



# Brainstorming XXXI

## Topics for discussion

The format of the 2022 brainstorming has been designed to enable in depth discussions of short-term energy issues in the context of longer-term economic and public policy goals that will strongly affect the entire energy sector, notably those related to climate change. Public policy imperatives will almost certainly lead to a major shifting of roles between segments of the current overall energy system, e.g., from oil to electricity in transportation and from coal and gas to renewable sources in electric power generation. In this brainstorming event we will strive to consider issues affecting segments of the energy sector in the context of the overall energy system during the energy transition.

There are six topics/themes which will be discussed in order, but the timing will be flexible; some might only take 45 minutes, while others might stretch over two sessions (see timetable attached).

Topic 1 defines the context: net zero carbon emissions is the goal that most of the world thinks our long-term existence demands. However, there are enormous challenges to achieving the transition to net zero. There will also be enormous opportunities for companies and countries that can contribute to the energy transition. Topic 2 will examine recent and short-to-medium term energy market dynamics. Topics 3-5 will address how the net zero goal may be achieved, examining challenges and opportunities in the areas of technology, finance and governmental policy. The final topic will pull together the conclusions from the prior sessions and focus primarily on how companies (and countries) in each part of the energy system could position themselves over the shorter run to survive and thrive as the overall energy system evolves in the longer run.

### **Topic 1: Context: net zero will be the primary driver of decisions related to energy**

- Do ongoing energy market developments reflect a view that a longer-term goal of net zero emissions is the main driver, or can they be explained by conventional shorter-term dynamics?
- What are the key implications of COP26 for the energy transition?
- How realistic and plausible are the recent announcements about net zero targets?
- What do CO<sub>2</sub> emissions in 2019-2022 (during COVID-19) tell us about environmental targets?
- Could continuing high/volatile energy prices reduce the pace of the transition or accelerate it?

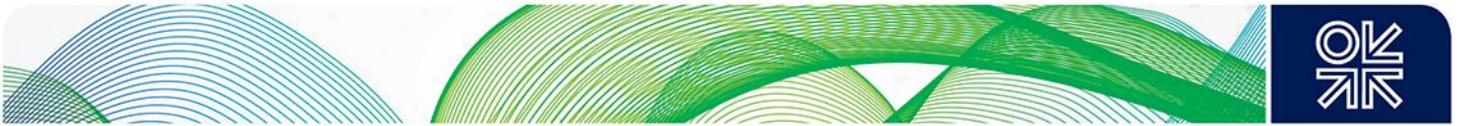


## Topic 2: Are recent energy market developments giving us a glimpse of what to expect?

- Global economic recovery, macroeconomic prospects and energy demand.
- Oil: should we expect oil demand growth to go back to historical trends in 2023-2025?
  - How did OPEC+ perform over this cycle and what are OPEC+ next steps?
  - Will US shale continue to be self-disciplined?
  - Has the investment cycle in oil become shorter?
  - Will oil trade flows change and how?
  - Is the world seeing the end of refining expansion?
- Natural gas: do recent developments suggest that natural gas is the bridge to decarbonization?
  - How are attitudes in Europe toward Russian gas supplies evolving? Will the 2021 gas crunch lead to more reliance on LNG?
  - What happens if gas demand continues to grow but supplies fail to keep up?
  - Will gas trade flows change?
  - Can gas be a bridge fuel for energy transition in emerging markets if prices remain high?
- Electricity: what are the challenges and opportunities of decarbonizing electricity?
  - What explains the rising price of electricity in most countries in 2021?
  - Given that the primary sources of decarbonized electric generation are projected to be wind and solar, which are intermittent, how can the electric power sector continue to provide highly reliable power to end users?
  - Are current power markets motivating the needed investments in security and reliability of supply?
- Competition among low carbon energy resources and the limits of electrification
  - What do recent trends in transport, heating and industrial markets suggest concerning the future of oil, gas and electricity; and how does this vary by region?
  - Will carbon neutral hydrocarbons become a real product?
  - How might the need to reduce methane emissions impact sales of oil and gas?

## Topic 3: Technology innovation is key to net zero, but challenges are plentiful

- Electricity is likely to emerge as the main vector of decarbonization, but storage and other technological developments are needed for this to occur.
- Are electricity networks, all the way forward to end-user information and control technology, ready for a massive transformation?
- Will development of technologies like CCUS enable fossil fuels to remain part of the energy mix?
- Can a hydrogen economy develop and over what timescale?
- What are the supply chain constraints, all the way back to minerals, on the development of storage and other technologies needed for pervasive electrification? How durable are these constraints?



#### **Topic 4: Immense capital investment will be needed to make the transition to net zero**

- What are the financing requirements for low-carbon energy to meet net zero; how can they be met?
- Is ESG impacting investment in oil and gas?
- Will we see super cycles in oil and gas (and volatile prices) due to underinvestment?
- What are the implications of the EU moving ahead with plans to label gas and nuclear as 'green'?
- Will governments and the private sector in the global north and new markets (e.g. carbon offsets) provide sufficient financing for the global south to achieve energy access and energy transition?

#### **Topic 5: Governments are key to the success or failure of the energy transition**

- How can governments enable the energy transition and limit public opposition to it?
- What can we expect from future international climate negotiations (COPs and climate clubs)?
- What are the determining features of the modern geopolitics of energy and climate?
- What should we expect from the key players (emitters, deforestation) in the next decade (US, China, India, Russia, Middle East producers, Brazil)?
- How can governments and private capital markets address energy poverty and the need for decarbonized economic development in emerging countries?
- How will policy-makers respond if/when it becomes clear that the world is going to miss, or has already missed, its climate goals (exceeded the carbon budget for 1.5°)?
- How will the energy transition differ by region and what will the consequences of these differences be?
- What do these prospects mean for existing geopolitical relations?

#### **Topic 6: How can energy companies position themselves now to survive and thrive in the longer run? Is uncertainty too high to be a first-mover or is the time for corporate action now?**

- What are the greatest opportunities and challenges facing oil and gas companies in the transition?
- What do these prospects mean for current and future business models of energy companies?
- How will governments/companies deal with the prospects of volatile fossil fuel prices and higher costs of minerals required for the transition?
- Will civil society demand action and what could be the consequences in different regions?