

CERAWeek[®]

by **S&P Global**

Houston, Texas
Marzo 18-22, 2024

“El tema de este año, Transición Energética Multidimensional, quiere decir que se va a desarrollar a ritmos diferentes, en lugares diferentes, con diferentes tecnologías, y con diferentes prioridades.”

Daniel Yergin

Reportaje Especial de Petroleum Editores, S.A.

Jorge Zajía – Editor en Jefe

Editores Asociados: Carlos Sánchez, Edgar Peláez

Contribución Especial: Lumay Viloría

Petroleum
Latin American Oil and Gas Magazine

Multidimensional Energy Transition : Markets, Climate , Technology and Geopolitics



The following are final attendance figures for CERAWeek by S&P Global 2024:

Source: CERAWeek by S & P Global

- 8100+ delegates (9400+ when counting staff, vendors etc) – A record. The previous record was 7200+ delegates at CERAWeek 2023.
- 600 sessions (approximate 120/day)
- 1400 speakers
- 85 countries represented

CERAWeek 2024 Themes

- Energy Markets
- Policy and Geopolitics
- Company Strategies
- Power Markets in Transition
- New Supply Chains for Net Zero
- Capital Transition
- Technology and Innovation
- Climate and Sustainability

Convenes a remarkable group of thought leaders on the future of climate and energy

- ✓ How will governments, academia and industry continue to coalesce around shared goals and advance climate objectives?
- ✓ How will decarbonization progress and how will climate priorities harmonize with economic growth, energy security, affordability and access?
- ✓ What actions will governments and companies take to meet COP28 commitments?
- ✓ How will we adapt to climate change?
- ✓ What are emerging strategies, risks and investment opportunities?
- ✓ Funding the energy transition
- ✓ Geopolitics: Navigating a new world of risk and returns
- ✓ The "higher-for-longer" interest rates: Implications for energy investment
- ✓ Supply chains and the reshoring agenda
- ✓ The US Inflation Reduction Act, The EU Green Deal, and global responses

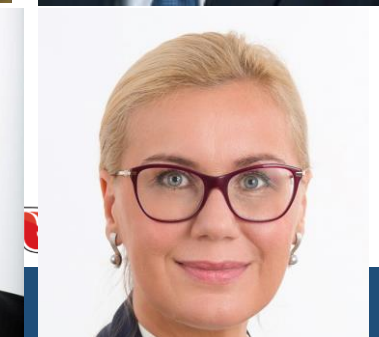
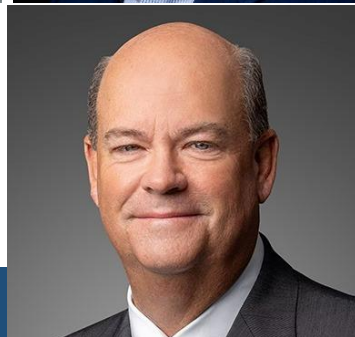
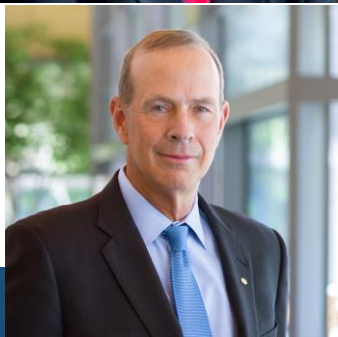
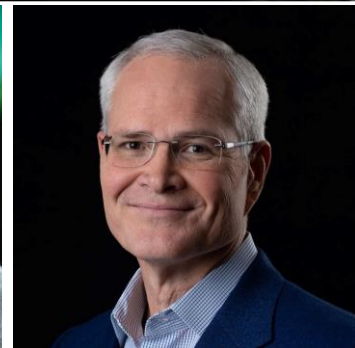
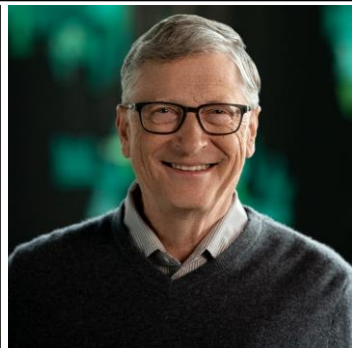
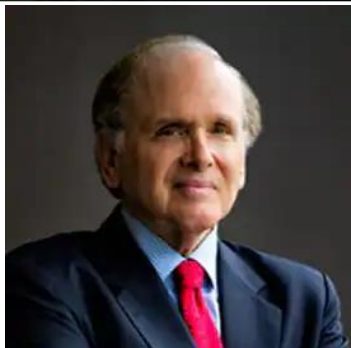
Sessions Format

- Executive Conferences Program
- Agora (new and future technology – Lyceum Forum)
- Leadership Circles Program

Executive Conference Program

Sessions focus on the most relevant themes and topics facing the energy industry addressed by the most prominent voices in the industry

Source: CERAWEEK by S & P Global



Executive Conference Session Formats

Source: CERAWEEK by S & P Global



Plenary

Chief executives and senior officials from government and industry share high-level insights on the global energy landscape.



Spotlight

Industry executives and government officials share their visions and strategies on issues critical to the energy future.



Strategic Roundtable (New!)

A dynamic discussion among top executives, policy makers and other stakeholders analyzing critical energy issues.



Strategic Dialogue

In-depth discussion among industry leaders on key issues, strategies and trends shaping energy.



Insight Dinner

Experts from industry, government and academia explore timely topics on energy, trade, finance, geopolitics, and the global economy in an informal and relaxed setting. Media not allowed.



Expert Zone

Insight presentations, discussions and meet ups with S&P Global experts on their latest research findings held periodically through each day.



“We should abandon the fantasy of phasing out oil and gas and instead invest in them adequately reflecting realistic demand assumptions.”

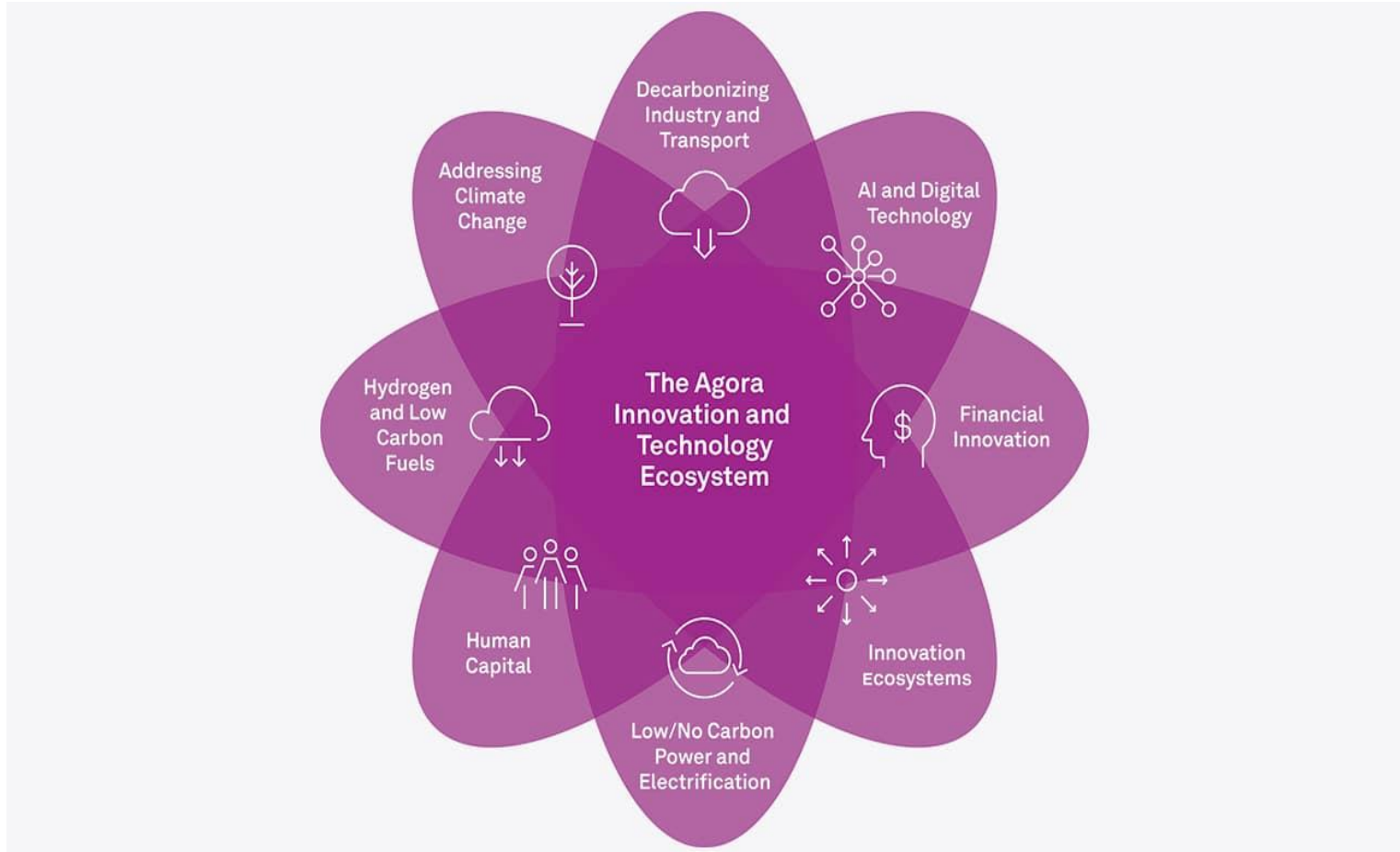
Amin Nasser – CEO Saudi Aramco

The focus should be on reducing oil and gas emissions.

Petroleum



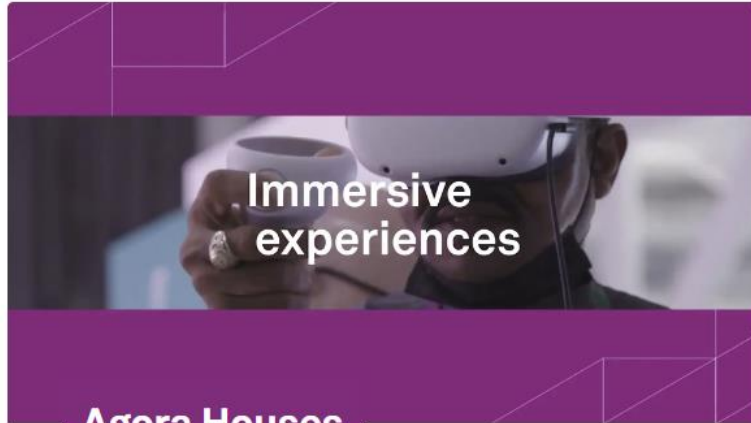
Experience the frontiers of innovation and energy technology in the CERAWEEK Agora Partner Houses



Source: CERAWEEK by S & P Global



Agora Session Formats



Agora Houses

Dedicated spaces for delegates to experience showcased technologies from our Partners that are transforming the energy industry and give you a chance to experience them for yourself.



Studios

Moderated dialogues with 2-3 guest speakers on emerging and disruptive technologies. These 25-30-minute conversations will be technology-focused discussions with industry leaders and ecosystem participants.



Voices of Innovation

Candid conversations from the foremost and sometimes controversial thought leaders. S&P Global experts and invited guests will moderate these 20-25-minute intimate discussion profiling the journeys of thought leaders in a one-on-one setting.

Source: CERAWeek by S & P Global

Agora Session Formats



Agora Hubs

Dedicated zones for sharing ideas and insights, exploring the technology frontiers around a central theme and topic area. Each Hub includes Meetups, displays and demonstrations, Discovery Pods for start-ups and presentations and receptions and informal meetings for connections.



Learning Lyceum

Seminars with insights on critical emerging topics and technologies led by our CERAWeek Partners, S&P Global experts, and guest “faculty”. Live sessions, including presentations, are 30 minutes in duration and offer deeper dives into technologies, primers, and a chance to look under the hood of innovation.



Book Signings

Meet top authors fostering in-depth discussion around common interests and topics.

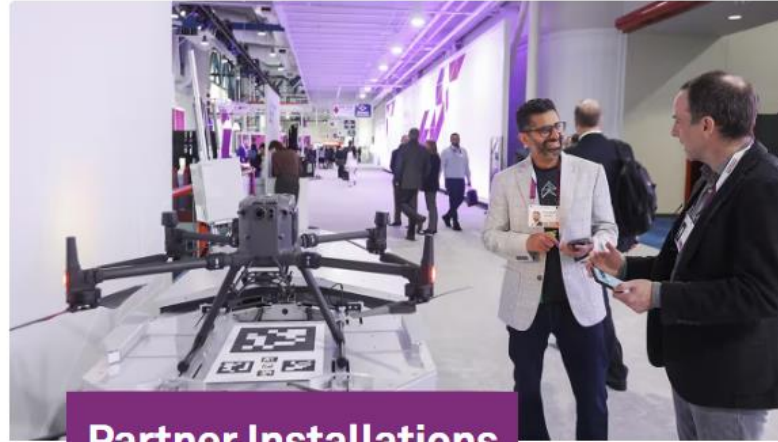
Source: CERAWeek by S & P Global

Agora Session Formats



Clean Energy Commons

A space for informal interactions and connections in a casual setting with refreshments and beverages.



Partner Installations

Dedicated presence in the Agora Hubs featuring demonstrations of leading-edge solutions from Partner organizations.



Technology Corridor

Featuring startup stations where delegates can meet entrepreneurs building promising companies.

Agora Pods

Briefs from startups, tech innovators, and case studies. Hear 20–30-minute presentations on technology impacts across industries.



Source: CERAWeek by S & P Global

Petroleum



Established in response to Partner requests for intimate peer dialogues, **CERAWeek Leadership Circles** are private, invitation-only interactive summits and forums built around communities, topics, business functions and regions. Leadership Circles and Forums provide a unique opportunity for executive to explore common concerns, develop new relationships, gain insights and share experiences and perspectives.

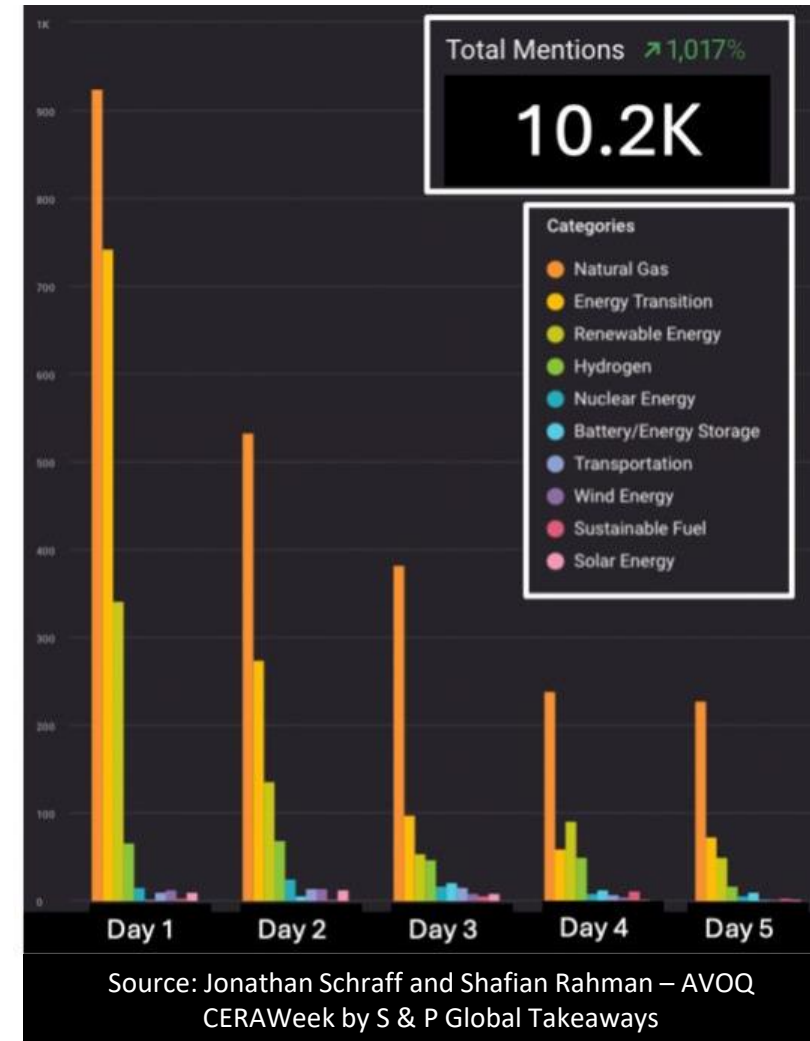
2024 planned Summits and Forums

- Africa Energy & Economy
- Agribusiness & Biofuels
- Asia Pacific Energy
- Carbon Markets
- Climate & Sustainability
- Critical Minerals
- Digital AI
- Downstream
- Europe
- Financial
- Global Gas & LNG
- Global Hydrogen
- Global Power & Renewables
- Global Upstream
- Hydrogen Financing
- Innovation
- Latin America
- Low Carbon
- Methane
- Mobility
- North America
- North American Independents
- Nuclear
- Oil & Gas Innovation
- Trade

Trending Issues at CERAWeek

“Natural Gas was by far the most discussed, which makes sense considering all the attention on the LNG export ban, industry M & A activity and growing power demand from data centers across the United States.”

Jonathan Schraff
and
Shafian Rahman
AVOQ



Reflections of the Week

Energy Transition:

- A transition must be balanced, sustainable, achievable, safe, affordable, policy led, just and equitable.
- The energy transition is not a one size fits all for everyone.
- The energy transition is accepted as being multidimensional: many individual but linked transitions.
- We need to abandon the binary discussion trap around energy transition.
- The energy transition is moving to a pragmatic dialogue focusing on scale and emissions reduction.
- Energy technology innovation needs all approaches.
- There needs to be increased sensibility of the gap between ambition and reality.
- There is no sustainability without profitability.
- A global transition will not consolidate unless the justice gap narrows.
- The energy industry has the dual responsibility of producing more energy and producing it cleaner.
- There is broad consensus that natural gas will be the most relevant transition fuel.
- Policy needs to be technology agnostic and never pick winners.

Reflections of the Week

COP 28

- Success in inclusion: All stakeholders present.
- Energy Transition Consensus.
- Agreement to 3X renewables by 2030
- Challenge: Meet energy demand @ lower emissions.
- Policy leads markets. Technology leads success. Need initiatives to work in parallel not in series.
- Politics and technology need to do a better job at co-evolving. We need free trade of ideas.

Oil and Gas Industry

- The importance of the oil and gas industry was asserted.
- The world needs electrons plus molecules. We just need to make them in a better way.
- The world will still need molecules as source of energy for many years to come.
- The oil and gas industry is still needed and will be needed for years to come.
- A dialogue is opening up among all energy transition stakeholders.
- There is a common goal to produce more energy with less emissions

Technologies in a Competitive World

- Power and related technologies: Reshaping the energy landscape.
- Desalinization: Middle East need for water security.
- Google X “moon shot” factory: Innovation systematization.
- Semi-conductors: Security, geopolitical and competitive implications.
 - Taiwan: >90% of the advanced chips manufacturing.
 - Taiwan chip supply disruption: can potentially impact global GDP by 10-30%.
- Green hydrogen: Long-term potential.
- Geothermal liftoff: use of O & G infrastructure and technologies for geothermal.
- Nuclear Energy: Need to extend life of current plants and build new ones: Traditional, modular and micro.
- Decarbonization or Carbon Management
 - Direct Air Capture facilities under construction: Targets 100 DAC plants by 2035, each at 1 MM tons.
 - Digital twins for modeling accelerating technology development.
- What is new: extracting lithium from geothermal brine and converting CO2 to bio ethylene.

Technologies in a Competitive World

- 17 national labs under the DOE.
 - Focus on minerals substitution.
 - Nuclear plants for electricity generation.
 - Old time physical experiments being replaced by digital simulations.
 - Long term, fusion will generate most electricity.
- Needs more investment in radioactive materials enrichment to reduce dependency on Russia.
- Coal: 8 BN tons global production – industry harvesting capital as coal is being replaced.
- Government subsidies play a vital role in technology development.
- Technology development needs to yield higher energy use efficiency.
- 10 yrs. ago, low-cost targets for solar panels were deemed crazy. They were surpassed.
- Kuwait Petroleum Corporation: Running ESP's exclusively on solar.
- By 2030, 30% of the energy is expected to go into computers.
- Technology development needs to fight the traditional risk aversion of oil and gas industry.

All these Technologies are supported by AI

Geopolitics

- Europe managed to decouple itself energetically from Russia, Russia's income from gas sales dropped by 25%.
- The war promoted development of LNG and the energy transition globally.
- USA was able to help Europe. Europe strategy to not have again a strong dependence on Russia.
- Hamas - Israel conflict placed a pause on a far-reaching Saudi Arabia-Israel-United States trade agreement.
- There is a big division in the Middle East between Iran and Saudi Arabia. Concerns on Iran influence.
- For the war to end, Palestine must be stabilized, which is a great challenge.
- Great global drive for technologies to reduce emissions.
- Divided bipolar world: Russia, China, India not represented in CERAWeek: large block of people and energy demand
- Latin America has energy resources, traditional and renewable however, its scale is not one to drive global markets.
- Venezuela not present in the discussions.

Thoughts and Conclusions

- Hydrocarbons are no longer a bad word.
- Natural Gas is the Future as Transition Fuel
- Executives from major IOC's and NOC's stated that the traditional oil and gas industry is alive and well.
- Already in 2024, demand expectations for oil and gas are being revised higher.
- Houston previously declared itself the “energy transition capital of the world” focused on renewables.
- At CERAWeek 2024, Houston asserted its leadership with focus back on oil and gas.
- Petroleum and natural gas, will have dominant roles for decades; investment in new development, particularly gas, is required.
- Electricity demand will continue to grow: energy transition electrification, Data Centers, Cloud, AI, Electronic Currency.
- By 2030, an impressive 30% of energy is expected to go into computers. More than power for households.
- Energy supply from solar and wind not expected to fulfill the increasing energy demand in the short term.
- Fossil fuel generation will be needed, including additional natural gas plants in most global markets.
- COP 28: Agreement on energy transition consensus.
 - Shift of debate from a binary energy choice between fossil and low-carbon fuels
 - Agreed the world needs all sources of energy for the near term.

Select Messages

Jennifer Granholm (Secretary of Energy USA)

- *The world will need Traditional and New Energy.*
- *The global Economy will be revitalized with clean energy.*
- *The energy transition is now generally acknowledged.*
- Investments in clean energy today are larger than those in oil & gas.
- The pause on issuing licenses for new LNG export terminals “will be well in the rearview” in a year.
- Transition should be led by the private sector and enabled by the government.
- Holistic energy strategy: Keep lights on – speed towards the future.

Select Messages

Bill Gates (Breakthrough Energy, and TerraPower (nuclear))

- *The world runs on a heavy hydrocarbon economy.*
- *“We shouldn't underestimate how incredibly difficult the energy transition challenge will be”.*
- *AI will become an everyday part of productivity.*
- *Current data centers are high energy demand facilities.*
- New technologies for advanced computing at lower energy demand are likely 10 years out.
- Houston May Become The “Silicon Valley Of Energy”
- Electricity cost is the key input for a data center profitability. The amount of power AI will consume is staggering.
- The US concentrates best IQ minds in a startup innovation environment.
- The transition speed is up, however, not yet enough to meet the agreed goals.
- There are heroic efforts being made to face a very large challenge.
- Breakthrough Energies: Global innovation focused venture. Started with \$1B, 25 people, created 100 companies.
 - Criteria: companies must have potential to reduce global emissions by ½ %
- Terra Power: Founded in 2006. Started from scratch on design using digital simulation.
 - Nuclear plants for electricity generation.
 - Old time physical experiments being replaced by digital simulations.
 - Long term, fusion will generate most electricity.

Select Messages

Darren Woods (CEO ExxonMobil)

- **No denying, an energy transition is underway. Energy transition can mean different things to different people.**
- **The energy transition will require many solutions, many technologies, all around the world. Anything but simple.**
- **Transition is shifting from ideology to practical implementations.**
- **Government subsidies are not and should not be sustainable long term.**
- **Unconventional Hydrocarbons will continue to grow in the USA, there is efficiency due to scale to gain.**
- **In much of the developed world, the energy transition means concentrating on the need to reduce emissions.**
- **Many developing nations are transitioning from wood and animal waste to reliable electricity or heating oil.**
- **Welcome fact that at COP 28 the oil and gas industry was invited to participate.**
- **The Inflation Reduction Act should be technology agnostic. Should not pick winners and losers.**

Select Messages

Amin Nasser (CEO Saudi Aramco)

- Forecasted years of rising fossil-fuel consumption, proposing a shift on the energy transition.
- New technologies must be used when possible due to available infrastructure and economy.
- Need focus on practical solutions: Lower carbon intensity, new transition materials
- Drive towards affordability, reliability, and achievability.
- “Consumers around the world are sending powerful messages that can no longer be ignored. They want energy that helps to protect the planet and their pocketbook with minimal disruptions to supplies and their daily lives. The current transition strategy is visibly failing on most fronts as it collides with five hard realities: The 1st is that alternatives have been unable to displace hydrocarbons at scale. The 2nd hard reality is that despite the contribution of alternatives to reducing greenhouse gas emissions, when the world does focus on reducing emissions from hydrocarbons it achieves much better results. The 3rd reality is that many alternatives in play are simply unaffordable for the majority of people around the world. The 4th reality is that energy transition narrative will increasingly be written by the global South and in turn, this is driving the 5th hard reality, that a transition strategy reset it's urgently needed, and my proposal is this: **We should abandon the fantasy of phasing out oil and gas and instead invest in them adequately reflecting realistic demand assumptions.** This welcome clarity from consumers is shifting the transition’s center of gravity to a multi-source, multi-speed, multi-dimensional road to reality and to the right side of history where everyone's hopes and ambitions can actually be met.”

Petroleum

Select Messages

Ryan Lance (CEO ConocoPhillips)

- “With this huge revolution around artificial intelligence, I think the energy needs are going to be enormous”.

Wael Swan (CEO Shell)

- **LNG will continue to play a critical increasing role. Its share of gas sales expected to almost 2X in 15-20 years.**
- **There is latent demand of LNG to mitigate a potential glut.**
- The energy sector is more politicized than it needs to be.
- Global demand for LNG is increasing due to lower prices.

Mike Wirth (CEO Chevron)

- **LNG Pause: Sends mixed signals to the market as unreliable supplier.**
- **Need a balanced energy transition dialogue: Reliability, affordability, environmentally protective, all energy needs met.**
- AI drives safety, reliability, lower cost.
- Technology target to drive improved recovery.
- New energies focus: Green hydrogen, long term.

Select Messages

Vicki Hollub (CEO Oxy)

- **A single energy transition path is unrealistic.**
- **Need to build a road to decarbonization growth.**
- **The economic and wealth gaps lead to different priorities. AI implementation drives efficiency.**
- **Frist Direct Air Capture facility will be ready in 2025.**
- **Targets building 100 DAC plants by 2035, each at 1 MM tons.**
- **Use of digital twins for modeling accelerating technology development.**

John Hess (CEO Hess Corporation)

- **US production is playing a balancing role in the global markets.**
- **Non-OPEC production to balance global markets: Guyana, Canada**
- **Asia is 50% of population, energy consumption and emissions. It is a critical region.**
- **Russia war price affected financial markets generating shock and promoting hedges.**
- **LNG Pause: Unwarranted; Government administration flip flop; Unfriendly in cost, security and strategy**
- **Energy security key to energy transition.**
- **COP28: Oil and gas industry had a seat.**

Select Messages

Patrick Pouyanné (CEO Total Energies)

- **Transition needs to be orderly.**
- **Today, energy demand growth is outpacing renewables growth.**
- Strategic decision to invest in the US and in Texas.
- Combined Transition strategy: LNG + Solar + Wind
- Texas is good for integrated power generation.
- A number of LNG plants will be on stream by 2027. LNG supply will be tight until then.

John Ketchum (CEO NextEra Energy)

- **Power demand drivers: Electrification, Reshoring manufacturing, Cloud / AI data centers**
- **Renewables challenge: Permits, Transmission, People**
- Strategic decision to invest in the US and in Texas.
- Owns Florida Lighting and Power and NextEra E & P
- Renewables CAGR @ 80% for 5 years.

Select Messages

Ricardo Markous (CEO Tecpetrol)

- Argentina is in a "very bad" economic situation, but is on the right path to encourage energy investment and remove its fiscal imbalances if reforms proposed by President Javier Milei passes the Congress
- By 2030 Argentina will produce 1.2 – 1.5 MMBBL/day.
- Hydrocarbons are going to help the Argentine economy.
- Imports from Bolivia might not be needed from October

Stuart R Young (Minister of Energy, Trinidad & Tobago)

- There are difficulties of developing countries accessing just energy security as they also face pressures from global climate change, as well as "the developed world's insistence of moving quickly towards renewables without providing the resources necessary to facilitate such a transition.
- Met with Shell for discussions around achieving of the 30-year licence from Venezuela for the Dragon gas field, Manatee and other projects that Shell would like to pursue with Trinidad and Tobago.
- Met with BP and discussed operations in Trinidad and Tobago, the success of restructuring ALNG, the pursuit of deep-water gas, Manakin/ Cocuina and other projects that BP would like to pursue with Trinidad and Tobago.

Select Messages

Ricardo Roa (CEO – Ecopetrol)

Colombia is analyzing options to alleviate a natural gas deficit that may grow.

Potential increase in LNG imports.

Promising offshore reserves found are years away from production.

Narcis de Carreras (CEO - Valia Energia Mexico)

- **"Transition is not renewables. Energy transition is sustainable energy,"**
- "Natural gas continues to be a central part of the composition."
- Mexico needs to rely on natural gas for its energy transition path to a larger use of renewable energy

Andrea Arrobo (Energy Minister, Ecuador)

- Oil output to reach 550,000 bpd by end of 2025: grants contract extensions that had been on hold.
- Current output is 485,000 bpd, below a peak of some 560,000 bpd a decade ago.
- President Daniel Noboa re-launching offers for areas previous administration failed to allocate.
- Promising Amistad gas field, output needed for power generation.

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Reported by Petroleum Magazine

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www.petroleumag.com