions*)



Nuclear's Role in Achieving Net Zero with **Daniel B. Poneman**, President & Chief Executive Officer, Centrus Energy Corp.; **Maria Korsnick**, President & Chief Executive Officer, Nuclear Energy Institute; and **John Wagner**, Laboratory Director, Idaho National Laboratory

Sessions included:

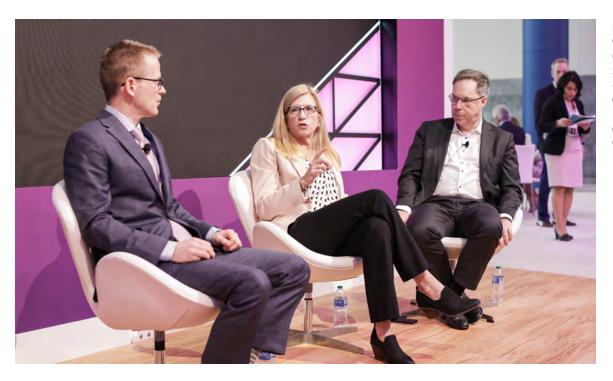
- Advanced Nuclear Technologies Leading to New Interest
- Advancements in Wind Technology: Increasing efficiency
- Can Hydrogen Be the Next Diesel?
- Developing the Hydrogen Value Chain
- Direct Air Capture: What will it take to scale up enough?
- Driving Low-carbon Innovation: Hot research topics
- Electric Grid Reliability & Resiliency: Climate, planning & technology
- Electrifying Ocean Operations:
 Sea floor energy systems

- Energy Innovation Pioneers— Scaling the Mountain: Accelerating development of zero-carbon energy systems for deep decarbonization
- Establishing a Global Hydrogen Marketplace
- European Hydrogen Meetup
- Exploring Industry Collaboration for Hydrogen Development
- · FCEVs & BEVs: The race to net zero
- Financing the Hydrogen Value Chain: From millions to billions
- From Hydrocarbon to Hydrogen?
- Fusion: Closer than you think
- Green Hydrogen: A road map to low costs & low carbon
- Gulf Coast Hydrogen

- H2 Collaboration & Partnerships
- Hot Stuff: Methane pyrolysis
- How Can Public Innovation Funding Supercharge Decarbonization?
- Hydrogen Hub Wrap Up: Talking Heads
- Hydrogen Production Costs: What's on the other side of the rainbow?
- Is Hydrogen a Viable Longduration Storage Solution?
- Latin American Meetup
- Leveraging H2 Brownfield Infrastructure: A potential breakthrough for the US Gulf Coast

- Loco-motion: The race to power planes, trains & trucks with hydrogen
- Municipal Hydrogen: Creating city hydrogen hubs
- Nuclear: Ready to power the hydrogen economy
- Nuclear's Role in Achieving Net Zero
- Pipelines to Prosperity
- Policies Needed to Support Development of a Hydrogen Economy
- Powering Data Centers with Hydrogen
- Practical Lessons Learned in Measuring & Reducing Methane in O&G
- Renewable Power, Electrolyzer Technology & Storage
- Saving California Sunshine:
 Storing hydrogen underground
- Scaling-up Hydrogen: The race to the cheapest green hydrogen
- Technologies to Reduce Scope 1 & Scope 2 Emissions in Downstream & Midstream
- The Race to a Hydrogen Export Economy
- Transporting Hydrogen: How mobile is it?

Mobility, Hydrogen & the Built Environment (24 sessions*)



FCEVs & BEVs: The race to net zero with Randy MacEwen, President & Chief Executive Officer, Ballard Power Systems; Amy Adams, Vice President – Fuel Cell & Hydrogen Technologies, Cummins Inc.; and Holger Lösch, Deputy Director General & member of the Executive Board, Federation of German Industries (BDI), and Chair, Industrial Affairs Committee

Sessions included:

- Automating the Built Environment: Maximizing efficiency, costs & emissions
- Cities Leading the Way: Climate challenges facing mayors & local governments
- Consumer Behavior & Electric Vehicles
- Electric or Eclectic Mobility?
 Why some believe that net zero has just saved the combustion engine

- Electrified Fleets: The real opportunity to enable the mobility & energy transition?
- Evolution of Smart Cities: Autonomy increasing with intelligence
- FCEVs & BEVs: The race to net zero
- Financing the Hydrogen Value Chain: From millions to billions
- Growing Power Infrastructure: Electrification of cities & public transport

- Loco-motion: The race to power planes, trains & trucks with hydrogen
- Municipal Hydrogen: Creating city hydrogen hubs
- Sustainable Transport: Growing biofuels & green fuels production
- The Challenges Facing EV Charging Infrastructure in the Decade Ahead
- Transporting Hydrogen: How mobile is it?

"Unparalleled insight on the state and direction of the energy business."

Rob Fast, Chief Technology
 Officer, Hess Corporation

New Models of Finance and Investment (10 sessions*)



Innovations in Clean Tech Financing: Are investors ready & willing? with Peter Gardett (Chair), Executive Director, Climate & Cleantech, S&P Global; Juliana Garaizar, Head of Houston Incubator & Vice President, Innovation, Greentown Labs; Deepa Poduval, Vice President & Global Advisory Leader, Black & Veatch; and Stephen Pang, Managing Director, TortoiseEcofin

Sessions included:

- Alternative Financing Models for Clean Tech Energy Transition
- Driving Low-carbon Innovation: Criteria for investing in earlystage companies
- ESG Small Group Workshop
- Financing the Hydrogen Value Chain: From millions to billions
- How Can Public Innovation Funding Supercharge Decarbonization?

- Innovations in Clean Tech Financing: Are investors ready & willing?
- Leaving No One Behind: Innovative solutions for a just energy transition
- Through the Energy Transition Capital Stack: Venture, debt, equity, asset finance & beyond

"...an opportunity to peer into and sometimes touch the future."

— **Ashley Gilmore**, Co-Founder and Chief Executive Officer, Tracts

Digital Transformation (50 sessions*)



How Can AI Applications Keep the Grid Stabilized? with Michael Nolan (Chair), Consulting Director, S&P Global; Danilo Moresco, Global Vice President, Power Generation & Water, ABB; Laura Anderson, Senior Vice President – Service Controls & Digitalization, Siemens Energy; and Yair Amir, Professor of Computer Science, Johns Hopkins University



Quantum Computing: Solving big problems in energy transition with Bill Vass, Vice President of Engineering, Amazon Web Services (AWS)

Sessions included:

- Advancing Energy Innovation: Growth of the ecosystem
- Al in the Energy Production Process: Unlocking energy transition opportunities
- Collaboration & Partnerships: Critical path to energy transition
- Cybersecurity in the Energy Ecosystem: Lessons learned

- Digital & Emerging Technologies & the Lowcarbon Future
- Digital Technology's Impact on the Energy Transition
- Digital Twins: From hype to gamechanger technology?
- Digitalization: Evolution or revolution?

- Evolution of Robotic Technologies in Energy Systems
- Frontiers of AI: What's New at Johns Hopkins?
- Growth & Success of Blockchain in Oil & Gas Supply Chains
- How Can Al Applications Keep the Grid Stabilized?
- Journey to the Edge: The need for critical real-time processing
- Quantum Computing: Solving big problems in energy transition
- View from the Ivory Tower: Role of universities in advancing decarbonization technologies

^{*}including sessions in Agora Pods, Hubs, and the Lyceum.

Innovation and Digital Workforce (48 sessions*)



Competing for Young Talent in a World of Energy Transition with Minuri De Silva (Chair), Global Research Analyst, Upstream Energy, S&P Global; Deanna Jones, Chief Human Resources Officer, Baker Hughes; Jessica Van Singel, Managing Director, Strategy & Consulting, Talent & Organization, Energy, Accenture; Meerah Al Mulla, Senior Production Engineer, Abu Dhabi National Oil Company (ADNOC)

Sessions included:

- · Robotics: Lessons from the sea
- "Next Gen" Future Energy Leaders Town Hall
- Accelerating Progress:
 Diversity, equity & inclusion in executive leadership
- Ally Energy | Powering the Energy Workforce Using Technology
- Diversity Dashboard

- Innovation in Plastics Recycling: Chemical vs. mechanical
- New Business Models for Bringing Climate Tech Solutions to Scale
- Scaling New Energy Minerals: Supply chains & technologies
- What's New at Rice University?

"...a great place to learn and make relevant connections"

— **Colin Ardern,** Co-Founder & Chief Executive Officer, Applied Bioplastics

Agora Voices of Innovation

Journeys and Insights by Pioneers and Thought Leaders



Deepak Bagla, Managing Director & Chief Executive Officer, Invest India



Julie Sweet, Chair & Chief Executive Officer, Accenture



Ahmad O. Al Khowaiter, Chief Technology Officer, Saudi Aramco



Carol Anne Clayson, Senior Scientist & Associate Director, Research Strategies, Woods Hole Oceanographic Institution (WHOI)



Hon. Jason Kenney, Premier, Province of Alberta, Canada



David Victor, Professor of Innovation & Public Policy, School of Global Policy & Strategy, University of California, San Diego (UCSD)



Dr. Ernest Moniz, Founder & Chief Executive Officer, Energy Futures Initiative



Lord John Browne of Madingley, Senior Advisor, General Atlantic and Chairman, BeyondNetZero



Jigar Shah, Director, Loan Programs Office, United States Department of Energy

Agora Voices of Innovation



Kara Hurst, Vice President, Worldwide Sustainability, Amazon



Lorenzo Simonelli, Chairman and Chief Executive Officer, Baker Hughes



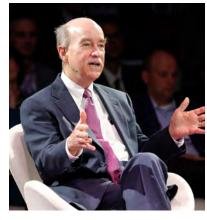
Sunita Narain, Director General, Centre for Science and Environment



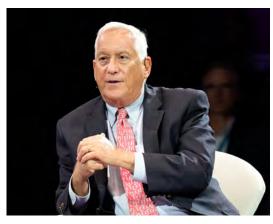
Yi Cui, Director of Precourt Institute for Energy, Professor of Materials Science and Engineering, Stanford University



Vijay Swarup, Vice President, Research & Development, ExxonMobil Research and Engineering Company



Robert Armstrong, Director, MIT Energy Initiative; Chevron Professor of Chemical Engineering, Massachusetts Institute of Technology



Walter Isaacson, Leonard Lauder Professor of American History and Values, Tulane University & Author

Agora Hydrogen Hub

Dedicated Hydrogen area featuring 35 interactive presentations and discussions, meet-ups, receptions, and more

Sessions included:

- Can Hydrogen Be the Next Diesel?
- Developing the Hydrogen Value Chain
- Establishing a Global Hydrogen Marketplace
- Exploring Industry Collaboration for Hydrogen Development
- FCEVs & BEVs: The race to net zero
- Financing the Hydrogen Value Chain: From millions to billions
- From Hydrocarbon to Hydrogen?
- Green Hydrogen: A road map to low costs & low carbon
- Gulf Coast Hydrogen
- H2 Collaboration & Partnerships
- Hot Stuff: Methane pyrolysis
- Hydrogen Hub Reception: Hosted by Mitsubishi Heavy Industries
- Hydrogen Hub Wrap Up: Talking Heads
- Leveraging H2 Brownfield Infrastructure: A potential breakthrough for the US Gulf Coast
- Loco-motion: The race to power planes, trains & trucks with hydrogen
- Municipal Hydrogen: Creating city hydrogen hubs

- Nuclear: Ready to power the hydrogen economy
- · Pipelines to Prosperity
- Policies Needed to Support Development of a Hydrogen Economy
- Powering Data Centers with Hydrogen
- Renewable Power, Electrolyzer Technology & Storage
- Saving California Sunshine: Storing hydrogen underground
- Scaling-up Hydrogen: The race to the cheapest green hydrogen
- The Race to a Hydrogen Export Economy
- Transporting Hydrogen: How mobile is it?
- Who Let the [Robot] Dogs Out?
- Meet the Mayors
- Meetups on:
 - » California Regional Hydrogen
 - » Climate Advocates & the Energy Industry
 - » Financing Hydrogen
 - » Latin American
 - » European Hydrogen
 - » Car Enthusiasts



Establishing a Global Hydrogen Marketplace with Alex Klaessig (Chair), Senior Director, Hydrogen & Renewable Gas Forum, S&P Global; Bill Elrick, Executive Director, California Fuel Cell Partnership; Alex Barnes, Senior Advisor, S&P Global; and Everett Anderson, Vice President, Advanced Product Development, Nel Hydrogen



Renewable Power, Electrolyzer Technology & Storage with Catherine Robinson (Chair), Research & Analysis Executive Director, S&P Global; Naomi Boness, Managing Director, Stanford Natural Gas Initiative & Co-Managing Director, Stanford Hydrogen Initiative, Stanford University; Jason Stevens, Director of Hydrogen Project Development & Execution, North America, EDP Renewables; and Raffi Garabedian, Co-Founder & Chief Executive Officer, Electric Hydrogen

Agora Carbon Management Hub

Dedicated Carbon Management area featuring 23 interactive presentations and discussions, meet-ups, receptions, and more

Sessions included:

- A Conversation with Dr. Vanessa Chan, Chief Commercialization Officer & Director, Office of Technology Transitions, United States Department of Energy
- Breakthroughs in Nature-based Solutions: Afforestation & reforestation
- Carbon Management Hub Reception
- Carbon Management Hub Reception: Hosted by 8 Rivers
- Carbon Management: Building net zero
- Carbon Markets: Working with offsets
- Climate Advocates & the Energy Industry: Finding common ground
- Direct Air Capture: What will it take to scale up enough?
- Driving Low-carbon Innovation: Criteria for investing in earlystage companies
- Energy Transition: Big ambitions, hard realities

- Globalizing CCUS Deployments
- How to Accelerate the Energy Transition Across Multiple Sectors
- Natural Carbon Sinks: Plants, oceans, soil
- · Robotics: Lessons from the sea
- Sustainable Transport: Growing biofuels & green fuels production
- · Meetups with:
 - » Ahmad Al Khowaiter on Carbon Management
 - » Alliance to End Plastic Waste Meet & Greet
 - » David Victor on Carbon Management
 - Hon. Minister Sonya
 Savage on Managing
 Alberta's Energy
 Resources
 - » Jules Kortenhorst on the Speed of the Energy Transition
 - » Steven Koonin on Carbon Management



How to Accelerate the Energy Transition Across Multiple Sectors with Paul Markwell, Senior Associate, S&P Global; Varun Sivaram, Senior Director for Clean Energy and Innovation, US Special Presidential Envoy for Climate John Kerry; and Jules Kortenhorst, Chief Executive Officer, RMI



Carbon Management: Building net zero with Cameron Hosie, Chief Executive Officer, 8 Rivers

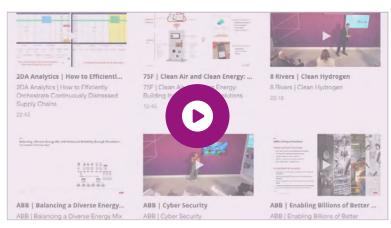
"...unequivocally very high-quality content, with superb networking opportunities."

— Martin J. Houston, Vice Chairman & Co-Founder, Tellurian Investments Inc.

Agora Pods

Deep-dive presentations case studies, startup "pitches" in a close-up, relaxed setting

130 Agora Pods featuring startups and new technology



Click to view Agora Pods video gallery 🗹



Sunnova | How Decentralization Creates a More Reliable & Resilient Grid with Meghan Nutting, Executive Vice President, Government & Regulatory Affairs, Sunnova



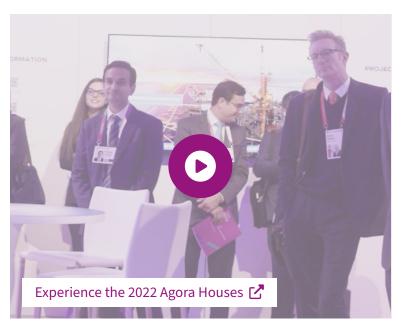
Rice University | A Systems Perspective for the Energy Transition with Dr. Rachel A. Meidl, LP.D., CHMM, Fellow in Energy & Environment, Rice University's Baker Institute for Public Policy



Iraya Energies | Disruptive Technologies, Convergent Solutions: Al's role in the energy transition with Nina Marie Hernandez, Chief Executive Officer, Iraya Energies

Agora Partner Houses

A glimpse of what's ahead by the world's preeminent energy and technology companies. Houses offer immersive experiences and connections.







aramco



Agora Partner Houses (continued)











Agora Partner Houses (continued)

By the numbers

7 Partner Houses

54 private tours

38 VIP tours

11+
government
officials

6,000+ attendee exposure

Government Officials House Visitations

- Ambassador of France to the United States, Ambassador Philippe Étienne
- Minister of Mines, Petroleum & Energy and Delegation, Cote d'Ivoire, Hon. Thomas Camara
- Department of Energy, United States, Dr. Vanessa Chan
- · Minister of Economy and Delegation, Argentina, Minister Martín Maximiliano Guzmán
- Principal Secretary, Ministry of Petroleum & Mining, Kenya, Hon. Eng. Andrew Kamau
- Ministry of Petroleum and Natural Gas, India, Anand Kumar Jha
- Ministry of Investment, Saudi Arabia, Ziyad Aljarboua
- Ministry of Mines and Energy, Namibia, Hon. Tom Alweendo
- President of Colombia and Delegation, Hon. Iván Duque Márquez
- Environmental Protection Agency, United States, Hon. Michael S. Regan
- Secretary of Energy and Delegation, United States, Hon. Jennifer M. Granholm



Secretary Jennifer M. Granholm, United States Department of Energy, tours the ExxonMobil House.

Robotic Dog Shows (2)





Social Media Hub



Book Signings (8)



John Doerr, Chairman, Kleiner Perkins and author *Speed & Scale: An Action Plan for Solving Our Climate Crisis Now.*

Mayor's Reception



Hon. Sylvester Turner, Mayor, City of Houston, Texas, US; Hon. Barney Crockett, Lord Provost, Aberdeen City Council, Scotland, UK; and John Cypher, Vice President, International Investment and Trade, Greater Houston Partnership

Agora Partner Installations (6)



Meetups (13)



Energy Innovation Pioneers

The 17th annual Energy Innovation Pioneers (EIP) program featured many of the world's leading early-stage enterprises in energy and sustainability.

Pioneers were selected by a panel of S&P Global technology experts who identify companies—disruptive or enabling—that exemplify:

- · Invention and creativity
- Feasibility and timeliness
- Scalability
- Superior management

Chosen from a field of over 500 candidates, this year's class of Pioneers was representative of the innovation occurring across the energy spectrum.

Representing a variety of emerging technologies and business models—advanced composite materials, carbon-free baseload power, carbon capture, cooling systems, distributed gas-to-liquids systems, energy recovery, hydrogen generation—these companies are leading innovators working to decarbonize the global energy system.

2022 Energy Innovation Pioneers

- Anax Power
- Carbon America
- Commonwealth Fusion Systems
- Emvolon

- Fervo Energy
- SAFCell
- Transaera
- TS Conductor



Energy Innovation Pioneers—Playing the Hand You're Dealt: Accelerating decarbonization in existing energy systems with Carolyn Seto (Chair), Director, Upstream Technology & Innovation, S&P Global; Emmanuel Kasseris, Chief Executive Officer, Emvolon, Inc.; Jason Huang, Co-Founder & Chief Executive Officer, TS Conductor; Sorin Grama, Co-Founder & Chief Executive Officer, Transaera, Inc.; and Michael Longo, Head of Business Development, Anax Power



Energy Innovation Pioneers—Scaling the Mountain: Accelerating development of zero-carbon energy systems for deep decarbonization with Carolyn Seto (Chair), Director, Upstream Technology & Innovation, S&P Global; Bob Mumgaard, Chief Executive Officer, Commonwealth Fusion Systems (CFS); Brent Lewis, Chief Executive Officer & Co-Founder, Carbon America; Tim Latimer, Co-Founder & Chief Executive Officer, Fervo Energy; and Dr. Calum R.I. Chisholm, Chief Executive Officer, SAFCell, Inc.

"Next Gen" Future Energy Leaders Town Hall

The race is ON for innovative, new approaches to solve the world's greatest energy and climate challenges. The emerging generation of future energy leaders, technologists, and entrepreneurs have unprecedented opportunity for impact—and to create real change.

This special interactive "Next Gen" dynamic session featured rapid-fire insights by leading minds on energy innovation, along with CERAWeek Future Energy Leaders, focused on: How can we achieve net zero ambitions by 2050? How can we tackle climate while meeting the planet's need for more energy? What are the promising and scalable technologies? What are the challenges and most exciting opportunities?



Louis Carranza (Chair), Associate Director, MIT Energy Initiative and Vijay Swarup, Vice President, Research & Development, ExxonMobil Research and Engineering Company



Darryl Willis, Corporate Vice President, Energy Industry, Microsoft Corporation



Jordan Watson, Senior Associate, Global Industrial Market, Korn Ferry

Alliance to End Plastic Waste Meetup

Following the Executive Conference discussion on "Sustainability & Circularity: The changing world of chemicals & plastics," the Alliance to End Plastic Waste (AEPW) hosted a meetup to share how AEPW is helping drive the shift to a more circular and sustainable world for plastics and chemicals.



Justin Wood, Vice President, Strategic Partnerships, Alliance to End Plastic Waste, and **Steve Sikra,** Vice President, Americas Alliance to End Plastic Waste respond to questions during a Meetup in the Agora Carbon Management Hub.



Sustainability & Circularity: The changing world of chemicals & plastics with Jacob Duer, President & Chief Executive Officer, Alliance to End Plastic Waste

Inaugural Energy Transition Venture Day Pitch Competition

The Energy Transition Venture Day pitch competition was hosted by the Greater Houston Partnership's Houston Energy Transition Initiative in partnership with Greentown Labs, Halliburton Labs, The Ion, Rice Alliance, and Chevron.

Twelve startups competed in four categories: carbon capture, use, and storage; hydrogen solutions; energy storage; and circular economy. A panel of investors selected the top pitch in each category.

The overall winner was Parasanti, an edgecomputing software startup that provides real-time analytics to operators in remote and extreme environments with little to no Internet connection. Parasanti received an invitation to participate in the Chevron Technology Ventures catalyst program.

Houston Innovators' Dinner

Following the competition, the overall winner and winners of the 4 individual categories were announced during a private Houston Innovators' Dinner in the Agora.



Energy Transition Venture Day judges **Abhinav Jain**, Vice President, CSL Capital Management, LLC, and **Grace Chan**, Associate, bp Ventures



Energy Transition Venture Day Competition's overall winner **Carrie Horazeck**, Head of Commercial Development, Parasanti



Competition judge **Richard Pardoe**, Executive, Venture Capital, Chevron Technology Ventures, congratulates pitch winner of the Energy Storage category, **Dr. Ben Jawdat**, Founder & Chief Executive Officer, Revterra, during the dinner

Energy Transition Advancements by US National Labs

Leaders from US Department of Energy national labs discussed the cutting-edge technologies that will help to wean the United States from its reliance on fossil fuels to more sustainable and cleaner sources of energy.



Scientific Achievements: Role of National Labs in advancing energy transition with Vijay Vaitheeswaran, Global Energy and Climate Innovation Editor, *The Economist*; Dr. Douglas J. Arent, Executive Director, National Renewable Energy Laboratory (NREL); Brian Anderson, Director, National Energy Technology Laboratory; and Paul Kearns, Director, Argonne National Laboratory

Hydrogen Vision Dinner

Dinner roundtable discussion followed by a panel of industry experts explored a future where hydrogen provides up to as much as 25% of end-use energy. This interactive dinner delved into the challenges and opportunities of a hydrogen economy.



Hydrogen Vision Dinner: What does 2050 look like? with Michael Stoppard, Chief Strategist Global Gas, S&P Global; Doreen Harris, President & Chief Executive Officer, New York State Energy Research & Development Authority (NYSERDA); Julien Rolland, Head of Power and Renewables, Trafigura; and Sharelynn Moore, Executive Vice President of Markets & Strategy & Business Development, Bloom Energy

Lyceum Labs / Workshops

40+ Interactive learning sessions and master classes with thought leaders and innovators







Geopolitics of Hydrogen Lyceum Lab led by Catherine Robinson, Executive Director, Research and Analysis, S&P Global and Alex Barnes, Senior Advisor, S&P Global

Sessions included:

- 10 Cleantech Trends in 2022
- AES | AES Indiana's Innovative Consumer EV Adoption Program
- Anchoring the Decarbonized World with the NET Power Platform
- Autonomous Operations: The digital drivers of the energy transition
- AWS | Amazon's Culture of Innovation
- AWS/Telco | Collaborating with Telcos on a Journey to Net-Zero Carbon Emissions
- Can Batteries Play a Role in Green Hydrogen Production?
- Carbon Engineering | Decarbonizing Is Possible & It May Cost Less Than You Think
- Creating & Selling Premium Climatefriendlier Hydrocarbon Products & Services with CarbonSig Software
- Diversity Dashboard
- Enabling Successful IR4.0-based Engineering Transformation

- Energy for the Common Good | Getting Ready to Put Fusion to Work
- ESG Small Group Workshop
- Floating Offshore Wind: What is it & does it work?
- Hydrogen 101: Fuel cell vehicles
- Hydrogen 101: Geopolitics of hydrogen
- Hydrogen 101: The power of hydrogen
- MIT | Energy Choices: Pathways to decarbonization
- MIT | The Fundamental Science Behind Green Hydrogen Technologies
- NEI | Understanding Regulatory Risk for Advanced Nuclear Technologies
- Petronas | Building Smart Project Delivery for a Sustainable Future
- S&P Global | Automotive Industry on the Road to Net Zero
- S&P Global | Carbon Intensity of Crudes
- S&P Global | Cybersecurity, Ransomware, Sanctions & ESG

- S&P Global | Electricity in the Room: Rising connections between crypto & power generation
- S&P Global | Field-to-Wheels Decarbonization
- S&P Global | Innovating to Keep Crude Oil Benchmarks Strong: A discussion of Brent, WTI, Dubai & Murban
- S&P Global | Integrated Digital Platforms-A silent gamechanger
- S&P Global | Introduction to Carbon Sequestration: A pathway for meeting climate goals
- S&P Global | Oil Price Forecasting in the Era of Energy & Capital Transitions
- S&P Global | Refining and Energy Transition: Part of the decarbonization solution
- S&P Global | The ICE May Finally Be Melting
- S&P Global | The Right Measure: A

- guidebook to crude oil life-cycle GHG emissions estimation
- S&P Global | Transforming Data Delivery, Access & Integration
- S&P Global | Uncovering External Risk & Revenue Gaps of Clean Power Assets
- S&P Global Workshop | Building Predictive Machine Learning Models to Answer Key Questions in the Energy Industry
- S&P Global Workshop | The Application of Predictive AI/ML Models
- Siemens Energy | Case for Carbon Capture: Real-life strategies for utilizing CCUS in oil & gas
- Siemens Energy | On the Road to Net Zero: Cost-effectively scaling up clean hydrogen production
- U.S. Government Global Energy Policy

Private Programs

Leadership Circles and Industry Forums

Invitation-only opportunities to Partners for executive dialogue and engagement. These events are open to CERAWeek delegates according to partnership, seniority, and relevance and are carefully curated to maintain a high level of seniority and targeted programming. The Private Programs include Leadership Circle Summits & Forums, Energy Partner Informal Conversations (EPIC) meetings, and Private Partner Briefings.

Leadership Circles and Forums

The CERAWeek Leadership Circle is a series of private, interactive dialogues for senior-level executives that meet under Chatham House Rules and tackle critical issues shaping the energy future.



Gas and LNG Leadership Circle



Mobility Summit



Climate and ESG Summit



Upstream Leadership Circle



Downstream Leadership Circle



Energy Investment Forum

Leadership Circles

- Upstream Summit
- Oil & Gas Innovation Summit
- Climate & ESG Summit
- Mobility Summit
- Gas & LNG Summit
- Downstream Summit
- Low & Net-Zero Carbon Power Summit
- Energy & Cleantech Innovation Summit

Industry Forums

- North American Independents Forum
- Energy Investment Forum
- Net-Zero Producers Forum
- Copper and Critical Minerals Forum
- United States
 Infrastructure Forum

"A see and be-seen event for the world's energy set."

— Houston Chronicle

Private Programs

Regional Forums

Africa Energy and Economy Forum





Trudi Makhaya, Special Economic Adviser to President Cyril Ramaphosa, The Presidency of the Republic of South Africa



H.E. Chief Timipre Marlin Sylva, Minister of State for Petroleum Resources, Federal Republic of Nigeria

Asia Pacific Energy Ministerial Forum







Latin America Forum





"the industry's most influential annual conference"

— Time

Private Programs

Energy Partner Informal Conversations (EPICs)

Energy Partner Informal Conversations (EPIC) meetings provide an opportunity for executives to engage in informal dialogue with senior public officials in a relaxed, informal setting. CERAWeek 2022 hosted 11 EPICs.

- President Hon. Iván Duque Márquez, Republic of Colombia; H.E. Diego Mesa Puyo, Minister of Mines and Energy, Republic of Colombia; and H.E. Carlos Correa, Minister of Environment, Republic of Colombia
- H.E. Chief Timipre Marlin Sylva, Minister of State for Petroleum Resources, Federal Republic of Nigeria
- H.E. Dr. Matthew Opoku Prempeh, Minister of Energy, Ministry of Energy, Ghana
- H.E. Mohammad Sanusi
 Barkindo, Secretary-General,
 Organization of the Petroleum
 Exporting Countries (OPEC)
- Hon. John Kerry, Special Presidential Envoy for Climate, United States
- Hon. Michael Regan, Administrator, United States Environmental Protection Agency

- Hon. Sonya Savage, Minister of Energy, MLA for Calgary-North-West, Government of Alberta and Hon. Jason Kenney, Premier of Alberta, Government of Alberta
- Hon. Thomas Camara, Minister of Mines, Petroleum & Energy, Ministry of Mines, Petroleum & Energy, Côte d'Ivoire
- Jose W. Fernandez,
 Undersecretary for Economic
 Growth, Energy, and The
 Environment, United States
 Department of State
- Trudi Makhaya, Special Economic Adviser to President Cyril Ramaphosa, The Presidency of the Republic of South Africa
- Hon. Jennifer M. Granholm, Secretary of Energy, United States Department of Energy



President Hon. Iván Duque Márquez, Republic of Colombia and **H.E. Diego Mesa Puyo,** Minister of Mines and Energy, Republic of Colombia



Hon. Jennifer M. Granholm, Secretary of Energy, United States Department of Energy



Hon. Michael Regan, Administrator, United States Environmental Protection Agency

Special Programs

Future Energy Leaders (10 sessions)

The Future Energy Leaders (FEL) program brought promising energy professionals to CERAWeek to engage with industry leaders in real-time learning and networking opportunities. FEL candidates, chosen by virtue of their high potential as future leaders of the industry, were nominated by CERAWeek Partners and supporting organizations. FELs form a unique community, building relationships that last throughout their careers.









Arun Majumdar, Jay Precourt Professor, Professor of Mechanical Engineering, Stanford University, presents at a Future Energy Leaders session.

Special Programs

Professional Development Program

The Professional Development Program (PDP) offered deep strategy and leadership development for a select global community of peers. Held the weekend prior to CERAWeek, it consisted of a two-day intensive series of lectures and case studies.



Forest L Reinhardt, John D. Black Professor of Business Administration, Harvard Business School (center wearing bow tie) with members of the Professional Development Program



Jenna Weiner, Senior Associate, Mergers and Acquisitions, The AES Corporation; Sue Lena Thompson, Special Programs Director, S&P Global; and Kevin De Jesus, Event Manager, S&P Global



Professional Development Program's Class of 2022



Special Programs

Women in Energy

Women in Energy (WIE) is committed to actively promoting diversity in the energy industry. CERAWeek and our Partners embrace an inclusive environment as the foundation to strengthen the energy sector. WIE identifies and celebrates Women Leaders through networking receptions, panel discussions, and conference programming in the Executive Conference and Innovation Agora.



Women in Energy Reception, hosted by the American Petroleum Institute with **Essi Kwabi**, Petrophysicist, Apache Corporation, giving remarks.



Women in Energy Reception



Dinner & Dialogue: Women in Energy with introductory remarks by **Dimitra Manis**, Executive Vice President, Chief Purpose Officer, S&P Global



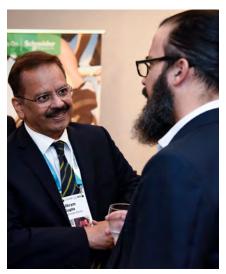
Dinner & Dialogue: Women in Energy panel with Leanne Todd (Chair), Senior Vice President, Upstream Energy, S&P Global; Tania Ortíz Mena, President for Mexico, Sempra Infrastructure; Fatema Al Nuaimi, Chief Executive Officer, ADNOC LNG, Abu Dhabi National Oil Company (ADNOC); Sunita Narain, Director General, Centre for Science and Environment (CSE); and Geraldine Richmond, Undersecretary for Science and Innovation, United States Department of Energy

Engage

Networking @ CERAWeek











"The contacts we made are leading to an ongoing set of conversations and visits. This is entirely due to the opportunity to meet exceptional individuals from diverse backgrounds, and to have those strategic discussions that provide insight into the great challenges and the opportunities."

— James Bellingham, Executive Director, Johns Hopkins Institute for Assured Autonomy, Johns Hopkins University

Engage

CERAWeek Executive Interviews



Hon. Thomas Camara, Minister of Mines, Petroleum & Energy, Ministry of Mines, Petroleum & Energy, Côte d'Ivoire



Leanne Todd (Chair), Senior Vice President, Upstream Energy, S&P Global and **Stephanie Rogers Whaley,** Managing Director, Accenture



Steven Kobos, President & Chief Executive Officer, Excelerate Energy and **Lyn Tattum,** Vice President, Global Chemical Market Information, S&P Global



Ryo Minami, Deputy Commissioner, International Affairs & Director-General, International Policy on Carbon Neutrality, Agency of Natural Resources and Energy, Ministry of Economy, Trade and Industry (METI), Japan and **Nirmal Shani,** Head of Asia Pacific, CERAWeek, S&P Global

Engage

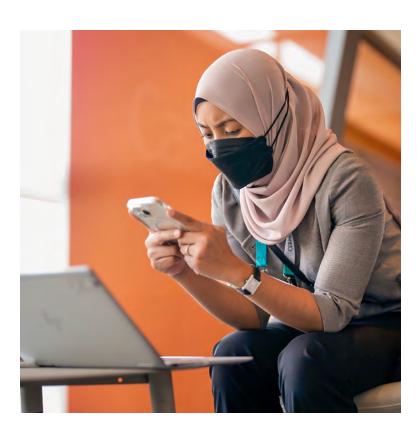
CERAWeek Conversations continue in 2022

Engage with the CERAWeek community throughout the year

CERAWeek Conversations—with senior executives, government officials, thought leaders, academics, technology innovators, and financial leaders—offer insights on the energy future and timely perspectives on critical issues and responses in the wake of the global pandemic and oil price volatility.

CERAWeek Conversations advance the latest discussions and debates by industry leaders on what's timely and vital for the energy industry and keep a finger on the pulse of technologies and the future of work, leadership, diversity, and inclusion.

View CERAWeek Conversations at www.ceraweek.com or listen on your favorite podcast channel.





CERAWeek Partners are committed to advancing the CERAWeek mission of thought leadership, shared learning, and relationship-building among industry, government, and society to secure the global energy future. Innovation Agora Partners support the exciting global innovation and technology community dedicated to creating new pathways and solutions for the energy future, contributing their expertise and experiences to this immersive environment.

The program integrates branding, knowledge contribution, media support, delegation support, hosting, and networking into a single, tailored strategy that supports the Partner's objectives.

Partner Benefits

- High-level engagement before, during, and after the conference
- Maximized impact and experience of your executives' participation
- Access to Private Leadership Circles and Special Programs
- Support by the CERAWeek Executive Steering Committee and a team of dedicated CERAWeek Partner Liaison Managers

This unique platform creates an opportunity for Partners to deepen relationships with key stakeholders, developing and sharing ideas and thought leadership, while enhancing their visibility and profile. CERAWeek Partners also benefit from access to exclusive CERAWeek private programs, networking, and meeting spaces. The former are reserved exclusively for CERAWeek's senior-most participants, providing an invitation-only track of designated professional communities. These interactive sessions draw on Partners' expertise and thought leadership contributions.









Foundational Partners

















Strategic Partners







































Strategic Partners



















VENTURE GLOBAL LNG

"A big part of CERAWeek is the opportunity for the industry to gather, to see old friends, and to discuss new technologies and opportunities."

- Darren Woods, Chairman & Chief Executive Officer, Exxon Mobil Corporation

Industry Partners

8 RIVERS





































































Industry Partners





















Agora Partners



























































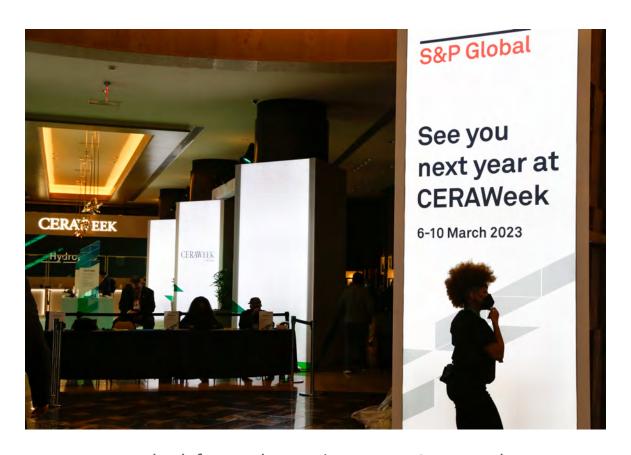












We look forward to seeing you at CERAWeek



March 6-10, 2023 Houston, Texas

For CERAWeek Partnership information, contact:

Todd Szczebak

Executive Director – CERAWeek +1 617 413 2034 todd.szczebak@SPGlobal.com

Martha O'Connor

Executive Director – CERAWeek +1 617 413 2049 martha.oconnor@SPGlobal.com

ceraweek.com

Nirmal Shani

Head of Asia Pacific – CERAWeek +91 981 928 1345 nirmal.shani@SPGlobal.com

Daniel Berkove

Head of Africa & Levant – CERAWeek +972 54 481 8580 daniel.berkove@SPGlobal.com





S&P Global

S&P Global (NYSE: SPGI) provides essential intelligence. We enable governments, businesses and individuals with the right data, expertise and connected technology so that they can make decisions with conviction. From helping our customers assess new investments to guiding them through ESG and energy transition across supply chains, we unlock new opportunities, solve challenges and accelerate progress for the world.

We are widely sought after by many of the world's leading organizations to provide credit ratings, benchmarks, analytics and workflow solutions in the global capital, commodity and automotive markets. With every one of our offerings, we help the world's leading organizations plan for tomorrow, today. For more information, visit www.spglobal.com.