



# CERAWeek 2019 in Review

New World of Rivalries:  
Reshaping the energy future

38th Executive Conference  
11–15 March 2019 | Houston, Texas

[CERAWeek.com](http://CERAWeek.com)



**Hon. Michael Pompeo**, Secretary of State, United States of America



**David Farr**, Chairman & CEO, Emerson



**Tan Sri Wan Zulkiflee**, President & Group CEO, PETRONAS



**H.E. Suhail Mohamed Al Mazrouei**, Minister of Energy & Industry, UAE



**Eldar Saetre**, President & CEO, Equinor ASA



**Andrew Jassy**, CEO, Amazon Web Services





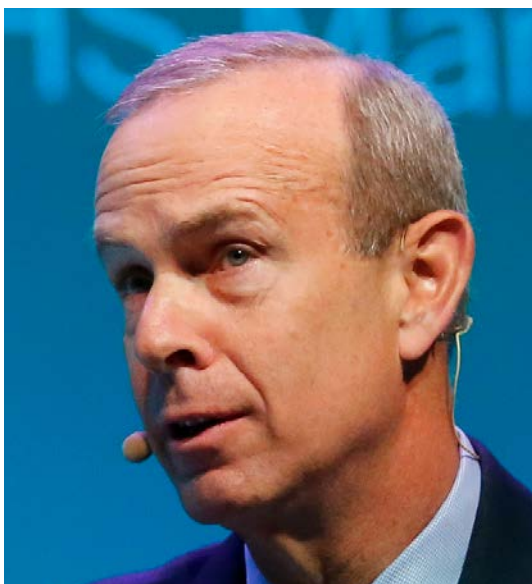
**Vicki Hollub**, President & CEO, Occidental Petroleum Corporation



**Bob Dudley**, Group Chief Executive, BP plc



**Hon. Rick Perry**, Secretary of Energy,  
United States of America



**Michael Wirth**, Chairman & CEO,  
Chevron Corporation



**Jason Zander**, EVP, Microsoft Azure,  
Microsoft Corporation



**Andrew Wheeler**, Administrator,  
U.S. Environmental Protection Agency





**William Clay Ford Jr.**, Executive Chairman, Ford Motor Company



**Dr. Fatih Birol**, Executive Director, International Energy Agency



**Hon. Lisa Murkowski**, U.S. Senator (Alaska) & Chairman, U.S. Senate Energy & Natural Resources Committee



**Hon. Amarjeet Sohi**, Minister of Natural Resources, Canada



**Joe Kaeser**, President & CEO, Siemens AG



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**Daniel Yergin**, Co-Chairman, CERAWeek & Vice Chairman, IHS Markit



**Iain Conn**, CEO, Centrica



**Sanjiv Singh**, Chairman,  
IndianOil Corporation, Ltd.



**Patti Poppe**, President & CEO,  
CMS Energy



**Jim Fitterling**, CEO, The Dow Chemical Company



**John Hess**, CEO, Hess Corporation



**Shunichi Miyanaga**, Chairman, Mitsubishi Heavy  
Industries, Ltd.



**Neil Chatterjee**, Chairman,  
U.S. Federal Energy Regulatory Commission





The 38th CERAWeek by IHS Markit focused on “New World of Rivalries: Reshaping the energy future.” Over 5,500 delegates from more than 85 countries participated in this year’s gathering. Over 380 public sessions and 100-plus private sessions addressed the opportunities and transitions ahead—from oil and gas to power generation, renewable energy, technology, investment, and regulatory and environmental policies.

Over 840 speakers—senior executives, government officials, thought leaders, and some of the greatest minds from across the energy spectrum—came together to share insight on the nature and pace of change shaping the future of the energy realm.

The third annual CERAWeek Innovation Agora included many new features, 1,500 learning journeys, and a remarkable assembly of disruptors. The Agora offers a forum for ideas, dialogue, new experiences, and connections. The great wave of new technology—from blockchain to e-mobility, robotics, additive manufacturing, connectivity, cloud, and digital technology—were all featured.

CERAWeek session highlights are available online. Please go to CERAWeek’s Digital Hub [ondemand.ceraweek.com](https://ondemand.ceraweek.com) to learn more.

We are deeply thankful to our speakers, partners, and participants for their engagement and contributions to CERAWeek.

Sincerely,



**Daniel Yergin**

A handwritten signature in black ink, appearing to read 'D. Yergin'.

Co-Chairman, CERAWeek  
Vice Chairman, IHS Markit



**James Rosenfield**

A handwritten signature in black ink, appearing to read 'James Rosenfield'.

Founder & Co-Chairman, CERAWeek  
Senior Vice President, IHS Markit

# Opening Day Plenaries



**Eldar Saetre**, President & CEO, Equinor ASA

## Leadership Dialogue

**Eldar Saetre**, President & CEO, Equinor ASA, said, “The world’s energy system must be transformed in a profound way to drive decarbonization.” Equinor is looking for long-term solutions for reducing emissions, including fossil fuel production and distribution and renewable energy.

“*Superbowl of the energy industry*”

- CNBC



**Vagit Alekperov**, President, CEO & Chairman of the Management Committee, PJSC LUKOIL

## Leadership Dialogue

**Vagit Alekperov**, President, CEO & Chairman of the Management Committee, PJSC LUKOIL, discussed the prospects for Russian oil production.

“*The center of the energy world*”

- Nightly Business Report







**Hon. Lisa Murkowski**, U.S. Senator (Alaska) & Chairman, U.S. Senate Energy and Natural Resources Committee, and  
**Hon. Joe Manchin**, U.S. Senator (West Virginia) & Ranking Member, U.S. Senate Energy and Natural Resources Committee

### U.S. Energy Policy Dialogue

U.S. Senators **Lisa Murkowski** (R-Alaska) and **Joe Manchin** (D-West Virginia) spoke about bipartisanship to advance legislation and consideration of the economic impact on communities in targeting a lower-carbon future.

### Carbon Management Strategies

**Vicki Hollub**, President & CEO, Occidental Petroleum Corporation, stressed the importance of improving technology for CO<sub>2</sub> capture to meet the Paris Agreement's goal, as well as developing GHG capture strategies through industry collaboration, such as the Oil and Gas Climate Initiative, a consortium of 13 oil and gas companies.



**Vicki Hollub**, President & CEO, Occidental Petroleum Corporation



# Opening Day Plenaries



Andrew Jassy, CEO, Amazon Web Services (AWS)

## Technology Leadership Dialogue

The oil and gas industry and its leadership is in the process of transitioning to cloud-based technology. **Andrew Jassy**, CEO, AWS, pointed to technologies, processes, cost advantages, security, and flexibility as key factors that will speed up the conversion.

*“Thousands of energy leaders...will descend on Texas...for CERAWeek, the annual conference...that has become a bellwether for the health of the global energy industry.”*

- Wall Street Journal



Andrew Wheeler, Administrator, U.S. Environmental Protection Agency (EPA)

## Luncheon & Dialogue

**Andrew Wheeler**, Administrator, U.S. EPA, addressed the Trump Administration's focus on regulatory relief to support the energy industry's contribution to U.S. economic growth, and on innovations to protect clean air and water.







**Arnaud Breuillac**, President, Exploration & Production, TOTAL S.A.



**Jack Fusco**, President & CEO, Cheniere Energy

#### **Fuels of the Future: The new rivalry**

The experts concluded that natural gas is the fuel of today and the future—providing the competitive edge of low cost, convenience, and low carbon emissions. Its growth is the only way to significantly reduce global emissions over the next 20 years.



**Maarten Wetselaar**, Director, Integrated Gas & New Energies, Royal Dutch Shell plc

# Opening Day Plenaries



**Hou Qijun**, President & Executive Director, PetroChina Company, Ltd., and former VP, China National Petroleum Corporation (CNPC)

## Special Dialogue on China

**Hou Qijun**, President & Executive Director, PetroChina Company, Ltd., and former VP, CNPC, shared CNPC's vision in the global oil and gas business.

*“One of the year’s biggest gatherings of energy executives and thought leaders”*

- CNBC

## Company Strategies in a Time of Change

The speakers agreed that although the world faces a dual challenge—more energy, less carbon—hydrocarbons will be part of the mix for the foreseeable future. Technologies are transforming the energy value chain and enabling companies to develop new solutions to tackle climate change.



**Atul Arya** (Chair), SVP & Chief Energy Strategist, IHS Markit; **Lisa Davis**, CEO, Gas & Power & Member of the Managing Board, Siemens AG and Chairman & CEO, Siemens Corporation, U.S.A.; **Shunichi Miyanaga**, Chairman, Mitsubishi Heavy Industries; **Musabbeh Al Kaabi**, CEO, Petroleum & Petrochemicals, Mubadala Investment Company; and **John Hess**, CEO, Hess Corporation





### Global Oil Markets Dialogue

H.E. Mohammad Sanusi Barkindo, Secretary General, OPEC, and Dr. Fatih Birol, Executive Director, International Energy Agency (IEA), discussed the outlook and uncertainties ahead for global oil supply and demand.



Dr. Fatih Birol, Executive Director, IEA



H.E. Mohammad Sanusi Barkindo, Secretary General, OPEC

### Climate Strategies in a World of Rivalry

The panel shared that collaboration plus a range of strategies and technologies will be needed to address climate change, both with respect to competition and across industry, governmental, and environmental bodies.



Carlos Pascual, SVP, IHS Markit; Jennifer Morris, President, Conservation International; Dr. Ernest Moniz, President & CEO, Energy Futures Initiative; Dr. Maria Zuber, VP, Research & E. A. Griswold Professor of Geophysics, MIT; and Mark Little, President & CEO, Suncor Energy



# Opening Day Plenaries

## Digital Transformation: Creating value

The work of analyzing data to guide business decisions has only just begun. Machine learning and artificial intelligence have proven superior to humans at diagnosing data and pattern recognition, enabling workers to focus on creative problem solving to make better business decisions.



**David Hicks** (Chair), SVP, Upstream Energy, IHS Markit, and **Dr. Ahmad Al-Khowaiter**, CTO, Saudi Aramco



**Lal Karsanbhai**, Executive President, Emerson Automation Solutions



**Yuri Sebrechts**, EVP, Technology & CTO, Shell, and **Babur Ozden**, Founder & CEO, Maana



### Energy: What do investors really want?

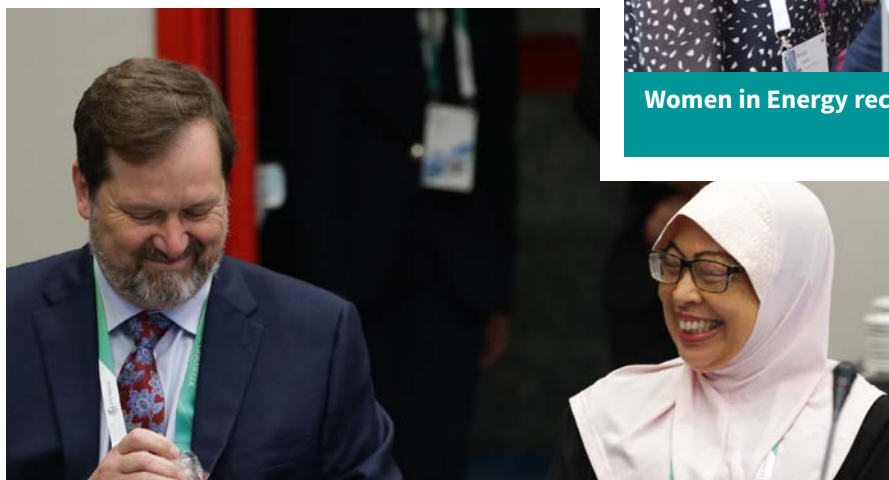
The speakers agreed that investors shouldn't focus only on growth business models, which depend on oil prices and geopolitical supply risks, but should also consider the growth potential of the energy sector.



**Nathan Strik**, Portfolio Manager, Fidelity Management and Research Company; **Osmar Abib, Jr.**, Chairman, Global Energy, Credit Suisse; and **Marcel van Poecke**, Head, Carlyle International Energy Fund & Managing Director, Carlyle International Energy Partners



**Women in Energy reception**



**Financial Officers Leadership Circle: John Gardner**, VP & Treasurer, Murphy Oil, and **Nuraini Ismail**, VP, Treasury, Petronas





# Opening Day Plenaries

## Geopolitical Dialogue

Panelists addressed economics and geopolitical hot spots that are causing market volatility.



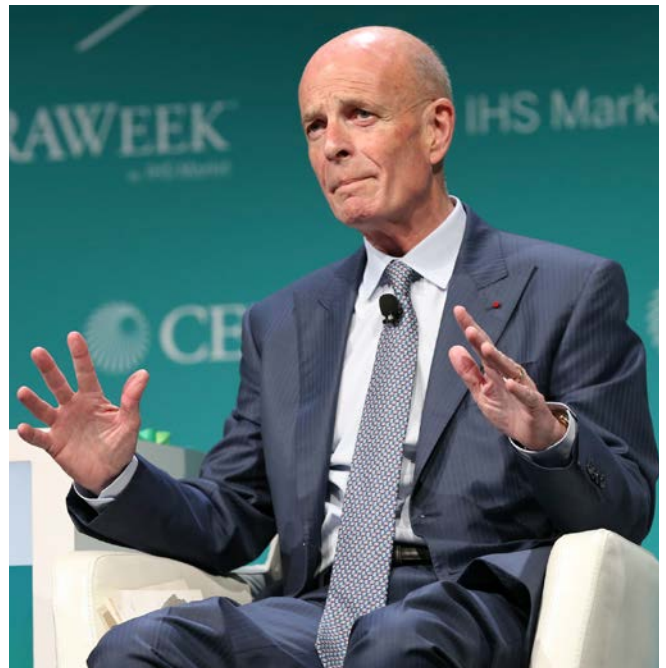
**Suzanne Maloney**, Deputy Director, Foreign Policy, The Brookings Institution



**Dr. Angela Stent**, Author of *Putin's World: Russia against the West and with the Rest* and Director, Center for Eurasian, Russian, and East European Studies, Walsh School of Foreign Service, Georgetown University



**Michael Green**, SVP, Asia and Japan Chair, Center for Strategic and International Studies and Director, Asian Studies, Georgetown University



**Sir John Scarlett**, Senior Advisor, Morgan Stanley

# Insight Dinners

- Crossing the Digital Divide: Company strategies for a new world
- Driving Change: Cities as the new frontier of mobility
- Investment Strategies in a Low Carbon World
- North Sea: The revival continues
- Plastics Sustainability: Meeting the challenge
- The Outlook for the Global Economy: A reversion to trend growth—or worse?
- U.S. Energy Abundance & Geopolitics
- Workforce of the Future



**U.S. Energy Abundance & Geopolitics dinner:** Dr. Meghan O'Sullivan (left), Jeane Kirkpatrick Professor of the Practice of International Affairs & Director, Geopolitics of Energy Project, John F. Kennedy School of Government, Harvard University



**Workforce of the Future:** Jim Nyquist, Group President, Process Systems & Solutions, Emerson Automation Systems, and Tasnim Al Mzaini, Head, Integrated Production Planning, Digital Unit, ADNOC



# Insight Dinners (continued)



**Crossing the Digital Divide:** Susan Farrell (Chair), VP, Energy-Wide Perspectives, IHS Markit; **Sanjay Paranji**, VP & CTO, Anadarko Petroleum Corporation; **Ahmed Hashmi**, CD&TO, Upstream, BP plc; and **Bill Vass**, VP, Technology, Amazon Web Services



**Plastics Sustainability:** Dewey Johnson (Chair), VP, Research & Analysis, Chemical, IHS Markit; **Paul Augustowski**, SVP, Olefins & Polyolefins, Americas, LyondellBasell; **Roberta Barbieri**, VP, Global Sustainability, PepsiCo; **Anne Womack Kolton**, EVP, Communications, Sustainability & Market Outreach, American Chemistry Council; and **Mike Witt**, Corporate Director, Plastics Circular Economy, The Dow Chemical Company







**Bob Dudley**, Group Chief Executive, BP plc, and **Eldar Saetre**, President & CEO, Equinor ASA at the OGCI Climate Investment Reception



**CNBC Interview: Hon. Michael Pompeo**, U.S. Secretary of State, and **Hon. Rick Perry**, U.S. Secretary of Energy

# Oil & Gas Plenaries



**Hon. Michael Pompeo**, Secretary of State, United States of America

## Special Keynote Address

U.S. Secretary of State **Hon. Michael Pompeo** spoke of how U.S. oil and gas will help U.S. allies secure energy supply diversification, a key security concern.

“*CERAWeek brings together all the oil, gas, and power generation leaders and executives of the world. It is an exciting place for exchange of ideas, viewpoints, and what’s going on.*”

- **Mike Train**, President, Emerson & Chairman, Emerson Automation Solutions





**Bob Dudley**, Group Chief Executive, BP plc

#### Keynote Address

**Bob Dudley**, Group Chief Executive, BP plc, shared his optimistic vision of the global energy industry, and of the immense climate change challenge, which will require both government and industry to work toward solutions.

*“We see old friends, we make new ones—we always learn a lot—that alone makes the trip worthwhile. We also get a lot of business done.”*

*- Bob Dudley, Group Chief Executive, BP plc*



# Oil & Gas Plenaries



**William Clay Ford Jr., Executive Chairman, Ford Motor Company**

## Welcome & Special Address

**William Clay Ford Jr.**, Executive Chairman, Ford Motor Company, said, “Every bit of our [automotive] business is being disrupted. There’s tremendous opportunity in that, but there are obviously a lot of pitfalls as well.” The challenges include autonomous driving and electric batteries, as well as how people want and need to access those technologies.



**Michael Wirth, Chairman & CEO, Chevron Corporation**

## Leadership Dialogue

The cost of oil and gas production has fallen significantly over the past five years from weak oil prices and technological advances, including machine learning and AI, noted Chevron Corporation Chairman & CEO **Michael Wirth**.



**Gary Heminger**, Chairman & CEO, Marathon Petroleum Corporation

#### Leadership Dialogue

**Gary Heminger**, Chairman & CEO, Marathon Petroleum Corporation, spoke of changes to the global refining industry from the International Maritime Organization's 2020 regulations to reduce sulfur in marine fuels. He also spoke of technological and AI data advances affecting the retail industry and Marathon's commitment to ethanol as part of the U.S. Renewable Fuel Standard.



**H.E. Suhail Mohamed Al Mazrouei**, Minister of Energy & Industry, United Arab Emirates

#### Leadership Dialogue

According to UAE Energy & Industry Minister **H.E. Suhail Mohamed Al Mazrouei**, the United Arab Emirates are committed to energy diversification and carbon reduction, with solar power a core component of its energy strategy.

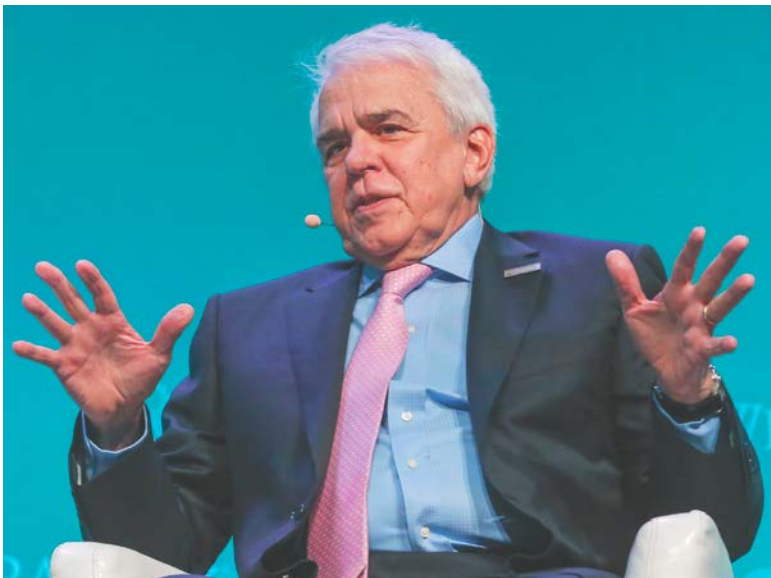


**Jason Zander**, EVP, Microsoft Azure, Microsoft Corporation

#### Leadership Dialogue

**Jason Zander**, EVP, Microsoft Azure, Microsoft Corporation, spoke of the vast potential of cloud computing and its benefits to the oil and gas industry.

# Oil & Gas Plenaries



**Roberto Castello Branco**, CEO, Petrobras

## Leadership Dialogue

Petrobras CEO **Roberto Castello Branco** shared his vision for Petrobras and Brazil, including partnerships, divestitures, and improvements in technology.



**Ulrich Spiesshofer**, President & CEO, ABB Ltd.



**Derek Kan**, Under Secretary of Transportation for Policy, U.S. Department of Transportation

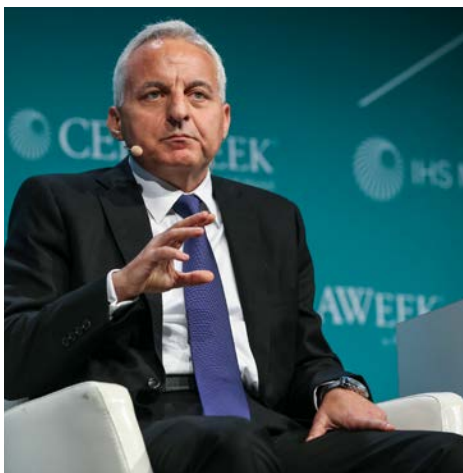
## The Future of Mobility: An industry perspective

**Ulrich Spiesshofer**, President & CEO, ABB Ltd., stressed the significance of infrastructure to support growth of electric vehicles and mobility.

## The Future of Mobility: A regulatory perspective

**Derek Kan**, Under Secretary of Transportation for Policy, U.S. Department of Transportation, discussed the importance of a regulatory structure that supports future investments needed to grow mobility.





**Tufan Erginbilgic**, Chief Executive, Downstream, BP plc



**Arif Mahmood**, EVP & CEO, Downstream, PETRONAS



**Sanjiv Singh**, Chairman, IndianOil Corporation Ltd.

#### Downstream: Competing through the cycles

Digital transformation is affecting manufacturing, retail, and marketing. As a consequence, downstream players are focused on developing successful partnerships and delivering value to customers.



**Joe Kaeser**, President & CEO, Siemens AG and **Daniel Yergin**, Vice Chairman, IHS Markit

#### Luncheon & Dialogue: New world of rivalries

**Daniel Yergin**, Vice Chairman, IHS Markit, and **Joe Kaeser**, President & CEO, Siemens AG, discussed the shifting geopolitical landscape and the global economy. Mr. Kaeser also envisioned a future world without boundaries that was achieved through the Internet of Things.

# Oil & Gas Plenaries



**Matt Fox**, EVP & COO, ConocoPhillips



**Gretchen Watkins**, President, Shell Oil Company & EVP, Unconventionals, Shell International



**Daniel González**, CEO, YPF



**Al Cook**, EVP, Global Strategy & Business Development, Equinor ASA

## Future of the Global Upstream

The panel examined how climate change is impacting the business strategies of their companies as they make their upstream portfolio choices. Unconventional oil and gas remains a focus for many companies. Major oil companies are building asset portfolios and long-range market outlooks and maintaining low production costs through the development of new technology.





**Hon. Kanat Bozumbayev**, Minister of Energy,  
Republic of Kazakhstan



**Hon. Dr. M. M. Kuty**, Secretary, Ministry of Petroleum &  
Natural Gas, Government of India



**Luis Miguel Morelli**, President, National Hydrocarbon Agency



**Secretary Gustavo Lopetegui**, Secretary of Energy,  
Ministry of Finance, Argentina

#### Global Oil Ministerial Dialogue

The speakers shared how policy decisions on oil and gas supply and energy diversification are reshaping markets, including the price environment, investment incentives, international partnerships, and the pace of innovation.



# Oil & Gas Plenaries



**Doug Suttles**, President & CEO, Encana



**Mark Gunnin**, President, Hunt Oil Company



**Lee Tillman**, Chairman, President & CEO, Marathon Oil Corporation

## North American Shale: Taking on the world

The energy executives shared their thoughts on how and why shale has disrupted the global oil market, how unconventional assets compete for scarce capital across diverse portfolios, and how the shale business model will evolve.

*“Sets the tone for the sector for the coming year”*

*- Financial Times*

### Special Dialogue on Venezuela

**Carlos Pascual**, SVP, IHS Markit, led a two-part dialogue on Venezuela that produced powerful insight into the political, infrastructure, and investment challenges the crisis-stricken country faces in resurrecting its energy sector.

#### *Part I: Vision of the interim government of President Juan Guaidó*



**Hon. Carlos Vecchio**, Ambassador of the Government of Venezuela to the United States



**Ricardo Hausmann**, Director, Growth Lab, Center for International Development & Professor, Practice of Economic Development, John F. Kennedy School of Government, Harvard University

#### *Part II: Impact of U.S. oil sanctions*



**Luisa Palacios**, Chairwoman, CITGO Petroleum Corporation



**Maynard Holt**, CEO, Tudor, Pickering, Holt & Co.



**Ashok Belani**, EVP, Technology, Schlumberger Limited



# Oil & Gas Plenaries



**John Gibson**, Senior Advisor, Tudor, Pickering, Holt & Co.



**Peter Herweck**, EVP, Industrial Automation, Schneider Electric



**Dr. Vijay Swarup**, VP, Research & Development, ExxonMobil



**Darryl Willis**, VP, Oil, Gas & Energy, Google Cloud

## Game-changing Technologies for Oil & Gas

The panel explored the prospects for the next technical and operational game-changers and what they might look like. The oil and gas industry is witnessing a new era of digital progress and related technologies creating renewed opportunities to secure sustainable growth.

# Strategic Dialogues: Oil & Gas

- Carbon Price: How critical for decarbonization?
- Cars & Oil: Reshaping demand
- Competing for Upstream Investment: Rewriting Africa's story
- Company Strategies for the Energy Transition
- Digitalization: Innovating for lowest costs
- Eurasian Upstream & the New World Oil Order
- Global Hot Spots & Policy Challenges
- Global Upstream Strategies: Diversification versus specialization
- Latin Energy: Aiming for competitiveness
- National Oil Companies: Repositioning portfolios for growth
- North American Refining: Will it remain an export powerhouse?
- Offshore Revival: Retesting the deep water?
- Oil Markets: Riding the wild roller coaster



**Eurasian Upstream & the New World Order:** Kurmangazy Oryngazyevich Iskaziyeu, Deputy Chairman, Management Board, Geology & Exploration, JSC NC KazMunayGas



**Unlocking Canada's Oil & Gas Potential:** Kevin Birn (Chair), VP, North American Crude Oil Market, IHS Markit; Janet Annesley, SVP, Corporate Affairs, Husky Energy; Susannah Pierce, Director, External Affairs, LNG Canada; and Steve Reynish, EVP, Strategy & Operations Services, Suncor Energy



**Oil Markets:** James Burkhard (Chair), VP, Oil Markets, Energy & Mobility, IHS Markit; Hon. Linda Capuano, PhD, Administrator, U.S. Energy Information Administration; Helen Currie, Chief Economist, ConocoPhillips; Spencer Dale, Group Chief Economist, BP plc; Ben Luckock, Co-Head, Oil Trading, Trafigura Group Pte Ltd.; and Adam Sieminski, President, King Abdullah Petroleum Studies & Research Center



# Strategic Dialogues: Oil & Gas (continued)

- Overcoming the Constraints: Unlocking Canada's oil & gas potential
- Realigning the Global Oil Order
- Reinventing Transportation: Buses, transit & fleets
- Retail Fuels Marketing: Back in fashion
- Returns versus Growth: Finance & the challenge for U.S. shale
- Sustainability in the Oil & Gas Industry
- The Growing North American Resource Base: How high & how long?
- The IMO Scramble: How big a disruption?
- Wellhead to Water: Getting U.S. oil to market



**Global Hot Spots & Policy Challenges:** Karen Harbert, President & CEO, American Gas Association and President & CEO, Global Energy Institute, U.S. Chamber of Commerce; Francis Fannon, Assistant Secretary, Bureau of Energy Resources, U.S. Department of State; and Elizabeth Rosenberg, Senior Fellow & Director, Energy, Economics & Security Program, Center for a New American Security



**Competing for Upstream Investment: Africa:** Daniel Berkove, Senior Associate, Energy, IHS Markit; H.E. Gabriel Obiang Lima, Minister of Mines & Hydrocarbons, Equatorial Guinea; Hon. Dr. Mohammed Amin Adam, Deputy Minister of Energy for Petroleum, Ministry of Energy, Republic of Ghana; Timothy Kabba, Director General, Sierra Leone Petroleum Directorate, Office of the President; Andrew Kamau, Principal Secretary, State Department of Petroleum, Ministry of Petroleum and Mining, Kenya; and Mohammed Lino Benjamin, Technical Advisory, Ministry of Petroleum, South Sudan





**H.E. Rocío Nahle García**, Secretary of Energy, Mexico (third from right) and **Admiral Bento Costa Lima Leite de Albuquerque**, Minister of Mines & Energy, Brazil (far right) at a luncheon



**U.S.-Africa Energy Roundtable: Dr. Maikanti Baru**, Group Managing Director, Nigerian National Petroleum Corporation and **Hon. Rick Perry**, U.S. Secretary of Energy

# Natural Gas & Global Energy Plenaries



**Hon. Rick Perry, Secretary of Energy, United States of America**

## Luncheon Dialogue

U.S. Secretary of Energy **Hon. Rick Perry** emphasized that the abundance of wide-ranging fuel sources is ushering in the new “American energy era.” From traditional fossil fuels to renewables and nuclear energy, the United States is producing more fuels more affordably, and it is projected to remain a net exporter of energy for the next 30 years.



**Iain Conn, CEO, Centrica**



**Tan Sri Wan Zulkiflee, President & Group CEO, PETRONAS**

## The Energy Company of the Future

**Iain Conn**, CEO, Centrica, and **Tan Sri Wan Zulkiflee**, President & Group CEO, PETRONAS, highlighted recent developments in the global energy market, including a shift toward clean energy and the growing importance of customer-centric marketing strategies.



### Eastern Mediterranean Gas Renaissance

In this historic session, energy ministers from Cypress, Egypt, Greece, and Israel noted that Eastern Mediterranean gas resources are plentiful, but regional cooperation is needed to diversify delivery methods and build a gas corridor to Europe.



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



**Yiorgos Lakkotrypis**, Minister of Energy, Commerce & Industry, Republic of Cyprus



**H.E. Dr. Yuval Steinitz**, Minister of Energy, Israel



**H.E. Minister George Stathakis**, Minister of Environment & Energy, Greece



# Natural Gas & Global Energy Plenaries

## Americas Ministerial Dialogue

Energy ministers from Brazil, Canada, Colombia, and Mexico shared their thoughts on how resource availability, technology, declining costs of renewables, and climate change are driving them to rethink and diversify their countries' energy strategies and policies.



**H.E. Rocío Nahle García**, Secretary of Energy, Mexico



**Admiral Bento Costa Lima Leite de Albuquerque**, Minister of Mines & Energy, Brazil



**Hon. Amarjeet Sohi**, Minister of Natural Resources, Canada



**Carlos Pascual** (Chair), SVP, IHS Markit



**Hon. María Fernanda Suárez Londoño**, Minister of Mines & Energy, Colombia

### Special Session on Africa: Foundations for new investment

Energy leaders from Namibia, Nigeria, Mali, and Uganda examined the opportunities and challenges of growing oil and gas production and building infrastructure to support future economic growth and a better standard of living.



**H.E. Mme Lelenta Hawa Baba Ba**, Minister of Mines & Petroleum, Republic of Mali



**Dr. Maikanti Baru**, Group Managing Director, Nigerian National Petroleum Corporation



**Immanuel Mulunga**, Managing Director, National Petroleum Corporation of Namibia



**Ernest Rubondo**, Executive Director, Petroleum Authority of Uganda



# Natural Gas & Global Energy Plenaries

## Global Gas Innovators

Leaders in the LNG industry discussed global gas developments, including LNG and trade with Asia—the world’s fastest-growing LNG market—as well as low-cost, readily available natural gas from the U.S. Gulf Coast and Russian Yamal Peninsula and efforts to make new gas infrastructure cost competitive.



**Mark Gyetvay**, CFO & Deputy Chairman of the Management Board, PAO NOVATEK



**Lorenzo Simonelli**, Chairman & CEO, Baker Hughes, a GE company



**Charif Souki**, Founder & Chairman, Tellurian

## Future of Global Gas

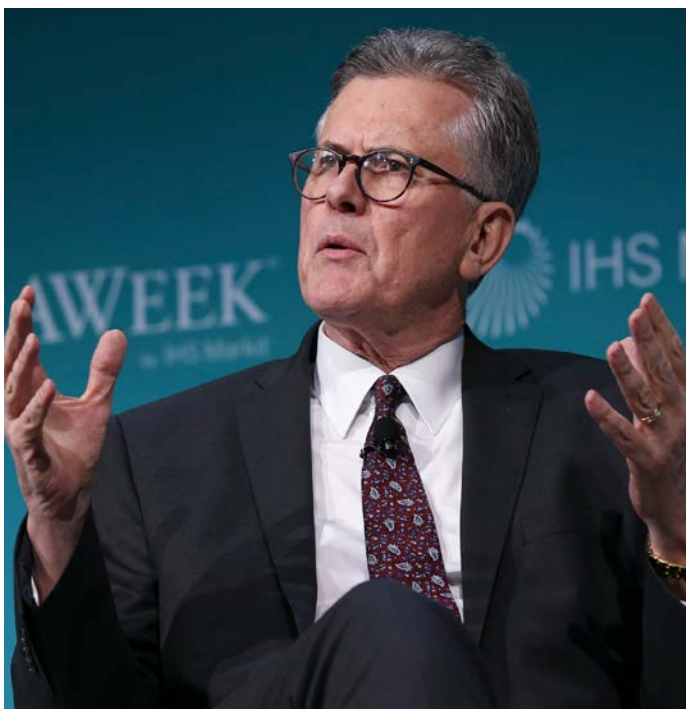
Innovation, policy change, and connectivity to consumers will drive success in the LNG market. In addition, growing U.S. LNG supply with no destination restrictions has created a new regime in the LNG market, allowing China and Southeast Asia to decrease coal usage.



**Simon Blakey** (Chair), Advisor, Global Gas, IHS Markit; **Robert Pender**, Co-CEO, Co-Chairman & Founder, Venture Global LNG; **B.C. Tripathi**, Chairman & Managing Director, GAIL (India) Limited; and **Michael Smith**, Chairman, CEO & Founder, Freeport LNG

### Next Wave of LNG

The panelists spoke about challenges for the global LNG market, including increasing supply from many LNG projects approaching commercialization and developing future demand centers.



**Andy Calitz**, CEO, LNG Canada



**Peter Coleman**, CEO & Managing Director, Woodside Energy Ltd.



**Philippe Sauquet**, President, Gas, Renewables & Power and President, Strategy-Innovation, TOTAL S.A.



**Shin Hosaka**, Deputy Commissioner, Agency for Natural Resources and Energy, Ministry of Economy, Trade and Industry, Japan



# Natural Gas & Global Energy Plenaries

## Methane Emissions: Getting to zero

Senior industry executives attributed their companies' success in meeting methane reduction targets to technology improvements and the use of drones to monitor maintenance. **Fred Krupp**, President, Environmental Defense Fund (EDF), added that EDF and industry partners are developing a global methane-detection satellite to monitor and report emissions.



**Staaale Gjervik**, President, XTO Energy



**Fred Krupp**, President, EDF



**Bernard Looney**, Chief Executive, Upstream, BP plc



**Tim Holt**, CEO, Power Generation Services,  
Siemens Energy



**Thomas Brostrøm**, President,  
Ørsted North America



**Philippe Frangules** (Chair), VP, Energy, IHS Markit

### Future of Renewables in the Power Mix

Policy continues to drive renewable build, but lower costs are creating economic parity with fossil generation. The speakers were bullish on the future of renewables and natural gas in the power mix.



**Chris Brown**, President, North America, Vestas



**Georgios Papadimitriou**, CEO, North America,  
Enel Green Power



# Natural Gas & Global Energy Plenaries

## Pathways to Technology Transformation

Industry executives shared examples on how digital technologies are transforming their businesses—impacting both capital and operating performance and transforming company cultures as companies adopt new tools, processes, and business models.



**Greg Leveille**, CTO, ConocoPhillips



**Caglayan Arkan**, SVP, Manufacturing & Resources Industry, Microsoft Corporation



**Shashi Shanker**, Chairman & Managing Director, Oil and Natural Gas Corporation Limited



**Peter Terwiesch**, President, Industrial Automation Division & Member of the Group Executive Committee, ABB Ltd.



**Dr. Pratima Rangarajan**, CEO, OGI Climate Investments



**Mark Menezes**, Under Secretary of Energy,  
U.S. Department of Energy



**John Mingé**, Former Chairman & President, BP America



**Sally Benson**, Co-Director, Precourt Institute for Energy,  
Director, Global Climate and Energy Project & Professor, Energy  
Resources Engineering, Stanford University

### CCUS Strategies & Business Models

Speakers argued that despite the 45Q U.S. Federal Tax Credit incentivizing CCUS, the U.S. needs to do more to meet global climate accords. U.S. Under Secretary of Energy **Mark Menezes** also announced that the U.S. Department of Energy will fund two studies on carbon capture for commercial-scale systems.

### Plastics Growth: Opportunities & risks in sustainability

Changes in mobility highlight chemical's role in oil demand growth. Although 50% of chemicals growth is tied to plastics, that value is undermined by environmental effects. However, the industry is taking ownership of the issue and driving funding for solutions.



**Jim Fitterling**, CEO, The Dow Chemical Company



# Natural Gas & Global Energy Plenaries

## European Gas Transit: A tangled knot

Industry executives discussed record flows of natural gas from Russia to Europe in 2018, while the European Union presses on with completion of the Single Energy Market. The future will see new pipelines come into operation and new commercial terms for some core transit routes.



**Maria Rita Galli**, EVP, Business Development, Snam S.p.A



**Grethe Kristin Moen**, President & CEO, Petoro AS



**Thilo Wieland**, Executive Director, Exploration & Production, Russia, North Africa & South America, Wintershall



**Amos Hochstein**, SVP, Tellurian

### How Technology Is Creating Business Value

New technologies are allowing development of difficult resources to create value across the energy sector. New entrants are challenging incumbents to quickly adapt and implement innovations and reinvent business models.



**Simon Mulcahy**, Chief Innovation Officer, Salesforce



**Bill Vass**, VP, Technology, Amazon Web Services



**Ahmed Hashmi**, Chief Digital & Technology Officer, Upstream, BP plc



**Mike Train**, President, Emerson & Chairman, Emerson Automation Solutions



# Natural Gas & Global Energy Plenaries

## Building Tomorrow's North American Infrastructure

This plenary contended that energy infrastructure improvements are necessary to take advantage of abundant North American energy resources and to safely and reliably transport oil & gas to customers.



**David Farr**, Chairman & CEO, Emerson



**Bernard McNamee**, Commissioner, U.S. Federal Energy Regulatory Commission



**Jim Teague**, Director & CEO, Enterprise Products Partners L.P.

### Special Dinner: India's Exploration & Production Opportunities—A paradigm shift

Indian ministers and executives outlined an ambitious agenda to wean India away from dependency on imported fossil fuels and to focus incentives on developing renewables, including LPG.



**Atul Arya** (chair), SVP & Chief Energy Strategist, IHS Markit; **Hon. Dr. M.M. Kutty**, Secretary, Ministry of Petroleum and Natural Gas, India; **Dr. V.P. Joy**, Director General, Directorate General of Hydrocarbons, India; and **Dr. Anupam Ray**, Consul-General of India for Houston, Indian Foreign Service

*“The annual confab called CERAWEEK by IHS Markit comes to town and brings the Who’s Who list of the global energy industry.”*

*-The Houston Chronicle*

*“Many of the world’s leading energy players gather for the annual CERAWEEK”*

*-Wall Street Journal*





# Natural Gas & Global Energy Plenaries

## Dinner Dialogue: Women in Energy

Gender parity; unintended bias; and gender, ethnic, and color diversity were discussed as panelists shared how their companies are improving participation through training programs and efforts to broaden recruitment.



**Melody Boone Meyer**, President, Melody Meyer Energy & Women with Energy and Non-Executive Board Director, British Petroleum, AbbVie, and National Oilwell Varco

*“Diversity is counting people; inclusion is people counting.”*

- Patti Poppe, President & CEO, CMS Energy



**Patti Poppe**, President & CEO, CMS Energy



**Susan Farrell** (Chair), VP, Energy-Wide Perspectives, IHS Markit



**Fiona Wild**, VP, Climate Change & Sustainability, BHP



**Emeliana Rice-Oxley**, Vice President Exploration, Upstream, PETRONAS



**Sue Lena Thompson** (Opening Remarks), Special Programs Producer for CERAWeek, IHS Markit

# Strategic Dialogues

- CCUS for EOR: What is the potential?
- Changing World of LNG Trading & Marketing
- European Gas: Competition for markets
- Developing Gas-to-Power & the LNG Value Chain in Asia
- Development in the Arctic: Opportunities & challenges
- Domestic Gas Pricing in Asia: How to accommodate new supply?
- Global LNG: Seeking producer & buyer alignment
- How Will LNG Infrastructure Be Financed?
- India's Energy Security: Choices in affordability & sustainability
- LNG: Reaching project sanction through cost management & innovation
- New Applications for Gas: Marine & road transport
- North America Unconventionals: New value equation
- North American Gas Infrastructure: Keeping pace with gas production in the Permian?
- North American Gas Market: Prospects for 2019
- Renewables & Gas Integration: Is there an efficient frontier?



**Renewables & Gas Integration:**  
**Claudia Squeglia**, VP, Positioning Strategies & Legislative Analysis, Eni



**Changing World of LNG Trading & Marketing:** **Andree Stracke**, CCO (Origination & Gas Supply), RWE Supply and Trading GmbH, and **Fatema Al Nuaimi**, Acting CEO, ADNOC LNG, ADNOC



# Strategic Dialogues (continued)

- South American Gas in Search of Demand
- The Case for Hydrogen in the Energy Transition
- The Future of EV Adoption, Investment & Innovation
- The New Energy Transition: Opportunities in clean tech?
- The Rise of Low Carbon Intensity Biofuels?
- The U.S. Administration's Policy Goals in Iran



**Domestic Gas Pricing in Asia:** Jenny Yang (Chair), Director, Greater China Natural Gas, IHS Markit; Prabhat Singh, Managing Director & CEO, Petronet LNG Ltd.; Kunio Nohata, Member of the Board & Senior Executive Officer, Tokyo Gas; Gang Chen, Executive Assistant to Chairman & CEO, Shanghai Petroleum and Natural Gas Exchange; and Syarif Maulana Chaniago, Senior Manager, Gas Monetization, Special Task Force for Upstream Oil and Gas Business Activities, Republic of Indonesia



**North American Gas Infrastructure:** Matthew Palmer (Chair), Research & Analysis Manager, Global Gas, IHS Markit; Matt Schatzman, President, NextDecade; Dave Tredinnick, Group President, Flow Solutions, Emerson Automation Systems; and Cynthia Walker, SVP, Marketing & Midstream Operations & Midstream Operations & Development, Occidental Petroleum Corporation



**Executive Interview by Xizhou Zhou, Managing Director, IHS Markit with Kian Min Low, Chief Development Officer, JERA Asia**





# Electric Power & Renewable Energy Plenaries



**Pedro Pizarro**, President & CEO, Edison International

## Electrifying Transportation: How far, how fast?

Shifting transportation from oil to electricity is critical to curbing climate change. The panelists addressed whether the electric grid is ready for EVs or needed improvements to support infrastructure, and their plans to accommodate future growth of electrifying transportation.

“...your energy conference is the best in the world on energy...leading the dialogue [on] new trends.”

- **Hon. Paul Dabbar**, Under Secretary for Science,  
U.S. Department of Energy



**Patti Poppe**, President & CEO, CMS Energy



**Greg Scheu**, President, Americas Region, ABB

### Leadership Dialogue

The changing energy landscape brings with it new regulatory challenges, noted **Neil Chatterjee**, Chairman, U.S. Federal Energy Regulatory Commission (FERC). Those challenges include adapting markets to accommodate changes in the energy mix and protecting the grid against threats, while maximizing value and minimizing consumer cost.

### State of the North America Power Business

The panelists discussed trends in consumer demand, the evolving electricity supply portfolio driven by technological advancement, wholesale market rules, regulatory policies, and distributed energy.



**Curtis Morgan**, President & CEO, Vistra Energy



**Neil Chatterjee**, Chairman, FERC



**Eric Silagy**, President & CEO, Florida Power & Light Company



**Mauricio Gutierrez**, President & CEO, NRG Energy



# Electric Power & Renewable Energy Plenaries

## New Frontiers for Power: Serving the customer of the future

Industry executives agreed that future energy customers will expect a more personal, dynamic experience, including the ability to manage their own energy and to choose clean power from renewables and other zero carbon options, while receiving safe, reliable, and affordable power.



**Anne Pramaggiore**, Senior EVP & CEO, Exelon Utilities,  
Exelon Corporation



**Scott Prochazka**, President & CEO, CenterPoint Energy



**Rolf Gibbels**, Head, Worldwide Business Development, Power &  
Utilities Industry, Amazon Web Services

### Deep Decarbonization: What does it mean?

Global deep decarbonization is achievable if all economic sectors contribute, although some, like agriculture and aviation, may reach net-zero carbon emissions with carbon removal technologies. Decarbonization solutions will include new technology and local initiatives. Technologies needed to reduce carbon emissions will be implemented regionally before scaling globally.



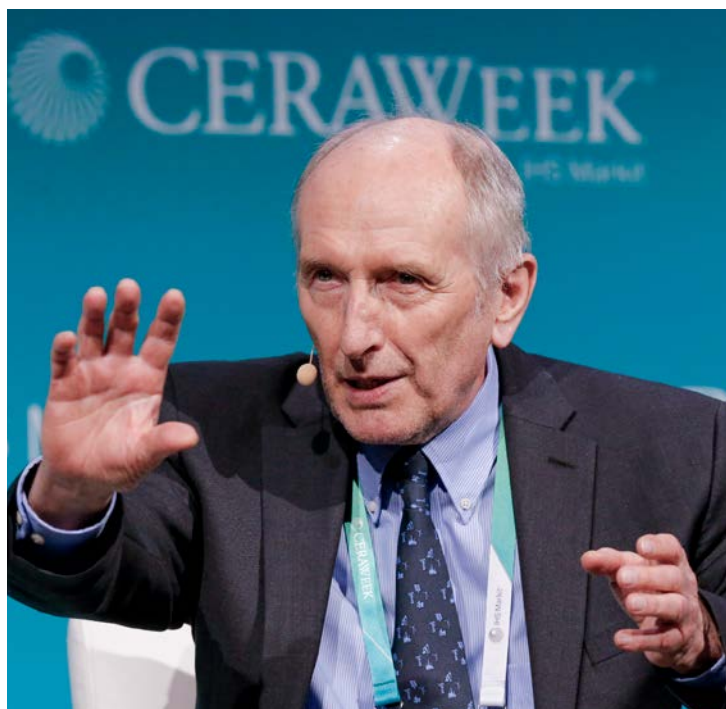
**Didier Holleaux**, EVP, ENGIE SA



**Artur Runge-Metzger**, Director, Directorate General for Climate Action, European Commission, EU



**David Victor**, Co-Director, Deep Decarbonization Initiative, University of California, San Diego



**Dr. Vaclav Smil**, Distinguished Professor Emeritus, University of Manitoba, Canada



# Electric Power & Renewable Energy Plenaries

## New World of Cyber Rivalries: Securing the Future

Renowned security experts spoke at CERAWeek about the significant threats facing the industry from cyberattacks and bad actors, and what will be required to prevent future attacks.



**General (Ret) Keith Alexander**, Founder, Chairman & Co-CEO, IronNet Cybersecurity; Commander U.S. Cyber Command (2010–14); and Director, National Security Agency/Chief, Central Security Service (2010–14)



**Taher Elgamal**, CTO, Security, Salesforce and Father of “SSI”

## Digital Transformation & the Future of Power

The speakers discussed a range of automation and smart system applications, from the first completely automated power plant in Japan to utilities that use their systems only for analytics, not for operations, as cybersecurity threats and malicious hacking remain a concern.



**Ganesh Bell**, President, Uptake



**Paul Browning**, President & CEO, Mitsubishi Hitachi Power Systems Americas, Inc.



**Gil Quiniones**, President & CEO, New York Power Authority



**Agustín Delgado Martín**, Chief Innovation & Sustainability Officer, Iberdrola



### Special Policy & Leadership Dialogue

**Hon. John Hickenlooper**, Former Governor, State of Colorado, discussed his decision to run in the 2020 U.S. Presidential election, and his pragmatic approach to governing and policy making.



**Hon. John Hickenlooper**, Former Governor, State of Colorado

### European Energy Security Dialogue

Government officials from Germany, Poland, and the United States debated challenges and solutions for a secure and reliable energy future for Europe.



**Emily Haber**, German Ambassador to the United States, German Embassy Washington



**Dan Brouillette**, Deputy Secretary of Energy, U.S. Department of Energy



**Tomasz Dabrowski**, Under Secretary of Energy, Republic of Poland



# Electric Power & Renewable Energy Plenaries



**Howard Gatiss, CEO, CMC Coal Marketing Company**

## Coal's Grand Challenges & Opportunities

Coal industry executives addressed the growing global demand for coal even as the industry faces major challenges, including capital investment, ownership ambition, declining quality in major basins, political opposition, and shifting demand patterns.



**Glenn Kellow, President & CEO, Peabody**



**Garold Spindler, CEO, Coronado Global Resources**



**George Dethlefsen, CEO, Corsa Coal**

### Leadership Dialogue

**Hendrik Gordenker**, Executive Chairman, JERA Co. Inc., focused on the strategic vision of the Japanese LNG powerhouse. Today, JERA is a global player, operating across the full value chain—from upstream and procurement to power generation and wholesaling of electricity and gas.



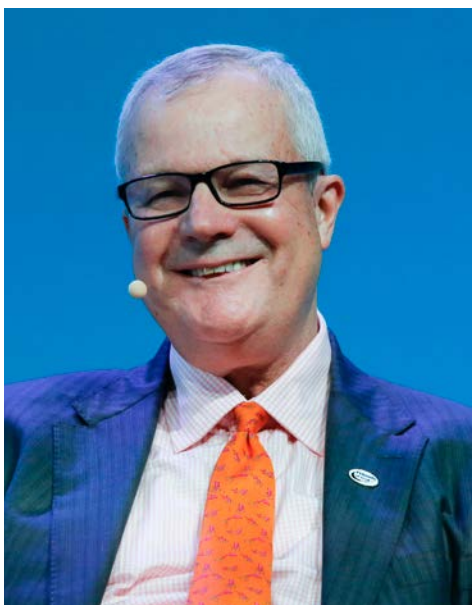
**Hendrik Gordenker**, Executive Chairman, JERA Co. Inc.

### Gas & Renewables: Partners or competitors?

The panelists discussed how the march toward renewables is likely to pick up speed as technology drives down the cost of renewables and carbon taxes make fossil fuels more costly. Fossil fuels, however, will continue to be a major part of the energy mix for decades, with its own advances in technology.



**Paddy Padmanathan**, President & CEO, ACWA Power International



**Ernie Thrasher**, CEO & CMO, Xcoal Energy & Resources



**Prabhat Singh**, Managing Director & CEO, Petronet LNG Ltd.





# Strategic Dialogues

- Battery Storage for the Grid: Climbing the growth curve
- Coal's Capital Challenges: Cost, availability & investment horizons
- Distributed Energy Resources: New opportunities & challenges at the grid edge
- Emerging Economies: Reinventing the power sector in Africa
- EV Charging Infrastructure: How will it develop?
- Financing Power: Adjusting to the new risk profile
- Global Solar: Shifting the focus from cost to value
- Grid Interconnectivity & Cities
- Investment Opportunities in a Decarbonized Europe
- Latin American Power Auctions: Optimizing for sustainability & reliability?



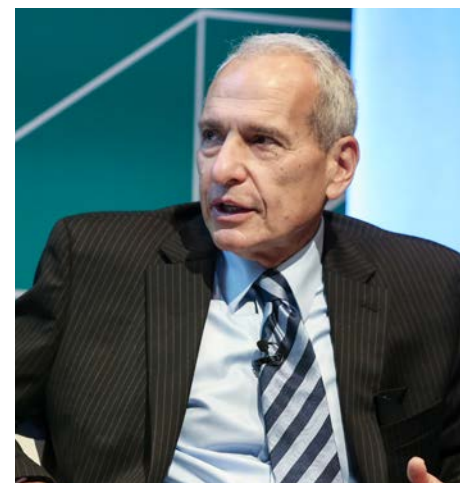
**Distributed Energy Resources:** Meg McIntosh (Chair), Senior Director, Energy, IHS Markit; **Frank Demaille**, President & CEO, ENGIE North America; **Mark Hedges**, Head of Distributed Power Systems North America, Centrica; **Steven Martin**, Acting CEO, GE Digital and CDO, GE Power; and **Dr. Matthew Croucher**, Director, Business Analytics, Entergy



**Grid Interconnectivity & Cities:**  
**Jay Allardyce**, EVP, Industry, Product & Partnerships, Uptake



**Investment Opportunities in a Decarbonized Europe:** **Paula Pinho**, Head, Energy Policy Coordination, European Commission



**Meeting the World's Growing Appetite for Coal:** **Jack Porco**, President & CCO, Xcoal Energy & Resources

- Meeting the World's Growing Appetite for Coal: Future supply sources?
- Offshore Wind: The new frontier
- Positioning Renewables in Asia: Finding the right policy mix
- Powering South & Southeast Asia's Growth: Coal, gas, renewables?
- Texas: Passing the stress test?
- Wholesale Power Market Evolution



**Emerging Economies: Saidu Mohammed**, COO, Gas & Power, Nigerian National Petroleum Corporation



**Financing Power: Jonathon Kaufman**, Co-Head of Power & Renewables Group - Americas, Credit Suisse



**Global Solar: Emily Heitman**, VP, U.S. & Canada, Schneider Electric



**Wholesale Power Market Evolution: Clair Moeller**, President & COO, Midcontinent Independent System Operator, and **Bill Magness**, President & CEO, Electric Reliability Council of Texas



# Expert Dialogues

- Outlook for Global Fuels in 2019
- Reducing CO<sub>2</sub> in North American Power: Emerging technologies?
- Solar & Storage: Exploring cost trends & business models
- Why Power Costs Vary Globally: Technologies & fuels



**Reducing CO<sub>2</sub> in North American Power:** Alex Klaessig, Director, Power & Renewables, IHS Markit, and Mark Griffith (Chair), Senior Research Director, IHS Markit



**Outlook for Global Fuels in 2019:** Charles Nevle, VP, Production, PointLogic Energy, OPIS by IHS Markit



**Outlook for Global Fuels in 2019:** Roger Diwan, VP, Financial Services, IHS Markit



**Solar & Storage:** Edurne Zoco (Chair), Research & Analysis Director, Solar & Energy Storage, Energy Technology, IHS Markit



**Why Power Costs Vary Globally: Anna Shpitsberg, Director, Global Power & Renewables, IHS Markit**



**Why Power Costs Vary Globally: Rafael McDonald, Director, Global Gas & Global LNG, IHS Markit**



**Outlook for Global Fuels in 2019**





# Reflections & Prospects Plenaries



**Hon. Michael Dunleavy**, Governor, State of Alaska

## Special Dialogue

**Alaska Governor Michael Dunleavy** spoke about recent efforts to revitalize production that will help to keep the Trans-Alaska Pipeline System viable for the foreseeable future, as well as a proposed Alaska LNG project to export stranded gas.

## What's Ahead in Washington?

**Hon. John Cornyn**, U.S. Senator (R-Texas) offered his insight on a number of national and global issues on the political agenda.



**Daniel Yergin**, Vice Chairman, IHS Markit, and **Hon. John Cornyn**, U.S. Senator (Texas)

### Creating Resilient Cities for the Future

**Mayor Sylvester Turner**, City of Houston, Texas, shared how civic leaders are shaping the city of the future as they play prominent and profound roles in energy, mobility, technology, and policy.



**Hon. Sylvester Turner**, Mayor of the City of Houston, Texas

### Energizing Energy Innovation: The long view

The panelists discussed the pace and scale of innovation and technology to meet the energy needs and climate goals of a growing world population.



**Conner Prochaska**, Chief Commercialization Officer & Director, Office of Technology Transitions, U.S. Department of Energy



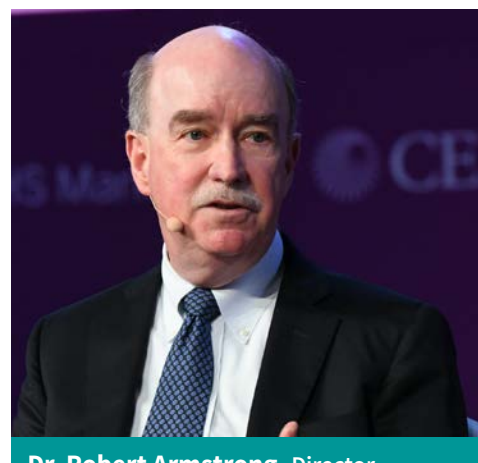
**Dr. Vijay Swarup**, VP, Research & Development, ExxonMobil



**Steven Koonin**, Professor, New York University



**Jim Goldinger**, Managing Director, ClearSky Power and Technology Fund



**Dr. Robert Armstrong**, Director, MIT Energy Initiative & Chevron Professor of Chemical Engineering, MIT





# Reflections & Prospects Plenaries

## Competitiveness, Trade & the Future of Global Markets

The panel discussed issues with the World Trade Organization, immigration, world trade, and competitiveness.



**Makan Delrahim**, Assistant Attorney General, Antitrust Division, U.S. Department of Justice



**Nicholas Eberstadt**, Henry Wendt Chair in Political Economy, American Enterprise Institute



**Ambassador Susan Schwab**, Former U.S. Trade Representative; Professor, University of Maryland; and Strategic Advisor, International Trade, Mayer Brown



**Christof Rühl**, Economist, Crystol Energy

### CERAWeek 2019: What lies ahead?

Over the last decade, the global energy sector has evolved from “peak oil” to “peak demand.” And now there is an unusual combination of “peak employment and peak anxiety, due to peak technology,” as technology continues to transform every aspect of the energy value chain. Above all, companies are taking the climate change challenge seriously by changing their portfolios.



**Susan Farrell**, VP, Energy-Wide Perspectives, IHS Markit



**Atul Arya** (Chair), SVP & Chief Energy Strategist, IHS Markit



**Raoul LeBlanc**, VP, North American Unconventionals, IHS Markit



**Jone-Lin Wang**, VP, Power & Renewables, IHS Markit



**Shankari Srinivasan**, VP, Energy, IHS Markit



**James Burkhard**, VP, Oil Markets, Energy & Mobility, IHS Markit





# Reflections & Prospects Plenaries

## Concluding Thoughts

CERAWeek Co-Chairmen, **Daniel Yergin**, Vice Chairman, IHS Markit, and **James Rosenfield**, SVP, IHS Markit, reflected on CERAWeek's theme of "New World of Rivalries: Reshaping the energy future" and plans for CERAWeek 2020.



# CERAWeek Innovation Agora



**Lyceum Workshop | Mapping the Energy Transition with Scenarios led by Mark Griffith, Senior Research Director, IHS Markit**

## CERAWeek Innovation Agora included

- **Agora Studios** – interactive discussions on emerging and disruptive technologies and models of innovation.
- **Voices of Innovation** – intellectual journeys and insights by high-profile and provocative thought leaders.
- **Agora Pods** – deep-dive discussions in the form of case studies or presentations, that explore technology solutions in an intimate and relaxed setting.
- **Agora Café** – perfect place for connecting with colleagues over locally roasted coffee.

## New for 2019

- **The Learning Lyceum** – a hub for high-impact learning through engagement and collaboration.
  - *Lyceum Labs* offer seminars on critical emerging topics in energy, technology, and mobility
  - *Lyceum Workshops* offer facilitated interactive sessions that allow groups to explore solutions to a specific challenge
- **Agora Houses** – hosted by preeminent technology companies offering experiences, learning journeys, and a glimpse of what's ahead.









# Themes

**Digitalization of energy:** Machine learning, artificial intelligence, predictive analytics

**Advanced manufacturing:** Robotics, agile design, additive and borderless manufacturing

**Mobility & future transport:** Battery technology, EVs & AVs, electric charging infrastructure

**Cities & the built environment:** Renewables, resiliency, energy efficiency, density and congestion solutions

**Blockchain in energy:** Peer-to-peer networks, energy trading, mitigation and control of decentralized generation

**Future technology pathways:** Decarbonization, electrification, cybersecurity, communication, future of work



**Voices of Innovation with Dr. Vijay Swarup**, VP, Research & Development, ExxonMobil, and **Dr. Robert Armstrong** (Chair), Director, MIT Energy Initiative & Chevron Professor of Chemical Engineering, MIT



# Voices of Innovation

insights by distinctive & original thought leaders



**Jason Zander**, EVP, Microsoft Azure, Microsoft



**H.E. Suhail Mohamed Al Mazrouei**, Minister of Energy & Industry, United Arab Emirates



**Ulrich Spiesshofer**, President & CEO, ABB Ltd.



**Ashok Belani**, EVP, Technology, Schlumberger Ltd.



**Ernest Moniz**, President & CEO, Energy Futures Initiative



**Blake Moret**, Chairman & CEO, Rockwell Automation



**Dr. Fatih Birol**, Executive Director, International Energy Agency







**Iain Conn**, CEO, Centrica



**Lord John Browne**, Executive Chairman, L1 Energy



**Simon Mulcahy**, Chief Innovation Officer, Salesforce



**Andrew Jassy**, CEO, Amazon Web Services



**Lal Karsanbhai**, Executive President,  
Emerson Automation Solutions



**Andy Karsner**, Managing Partner, Emerson Collective



# Voices of Innovation



**David Keith**, Gordon McKay Professor of Applied Physics, Paulson School of Engineering & Applied Sciences; Professor of Public Policy, John F. Kennedy School, Harvard University; and Executive Chairman, Carbon Engineering



**Michael Chasen**, CEO, PrecisionHawk



**Henrik Fisker**, Founder, Chairman & CEO, Fisker



**Arun Majumdar**, Professor & Co-Director, Precourt Institute for Energy, Stanford University



**Ganesh Bell**, President, Uptake



**Dr. Venkat Sumantran**, Chairman, Celeris Technologies



**Eric Ernst**, CTO, Formula E



**Dr. Vaclav Smil**, Distinguished Professor Emeritus, University of Manitoba, Canada







**Her Royal Highness Crown Princess Mary Elizabeth of Denmark**



**Hunter Hunt, CEO, Hunt Consolidated, and Ray Hunt, Executive Chairman, Hunt Consolidated**



**Dr. Robert Armstrong, Director, MIT Energy Initiative & Professor, MIT**



**Dr. Vijay Swarup, VP, Research & Development, ExxonMobil**



**Voices of Innovation with U.S. Department of Energy National Labs: New frontiers of research—Hon. Paul Dabbar (Chair), Under Secretary for Science, U.S. Department of Energy; Thomas Zacharia, Laboratory Director, Oak Ridge National Laboratory; Doon Gibbs, Laboratory Director, Brookhaven National Laboratory; and Brian J. Anderson, Director, National Energy Technology Laboratory**



# Agora Studios

interactive discussions on emerging & disruptive technologies & models of innovation



**Models of Innovation:** Nicoletta Giadrossi, Member of the Board, IHS Markit; Nick Lowes (Chair, back to camera), VP, Oil & Gas Consulting, Energy, IHS Markit; Reed Sturtevant, General Partner, The Engine; Barbara Burger, President, Chevron Technology Ventures; John Gibson, Senior Advisor, Tudor, Pickering, Holt & Co.; and Amit Mehta (back to camera), Chief Executive, Mobilize



**Autonomy, Automation, Offshore & the Ocean:** James Bellingham (Chair), Director, Center for Marine Robotics, Woods Hole Oceanographic Institution; Josh Broussard, Technical Director, Ocean Infinity; Diana Grauer, Director, External Technology Engagement – North America, TechnipFMC; Dr. Patrick Sobalvarro, President & CEO, Veo Robotics; and Nicolaus Radford, Co-Founder & CTO, Houston Mechatronics







**Digital Skills & the Workforce:** Susan Kish (Chair), Agora Curator, IHS Markit; Tasnim Al Mzaini, Head, Value Chain Optimization & Analytics, ADNOC; Leah McGowen-Hare, Trailhead Evangelist & Senior Director, Salesforce; Biswajit Roy, Director (HR & BD) & CEO, Hydrocarbon Sector Skill Council, Oil India Ltd.; and Mike Train, President, Emerson & Chairman, Emerson Automation Solutions



**The Quest for Better Batteries:** Khalil Amine, Sr. Materials, GL/Argonne Distinguished Fellow, Argonne National Laboratory; Mateo Jaramillo (back to camera), CEO & Co-Founder, Form Energy; Sam Wilkinson (Chair), Associate Director, Solar & Energy Storage Research, IHS Markit; Elsa Olivetti, Atlantic Richfield Associate Professor of Energy Studies, Department of Materials Science & Engineering, MIT; and Henrik Fisker, Founder, Chairman & CEO, Fisker



**The Path to Decarbonization:** Catherine Robinson (Chair), Executive Director, IHS Markit; Paolo Bertuzzi, CEO, Turboden - MHI Group; Christopher Knittel, George P. Shultz Professor & Professor of Applied Economics, MIT; Dr. Pratima Rangarajan, CEO, OGCI Climate Investments; and Peter Zornio, CTO, Emerson Automation Solutions



# Agora Pods

deep-dive presentations that explore technology solutions in an intimate, relaxed setting



**Subsea Electrification: Katrine Hilmen, Head, Engineering & Technology Studies, IA Energy, ABB**



**Designing Cities as Dynamic Systems & Interfaces: Amy Korté, Principal, Arrowstreet, Inc.**

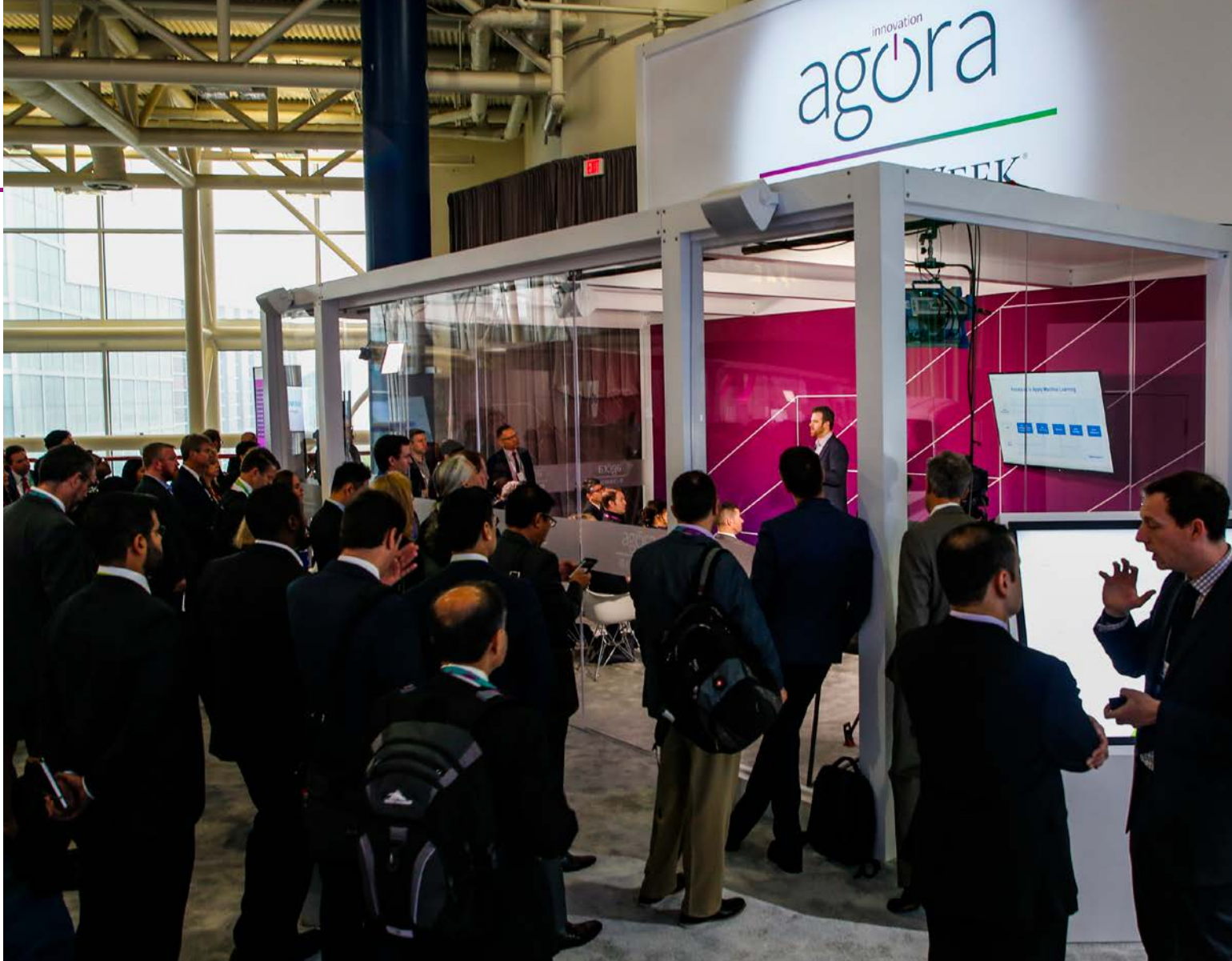


**Silicon Valley Disruptive Approaches: Amit Mehta, Chief Executive, Moblize**



**CarbonHouse: Mark Goulthorpe, Associate Professor, Department of Architecture, MIT**





**Deep Dive on Machine Learning for Energy Outcomes: Adam McElhinney, Chief, Machine Learning & AI Strategy, Uptake**



**What Is the OOC Blockchain Consortium? Kenneth Ebess, System Architect, ExxonMobil, and Rebecca Hofmann, Founder & Chairman, OOC Oil & Gas Blockchain Consortium and Leader, U.S. Blockchain Strategy & Innovation, Equinor**



**Application of Blockchain to Industry: Andrew Bruce, Founder & CEO, Data Gumbo**



**Transforming Air Travel: Susan Ying, SVP, Global Partnerships, Ampaire**



# The Learning Lyceum

hub for high-impact learning through engagement & collaboration

**Lyceum Labs** offer seminars on critical emerging topics in energy, technology & mobility

**Lyceum Workshops** offer facilitated interactive sessions that allow the group to explore solutions to a specific challenge



**Lyceum Lab | Predicting the Unpredictable: John Gibson, Senior Advisor, Tudor, Pickering, Holt & Co.**



**Lyceum Lab | EV Charging Primer: Heather Flanagan, Marketing Manager, EV Infrastructure, ABB, and Erin Galiger, EV Infrastructure Product Manager, ABB**



**Lyceum Workshop | New Mobility: Katherine Hardin, VP, IHS Markit, and Tom De Vleeschauwer, VP, Automotive, IHS Markit**



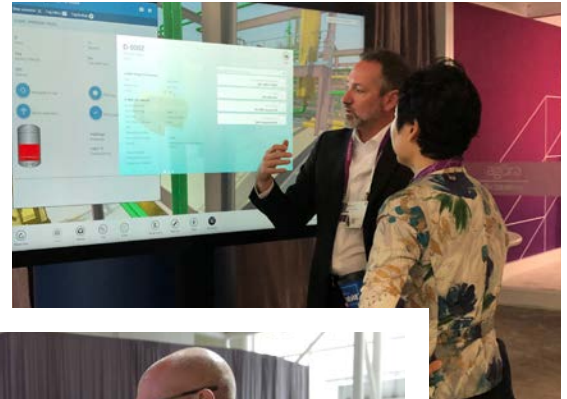
**Lyceum Lab | What Is TCFD & Where Is It Going? Fiona Wild, VP, Sustainability & Climate Change, BHP**





# Agora Experiences

personal interactions with new technologies



*Clockwise from top left:*

**GHGSat** | GHG & air quality gas emission monitor satellite

**ABB** | Formula-e car

**AVEVA Engage** | Touch-interface, 3-D asset visualization

**ABB** | Collaborative robot YuMi

**Environmental Defense Fund** | Methane emissions V/R

**Saudi Aramco** | Ford F-150 with opposed piston engine & Gasoline Compression Ignition (GCI)





# Agora Houses

hosted experiences & learning journeys & a glimpse of what's ahead

The **ABB Partner House** immersed participants in the world of autonomous industries and electric cars. They tested their driving skills in the ABB Formula E Simulator and their intellect by collaborating with ABB's YuMi robot. And they learned how ABB is influencing the future of how we live.



Visitors to the **Amazon Web Services (AWS) Partner House** learned how AWS is accelerating digital transformation and providing solutions for the modern energy company. They discovered how oil and gas companies are partnering with AWS to run business and technical workflows in upstream, midstream, and downstream.



This **Emerson Partner House** provided visitors with a “Digital Transformation Experience.” Employees of fictional “Agora Energy” shared how digital transformation has changed their jobs, operations, and business performance. Industry experts were on hand to discuss how industry leaders are using automation to drive best-in-class performance.



**Microsoft Azure Partner House:** Cloud computing is opening opportunities for the energy industry, creating new ways to harness data, increase productivity, and transform business. Attendees learned about the potential of cloud computing and met with an MS expert.





# Agora Houses (continued)

At the **Saudi Aramco Partner House**, visitors engaged with world-class researchers and learned how it is innovating across the energy value chain. Experts from Saudi Aramco's research centers discussed how they are developing new applications in energy, reimagining manufacturing, and creating a more sustainable future.



**Houston House:** Houston, the world's energy capital, continues to develop disruptive energy technologies and innovative companies while capturing new opportunities in the renewables sector. Visitors to Houston House learned about exciting opportunities in the region. World Petroleum Council is a proud supporter of Houston House.



**Hon. Sylvester Turner, Mayor, City of Houston, Texas**



**Her Royal Highness Crown Princess Mary of Denmark and Bob Harvey, President & CEO, Greater Houston Partnership**



# Special Programs

## 2019 OGCI Climate Investments Venture Day @ CERAWeek

This invitation-only event featured presentations by a shortlist of 10 companies seeking investment, as well as follow-up discussions and a networking reception. OGCI Climate Investments has allocated up to \$50M for promising technologies or business models that reduce CO<sub>2</sub> via increased efficiency in energy and industrial sectors. OGCI Climate Investments is a \$1B+ fund created by the Oil and Gas Climate Initiative to take practical action on climate change.



## Arab Innovation @ CERAWeek Agora

Delegates looked at the Arab energy innovation ecosystem, mapping out the challenges and opportunities of energy entrepreneurship in one of the world's largest energy-producing regions through networking meetups, a reception, and two sessions in the CERAWeek Agora.





# Book Signings

Delegates had the opportunity to meet authors and receive signed copies of their books.



**Dr. Angela Stent:** *Putin's World: Russia Against the West and with the Rest*



**Lord John Browne:** *The Glass Closet: Why Coming Out Is Good Business*



**Dr. Venkat Sumantran:** *Faster, Smarter, Greener: The Future of the Car and Urban Mobility*



**Dr. Vaclav Smil:** *Oil: A Beginner's Guide and Energy: A Beginner's Guide*

# Disruptors Dinner



Brought to CERAWEEK Agora by Foundational Partner **Tudor, Pickering, Holt & Co.**, the Disruptors Dinner featured creative chefs exploring the intersection of culinary art with innovation, inspiration, and disruption.



# Women in Energy: Reception & Dinner



**Patti Poppe**, President & CEO, CMS Energy; **Fiona Wild**, VP, Sustainability & Climate Change, BHP; **Emeliana Rice-Oxley**, VP, Exploration, Upstream, PETRONAS; and **Melody Boone Meyer**, President, Melody Meyer Energy & Women with Energy and Non-Executive Board Director, British Petroleum, AbbVie, and National Oilwell Varco



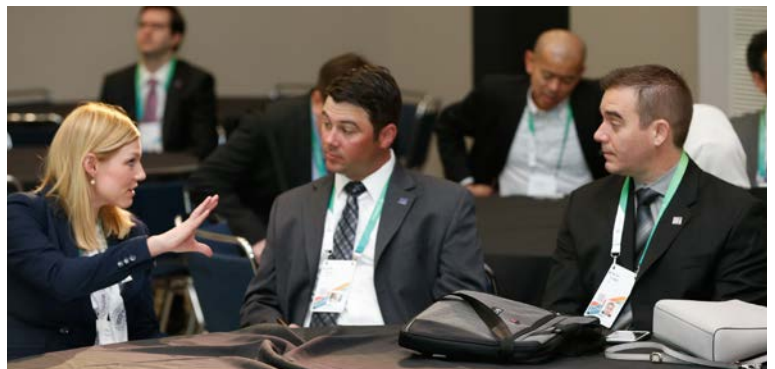


## Special Programs

# Future Energy Leaders

The Future Energy Leaders (FEL) program brought promising energy professionals to CERAWeek to engage in the learning, dialogue, and networking opportunities available at the conference. Chosen by virtue of their high potential as future leaders of the industry, participants formed a unique community. The program offered unparalleled exposure to C-level executives as well as the opportunity to develop new networks and perspectives.

FEL participants were nominated by supporting CERAWeek Partners and sponsoring companies and associations. Previous FELs hailed from ABB, ADNOC, BHP, BP, Chevron, ConocoPhillips, Dow Chemical, EEI, Emerson, Equinor, ExxonMobil, JOGMEC, MIT, PEMEX, PETRONAS, Saudi Aramco, Schneider Electric, Shell, Siemens, and TOTAL.



### Presentations & discussions led by



**Dr. Ken Medlock**, Chair, EEI Advisory Board; Senior Director, Center for Energy Studies; and James A. Baker, III, & Susan G. Baker Fellow in Energy & Resource Economics, Baker Institute for Public Policy, Rice University



**Dr. Tom Kolditz**, Brigadier General (Retired) & Director, The Doerr Institute for New Leaders, Rice University



**Dr. Robert Armstrong**, Director, MIT Energy Initiative & Chevron Professor of Chemical Engineering, MIT



## Special Programs

# Professional Development Program

The Professional Development Program (PDP) was an enhancement to the Future Energy Leaders (FEL) program and provided additional executive education and engagement before CERAWeek began. The PDP was available to a limited number of eligible candidates and augmented the conference experience with strategy and leadership capacity building opportunities.



The two-day intensive series of lectures and case studies was led by Harvard Business School Professor **Forest L. Reinhardt**.

- Fundamental Economics & Politics of Energy
- Strategy & Energy
- Energy from a Producer's Perspective: Norway
- Energy from a Consumer's Perspective: China
- Energy in the United States
- Technological & Institutional Innovation in Energy
- Technological Shocks & the Political System
- Interactive Lecture: Energy in the Global Future

The PDP concluded with a joint reception with delegates from CERAWeek's highly acclaimed FEL community. In addition, PDP participants were able to attend the CERAWeek conference.



Lance Uggla, Chairman & CEO, IHS Markit



Professional Development Program taught by Forest L. Reinhardt, John D. Black Professor of Business Administration, Harvard Business School



## Special Programs

# Energy Innovation Pioneers

For the 14th annual Energy Innovation Pioneers program, we featured eight of the world's leading early-stage enterprises in energy. Chosen from a field of over 500 candidates, this year's class of Pioneers embodied the spirit of innovation occurring across the energy spectrum. Representing a variety of emerging technologies and business models—advanced analytics, microgrids, energy storage, gamification, IIoT, renewable generation, robotics, satellite technology—these companies are leading innovators in the energy industry.

### 2019 Energy Innovation Pioneers

- **GHGSat** | Satellite-based greenhouse and air quality gas emissions monitoring
- **JP3** | Real-time, in-line hydrocarbon analysis for process control and custody transfer
- **Houston Mechatronics** | Robotics-as-a-service for subsea operations
- **Ingu Solutions** | In-line sensors for pipeline inspection
- **OhmConnect** | Customer rewards for residential energy savings
- **Orbital Marine Power** | Tidal turbine technology
- **Energy Vault** | Grid-scale energy storage in stacked concrete blocks
- **Enchanted Rock** | Microgrids-as-a-service



**Agora Studio | Reshaping Upstream Oil & Gas:** Carolyn Seto (Chair), Co-Chair, Energy Innovation Pioneers & Senior Director, Energy, IHS Markit; Jon van Pol, Co-Founder & CEO, Ingu Solutions; Matt Ondler, President, CEO & Co-Founder, Houston Mechatronics; Stéphane Germain, Founder, President & CEO, GHGSat; and Matt Thomas, President & CEO, JP3



**Agora Studio | The Future of Electric Power:** Alex Klaessig (Chair), Co-Chair, Energy Innovation Pioneers & Director, Energy, IHS Markit; Matt Duesterberg, Co-Founder & CEO, OhmConnect; Thomas McAndrew, Founder, President & CEO, Enchanted Rock; Merrick Kerr, CCO, Energy Vault; and Andrew Scott, CEO, Orbital Marine Power

# Special Programs

## Energy Innovation Pioneers



**Robotics-as-a-service for Subsea Operations:** Matt Ondler, President, CEO & Co-Founder, Houston Mechatronics



**Satellite-based Greenhouse & Air Quality Gas Emissions Monitoring:** Stéphane Germain, Founder, President & CEO, GHGSat



**Customer Rewards for Residential Energy Savings:** Matt Duesterberg, Co-Founder & CEO, OhmConnect



**In-line Sensors for Pipeline Inspection:** Jon van Pol, Co-Founder & CEO, Ingu Solutions



**Real-time, In-line Hydrocarbon Analysis for Process Control & Custody Transfer:** Matt Thomas, President & CEO, JP3



**Tidal Turbine Technology:** Andrew Scott, CEO, Orbital Marine Power



**Grid-scale Energy Storage in Stacked Concrete Blocks:** Merrick Kerr, CCO, Energy Vault



**Microgrids-as-a-service:** Thomas McAndrew, Founder, President & CEO, Enchanted Rock





**Lyceum Lab | Advanced Manufacturing & Drilling Technology in Industry 4.0:**  
Dr. C. Fred Higgs, III, Vice Provost & Professor of Mechanical Engineering, Rice University



**Agora Pod | Improving Production Efficiency & Debottlenecking with Filtration Technologies:**  
Shreya Dave, Co-Founder & CEO, Via Separations



# Partnership @ CERAWeek

Partners support the core CERAWeek mission—knowledge sharing, insight generation, and professional community. Contributing thought leadership, partners benefit by deepened engagement and relationships, as well as heightened experience and visibility at CERAWeek.



**Latin America Forum: Hon. María Fernanda Suárez Londoño**, Minister of Mines & Energy, Colombia (center)



**Global Power Leadership Circle: Emily Heitman**, VP, U.S. & Canada Energy, Schneider Electric, and **Ernie Thrasher**, Founder, CEO & CMO, XCoal Energy & Resources



**Partnership Lounge**



# Leadership Circle Executive Summits

The 2019 Leadership Circles were programs exclusively for senior executives in the communities of **Upstream, Downstream, Financial Officers, Upstream Technology, Global Gas, and Global Power**. Leadership Circles allowed focused, highly interactive discussions.



Global Gas Leadership Circle



Global Power Leadership Circle



Financial Officers Leadership Circle: Russell Alton, Head of Finance, Equinor and Lisa Cohen, VP & Treasurer, Cheniere Energy, Inc.

# Partnership Programs: EPICs

Energy Partner Informal Conversations (EPICs) are roundtable discussions bringing together international leaders.

- **H.E. Suhail Mohamed Al Mazrouei**, Minister of Energy & Industry, United Arab Emirates
- **H.E. Mohammad Sanusi Barkindo**, Secretary General, OPEC
- **Hon. Kanat Bozumbayev**, Minister of Energy, Republic of Kazakhstan
- **Hon. Neil Chatterjee**, Chairman, Federal Energy Regulatory Commission, United States
- **Hon. Dr. M. M. Kutty**, Secretary, Ministry of Petroleum & Natural Gas, Government of India
- **Hon. María Fernanda Suárez Londoño**, Minister of Mines & Energy, Colombia
- **Hon. Lisa Murkowski**, Chairman, Senate Energy and Natural Resources Committee, United States
- **Hon. Rick Perry**, Secretary of Energy, United States
- **Hon. Carlos Vecchio**, Ambassador of the Government of Venezuela to the United States
- **Hon. Andrew Wheeler**, Administrator, Environmental Protection Agency, United States



**Hon. Dr. M. M. Kutty**, Secretary, Ministry of Petroleum & Natural Gas, Government of India



**Hon. Rick Perry**, Secretary of Energy, United States



**Hon. Carlos Vecchio**,  
Ambassador of the Government of  
Venezuela to the United States



**Hon. Lisa Murkowski**, Chairman,  
Senate Energy and Natural Resources  
Committee, United States



**Hon. Andrew Wheeler**, Administrator,  
Environmental Protection Agency, United States



# Partnership & Invitation-only Programs

## Forums

- The Greater North Sea Investor Forum: Realizing value from the renaissance
- Energy Innovation Forum
- Latin America Forum
- North American Independents Summit
- North American Infrastructure Forum
- Mobility Executive Forum

## Leadership Development

- Future Energy Leaders
- Professional Development Program

## Entrepreneurial

- OGCI Venture Day

## Signings

- Siemens G-8 Signing

## Ministerial Briefings

- Climate & Sustainability
- Mobility
- OPEC Ministers with Financial Community
- Unconventionals (Argentina)
- Unconventionals (Colombia)
- U.S. Shale

## Receptions & Dinners

- Disruptors
- Explorers
- North America Independents
- OGCI

## Receptions

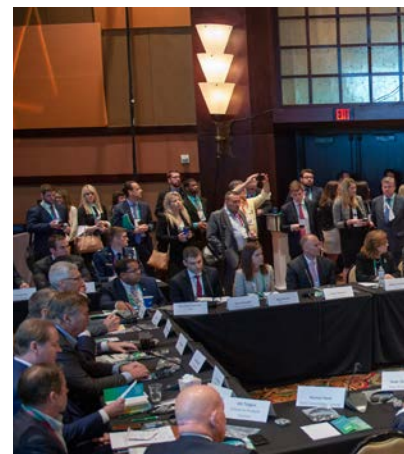
- Africa's Energy Future
- CERAWeek Partner Appreciation
- China
- Freeport LNG
- IHS Markit & Government Affairs liaisons
- India
- Latin America
- Mayors
- MITEI alumni
- MHI
- North Sea
- Rice University
- Schneider
- Women in Energy

## Dinners

- CERAWeek & Atlantic Council Dinner
- Latin America
- Maana

## Nightcap

- Mercuria



North American Infrastructure Forum



**Ministerial Briefing for OPEC & the Financial Community:** Dr. Maikanti Baru, Group Managing Director, Nigerian National Petroleum Corporation; H.E. Mohammad Sanusi Barkindo, Secretary General, OPEC; H.E. Suhail Mohamed Al Mazrouei, Minister of Energy & Industry, United Arab Emirates; Dr. Ayed Al-Qahtani, Director, Research Division, OPEC; H.E. Eng. Ahmed Al Kaabi, Assistant Undersecretary for Petroleum, Gas and Mineral Wealth Affairs, UAE and UAE Governor for OPEC; and H.E. Eng. Saeed Al Meheiri, Consul General of UAE in Houston



**Carbon & Climate Workshop**



**Future Energy Leaders Reception**



**Africa's Energy Future Reception**



**Mitsubishi Heavy Industries Group Reception**



# Partnership & Invitation-only Programs (continued)

## Workshops

- Global Scenarios
- Climate & Carbon Workshop
- Why Power Costs Vary Globally: Technologies & fuels
- Hydrogen as a Clean Energy Fuel

## Government Meetings

- U.S.-Africa Energy Roundtable
- Bilateral meeting: Canada & Mexico
- Partnership for Transatlantic Energy Cooperation (P-TEC)
- Trilateral meeting: U.S., Mexico & Canada



Hydrogen as a Clean Fuel Workshop



Global Scenarios Workshop



Partnership for Transatlantic Energy Cooperation





**Trilateral Meeting between the United States, Canada, & Mexico: Hon. Amarjeet Sohi, Minister of Natural Resources, Canada; Hon. Rick Perry, Secretary of Energy, United States; and H.E. Rocío Nahle García, Secretary of Energy, Mexico**



**U.S. & Africa Energy Roundtable**



**Hydrogen as a Clean Fuel Workshop**



# Media Coverage & Impact

**840+** Speakers • **380+** Public sessions • **100+** Private Partner/special programs

**5,500** Delegates from **1,000** companies & **85** countries • **650+** CEOs • **90+** Ministers & senior public officials

**1,400+** C-suite delegates

**300+** Accredited journalists • Media coverage across **122** countries • **75+** Broadcast segments

**13 billion** Global media impressions • **10,000+** Global media mentions with **7,500** during CERAWeek

Media presence included

*Bloomberg* • *Der Spiegel* • *Die Zeit* • *Financial Times* • *New York Times* • *Nikkei* • *The Economist* • *The Times of India* • *Time Magazine* • *Wall Street Journal*

*Agence France Presse* • *Arab News* • *Associated Press* • *CBC* • *CNBC* • *NPR* • *Politico* • *Reuters* • *RIA Novosti* • *Univision* • *Xinhua* • *Yahoo! Finance*



**IHS Markit Executive Interview: H.E. Gabriel Obiang Lima,**  
Minister of Mines & Hydrocarbons, Equatorial Guinea



**CNBC Interview: Daniel Yergin, Vice Chairman, IHS Markit,**  
and Brian Sullivan, Host, CNBC



**Brian Sullivan, Host, CNBC**



# CERAWEEK Foundational Partners

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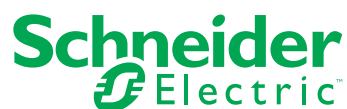


# CERAWEEK Strategic Partners





Morgan Stanley



THE CARLYLE GROUP



UPTAKE™

VENTURE GLOBAL LNG





# CERAWEEK Industry Partners



Google Cloud







# Agora Foundational Partners

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# Agora Partners

**accenture**

**AVEVA**

**centrica**

  
**equinor**



  
Google Cloud

**HUNT**  
CONSOLIDATED, INC.

 **IndianOil**  
The Energy of India

**MAANA**  
Knowledge Accelerated

**moblize**

 **CLIMATE INVESTMENTS**  
OIL AND GAS CLIMATE INITIATIVE

 **PRECISIONHAWK**

 **RICE**  
Energy and Environment Initiative

  
salesforce

**Schneider**  
Electric

**SIEMENS**  
Ingenuity for life

  
**WECP**  
WORLD ENERGY CITIES PARTNERSHIP

**Woods Hole**  
Oceanographic  
INSTITUTION



# Women in Energy Reception Partners

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## Women in Energy Dinner



## Media Partner

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**THE WALL STREET JOURNAL.**



**Daniel Yergin**, Vice Chairman, IHS Markit; **Michael Wirth**, Chairman & CEO, Chevron; and **William Clay Ford Jr.**, Executive Chairman, Ford Motor Company



**Agora Studio | What Does the Hydrogen Transportation Economy Look Like?** **James Kast**, Fuel Cell Business Analyst, Toyota; **Andrew Fulbrook** (Chair), Executive Director of Powertrain & Compliance Forecasting, IHS Markit; **Bill Elrick**, Executive Director, CA Fuel Cell Partnership; **Bashir Dabbousi**, Director, Technology Strategy & Planning, Saudi Aramco; and **Barney Crockett**, Lord Provost, City of Aberdeen, U.K.



**Agora Studio | AI & the Energy System:** **Matthew Short** (Chair), Research & Analysis Director, IT, IHS Markit; **Morag Watson**, VP, BP plc; **Dan Mbanga**, Principal Business Development Manager, Amazon AI, Amazon Web Services (AWS); **Paul Orland**, Co-Founder & CEO, Tachyus



# 2019 Featured Speakers

## OFFICIALS

**Hon. Rick Perry**  
Secretary of Energy, U.S.

**Hon. Michael Pompeo**  
Secretary of State, U.S.

**Andrew Wheeler**  
Administrator, Environmental Protection Agency, U.S.

**Neil Chatterjee**  
Chairman, Federal Energy Regulatory Commission, U.S.

**Hon. Lisa Murkowski**  
Chairman, U.S. Senate Energy & Natural Resources Committee (Alaska)

**Hon. Joe Manchin**  
U.S. Senator for West Virginia, U.S. Senate Committee on Energy & Natural Resources

**Hon. John Cornyn**  
U.S. Senator for Texas

**Hon. Michael Dunleavy**  
Governor, Alaska, U.S.

**Hon. John Wright Hickenlooper, Jr.**  
Former Governor, Colorado, U.S.

**H.E. Mohammad Sanusi Barkindo**  
Secretary General, OPEC

**Dr. Fatih Birol**  
Executive Director, IEA

**H.E. Abdirashid Mohamed Ahmed**  
Minister, Ministry of Petroleum & Mineral Resources, Somalia

**Admiral Bento Costa Lima Leite de Albuquerque**  
Minister of Mines & Energy, Brazil

**H.E. Mme Lelenta Hawa Baba Bah**  
Minister of Mines & Petroleum, Mali

**Hon. Kanat Bozumbayev**  
Minister of Energy, Republic of Kazakhstan

**Hon. Dr. M.M. Kuttly**  
Secretary, Ministry of Petroleum & Natural Gas, India

**Secretary Gustavo Lopetegui**  
Secretary, Ministry of Treasury, Argentina

**Yiorgos Lakkotrypīs**  
Minister of Energy, Commerce, & Industry Republic of Cyprus

**Hon. María Fernanda Suárez Londoño**  
Minister of Mines & Energy, Colombia

**H.E. Suhail Mohamed Al Mazrouei**  
Minister of Energy & Industry, UAE

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

**H.E. Rocío Nahle García**  
Secretary of Energy, Ministry of Energy, Mexico

**Hon. Amarjeet Sohi**  
Minister of Natural Resources, Canada

**H.E. Minister George Stathakis**  
Minister of Environment & Energy, Greece

**H.E. Dr. Yuval Steinitz**  
Minister of Energy, Israel

**Hon. Carlos Alfredo Vecchio DeMari**  
Ambassador of the Government of Venezuela to the United States

## EXECUTIVES

**Osmar Abib, Jr.**  
Chairman, Global Energy, Credit Suisse

**Musabbeh Al Kaabi**  
CEO, Petroleum & Petrochemicals, Mubadala Investment Company

**Vagit Alekperov**  
President, CEO, & Chairman of the Management Committee, PJSC LUKOIL

**Dr. Maikanti Baru**  
Group Managing Director, Nigerian National Petroleum Corp.

**Roberto Costello Branco**  
CEO, Petrobras

**Peter Coleman**  
CEO & Managing Director, Woodside Energy Ltd.

**Iain Conn**  
CEO, Centrica

**Bob Dudley**  
Group Chief Executive, BP plc

**David Farr**  
Chairman & CEO, Emerson

**Jim Fitterling**  
CEO, The Dow Chemical Company

**William Clay Ford Jr.**  
Executive Chairman, Ford Motor Company

**Matt Fox**  
EVP & COO, ConocoPhillips

**Jack Fusco**  
President & CEO, Cheniere Energy

**Staale Gjverik**  
President, XTO Energy, Inc.

**Daniel Gonzalez**  
CEO, YPF

**Hendrick Gordenker**  
Executive Chairman, JERA Co., Inc.

**Mark Gunnin**  
President, Hunt Oil Company

**Mauricio Gutierrez**  
CEO, NRG Energy

**Mark Gyetvay**  
CFO & Deputy Chairman, Management Board, PAO NOVATEK

**Gary Heminger**  
Chairman & CEO, Marathon Petroleum Corp.

**John Hess**  
CEO, Hess Corporation

**Vicki Hollub**  
President & CEO, Occidental Petroleum Corp.

**Maynard Holt**  
CEO, Tudor, Pickering, Holt & Co.

**Andrew Jassy**  
CEO, Amazon Web Services

**Joe Kaeser**  
President & CEO, Siemens AG

**Glenn Kellow**  
President & CEO, Peabody

**Jeffrey Lyash**  
President & CEO, Ontario Power Generation

**Shunichi Miyanaga**  
President & CEO, Mitsubishi Heavy Industries

**Curtis Morgan**  
President & CEO, Vistra Energy

**Paddy Padmanathan**  
CEO & President, ACWA Power International

**Robert Pender**  
Co-CEO, Co-Chairman & Founder, Venture Global LNG

**Pedro Pizarro**  
President & CEO, Edison International

**Patti Poppe**  
President & CEO, CMS Energy

**Anne Pramaggiore**  
Senior EVP & CEO, Exelon Utilities, Exelon Corporation

**Dr. Pratima Rangarajan**  
CEO, OGCI Climate Investments

**Eldar Saetre**  
President & CEO, Equinor ASA

**Philippe Sauquet**  
President, Gas, Renewables & Power & President, Strategy-Innovation, TOTAL S.A.

**Lorenzo Simonelli**  
Chairman & CEO, Baker Hughes, a GE company

**Prabhat Singh**  
Managing Director & CEO, Petronet LNG

**Sanjiv Singh**  
Chairman, Indian Oil Corporation

**Michael Smith**  
Chairman, CEO & Founder, Freeport LNG

**Charif Souki**  
Chairman, Tellurian

**Ulrich Spiesshofer**  
President & CEO, ABB Ltd.

**Doug Suttles**  
President & CEO, EnCana

**Jim Teague**  
Director & CEO, Enterprise Products Partners L.P.

**Ernie Thrasher**  
CEO & Chief Marketing Officer, Xcoal & XLNG Energy & Resources

**Lee Tillman**  
Chairman, President & CEO, Marathon Oil Corporation

**B.C. Tripathi**  
Chairman & Managing Director, GAIL India Ltd.

**Marcel van Poecke**  
Head, Carlyle International Energy Fund, CIEP

**Maaten Wetselaar**  
Director, Integrated Gas & New Energies, Royal Dutch Shell plc

**Michael Wirth**  
Chairman & CEO, Chevron

**Jason Zander**  
EVP, Microsoft Azure, Microsoft Corp.

**Wan Zulkiflee**  
President & Group CEO, PETRONAS



# Past Featured Speakers

## OFFICIALS

**President George W. Bush**  
United States

**President Bill Clinton**  
United States

**President Enrique Peña Nieto**  
Mexico

**Prime Minister Justin Trudeau**  
Canada

**President Paul Kagame**  
Rwanda

**Henry Kissinger**  
Secretary of State, U.S.

**Henry Paulson**  
Secretary of the Treasury, U.S.

**H.E. Berat Albayrak**  
Minister of Energy & Natural Resources, Turkey

**H.E. Khalid Al-Falih**  
Minister of Energy, Industry & Mineral Resources, Kingdom of Saudi Arabia

**H.E. Jabbar Ali Al-Luiebi**  
Minister of Oil, Republic of Iraq

**H.E. Bakheet Al-Rashidi**  
Minister of Oil, Electricity & Water, Kuwait; Chairman, Kuwait Petroleum

**H.E. Sultan Ahmed Al Jaber**  
Minister of State, UAE; CEO, ADNOC

**Mohammed Hamed Saif Al-Rumhy**  
Minister of Oil & Gas, Oman

**H.E. Mohammed Saleh Abdulla Al Sada**  
Minister of Energy & Industry, Qatar

**Ben Bernanke**  
Chairman, Federal Reserve, U.S.

**Hon. Matthew Canavan**  
Minister for Resources & Northern Australia, Australia

**Patricia Espinosa**  
Executive Secretary, UNFCCC

**H.E. Irene Muloni**  
Minister of Energy, Uganda

**Salvador Namburete**  
Minister of Energy, Mozambique

**Hon. Jesse Norman**  
MP Parliamentary Under Secretary of State, Minister for Energy & Industry, U.K.

**H.E. Alexander Novak**  
Minister of Energy, Russian Federation

**H.E. Shri Dharmendra Pradhan**  
Minister of State, Independent Charge, Ministry of Petroleum & Natural Gas, India

**H.E. Terje Søviknes**  
Minister of Petroleum and Energy, Norway

**José Maria Botelho de Vasconcelos**  
Minister of Petroleum, Angola

**Hon. Ryan Zinke**  
Secretary of the Interior, U.S.

## EXECUTIVES

**Nick Akins**  
Chairman, President & CEO, American Electric Power

**Nizar Al-Adsani**  
Deputy-Chairman & CEO, Kuwait Petroleum Corp.

**Mohamed Al Hammadi**  
CEO, Emirates Nuclear Energy Corp.

**Marco Alverà**  
CEO, Snam

**Greg Armstrong**  
Chairman & CEO, Plains All American

**Mary Barra**  
Chairman & CEO, General Motors

**Ben van Beurden**  
CEO, Royal Dutch Shell

**Patricia Vincent-Collawn**  
Chairman, President & CEO, PNM Resources

**Christopher Crane**  
President & CEO, Exelon

**Leo Denault**  
Chairman & CEO, Entergy

**Claudio Descalzi**  
CEO, Eni

**Thomas Fanning**  
Chairman & CEO, Southern Company

**Thomas Farrell, II**  
Chairman, President & CEO, Dominion

**Ignacio Galán**  
Chairman & CEO, Iberdrola

**Greg Garland**  
Chairman & CEO, Phillips 66

**Bill Gates**  
Co-Chairman, Gates Foundation

**Russell Girling**  
President & CEO, TransCanada

**Lynn Good**  
Chairman, President & CEO, Duke Energy

**Diane Greene**  
CEO, Google Cloud

**David Hager**  
President & CEO, Devon Energy

**Harold Hamm**  
Chairman & CEO, Continental Resources

**Paal Kibsgaard**  
Chairman & CEO, Schlumberger

**Richard Kinder**  
Executive Chairman, Kinder Morgan

**Isabelle Kocher**  
CEO, Engie

**Keisuke Kuroki**  
President, JOGMEC

**Ryan Lance**  
Chairman & CEO, ConocoPhillips

**Robert Lawler**  
President, CEO & Director, Chesapeake Energy

**Jean-Bernard Lévy**  
Chairman & CEO, EDF

**Fanrong Li**  
CEO & President, CNOOC

**Zhenya Liu**  
Chairman, State Grid Corporation of China

**Andrew Mackenzie**  
CEO, BHP

**Mpho Makwana**  
Chairman, Eskom Holding

**Jaime Francisco Hernández Martínez**  
General Director, CFE

**Alexander Medvedev**  
Deputy Chairman of the Management Committee, Gazprom

**Al Monoco**  
President & CEO, Enbridge

**Amin Nasser**  
President & CEO, Saudi Aramco

**Scott Prochazka**  
Chairman & CEO, Centerpoint Energy

**Igor Sechin**  
Executive Chairman & CEO, Rosneft

**Scott Sheffield**  
President & CEO, Pioneer Natural Resources

**Eric Silagy**  
President & CEO, FP&L

**Fred Smith**  
Founder, Chairman, President & CEO, FedEx

**JB Straubel**  
Co-Founder & CTO, Tesla

**Carlos Treviño**  
CEO, PEMEX

**Jean-Pascal Tricoire**  
Chairman & CEO, Schneider Electric

**Al Walker**  
Chairman & CEO, Anadarko

**Yilin Wang**  
Chairman, CNPC

**Kelay Warren**  
Chairman & CEO, Energy Transfer Partners

**Jeremy Weir**  
CEO, Trafigura Group

**Geisha Williams**  
President & CEO, PG&E

**Darren Woods**  
Chairman & CEO, ExxonMobil





# Past Speakers



**U.S. Presidents Bill Clinton and George W. Bush with Dr. Daniel Yergin**



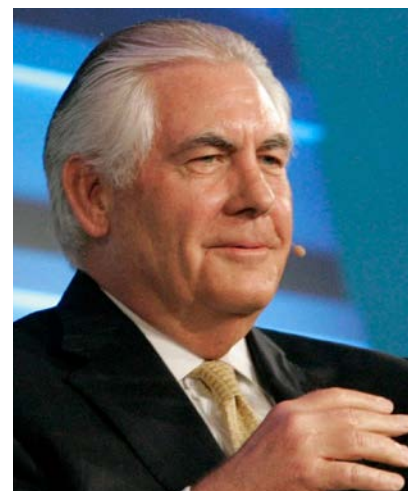
**Patrick Pouyanné, President & CEO, TOTAL**



**Bill Gates, Co-Chairman,  
The Gates Foundation**



**Admiral Mike Mullen,  
Former Chairman, Joint Chief of Staffs, U.S.**



**Rex Tillerson  
Chairman & CEO, ExxonMobil**



**Yilin Wang, Chairman,  
China National Petroleum Corporation**



**Isabelle Kocher, CEO, Engie**

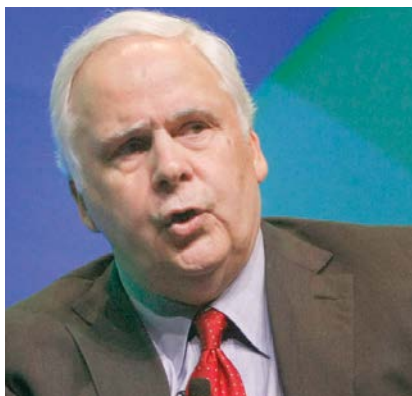


**Zhenya Liu, Chairman, State Grid  
Corporation of China**





**Mary Barra**  
Chairman & CEO, General Motors



**Fred Smith**, Founder,  
Chairman & CEO, FedEx



**H.E. Shri Dharmendra Pradhan**, Minister of State,  
Independent Charge, Ministry of Petroleum &  
Natural Gas, India



**Rt. Hon. Justin Trudeau**, Prime Minister, Minister of  
Intergovernmental Affairs & Minister of Youth, Canada

## Insight into the energy future®



**Ben Bernanke**, Chairman,  
Federal Reserve, U.S.



**JB Straubel**,  
Co-Founder & CTO, Tesla



**H.E. Khalid Al-Falih**, Minister of Energy, Industry &  
Mineral Resources, Kingdom of Saudi Arabia



**Richard Kinder**, Co-Founder,  
Chairman & CEO, Kinder Morgan



**President Paul Kagame**,  
Republic of Rwanda



# CERAWeek 2020

March 9–13, 2020

Hilton Americas, Houston, Texas

[ceraweek.com](http://ceraweek.com)

## Participation:

**Rob Fraser:** +44 77 33 00 11 22

[rob.fraser@ihsmarkit.com](mailto:rob.fraser@ihsmarkit.com)

## Partnership & special programs:

**Todd Szczebak:** +1 720-505-6730

[todd.szczebak@ihsmarkit.com](mailto:todd.szczebak@ihsmarkit.com)

## Speaking & programming:

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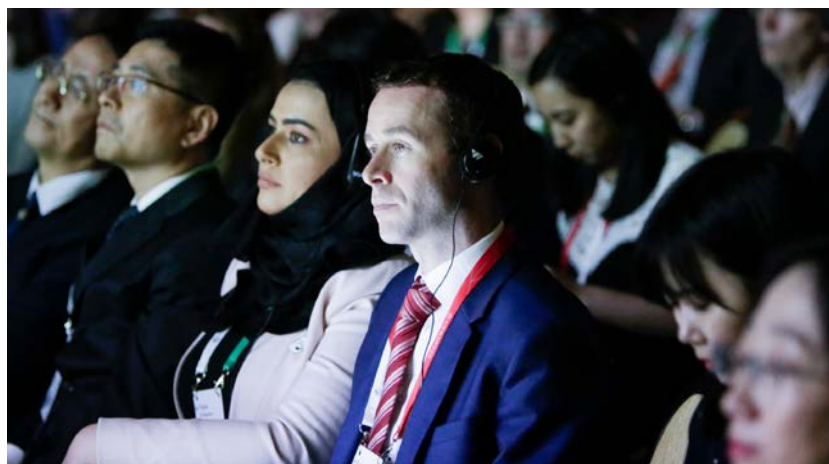
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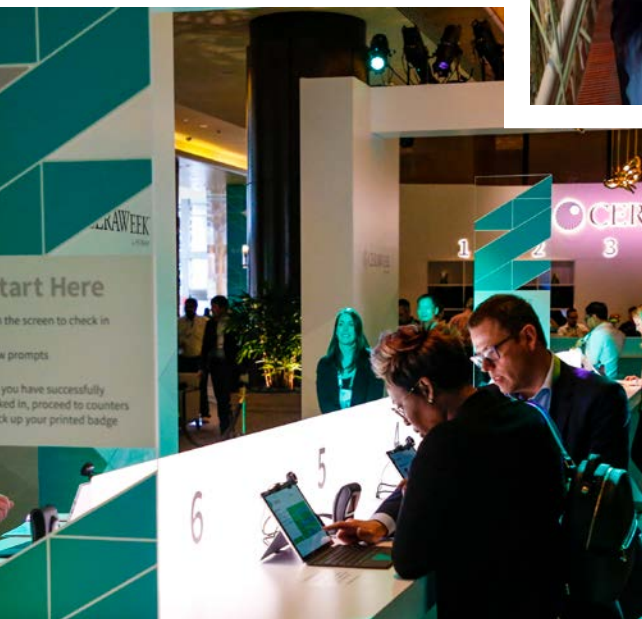
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**Hon. Sylvester Turner, Mayor, Houston, Texas, U.S., and  
Dr. Vijay Swarup, VP, R&D, ExxonMobil**







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