Paris Energy Club
Autumn Meeting

Friday 6 December 2024
Venue : Maison de la Recherche, 54 rue de Varenne, 75007 Paris

8:30–9:00 **Registration and Welcome Coffee**

9:00–9:10 **Welcome Remarks and Introductions**

09:10–10:30 **Geopolitics of the energy transition**

The global push towards sustainable energy and the associated shifts in power dynamics, economic interests, and international relations are shaping geopolitics of the energy transition. Transition from fossil fuels to renewable energy sources is altering the global energy landscape. The ongoing energy transition has implications on national security, including energy independence, supply chain vulnerabilities, and strategic resource competition. In a world moving towards renewables, oil and gas-dependent economies are facing significant challenges with socio-economic impacts and the need for diversification and economic transformation.

Technological innovation is driving the energy transition, and the race to lead such innovation is shaping geopolitical influence.

Questions to be addressed include:

- How is the shift to renewables changing global energy power dynamics? What strategies are traditional oil and gas exporters adopting to maintain their influence?
- How does the transition to renewables impact national security and energy independence?
- What are the strategic risks associated with critical minerals supply chains?
- What are the key strategies of the U.S., China, and EU in the context of the energy transition? How are these countries leveraging their technological and natural resource advantages?
- How are technological innovations in energy shaping geopolitical influence?
- How does the energy transition impact economic competitiveness and industrial policy? Which countries are emerging as leaders in renewable energy technology, and what are the implications for global trade?
- How might competition for renewable energy resources and technology lead to geopolitical tensions? What are the key areas of conflict in the renewable energy sector?
- What does the future of global energy markets look like in a low-carbon world? How will changes in energy demand and pricing affect global energy trade?

10:30–10:45 **Coffee Break**

10:45–12:15 **What implications of artificial intelligence (AI) for energy systems, and energy for AI?**

Integration of AI in the energy sector is becoming increasingly relevant for automation, reducing CO2 emissions, enabling preventive maintenance, and ensuring transparent and secure operations, offering opportunities for source transitions, business transformations, and forward-looking digital strategies.

Renewable energy stands out as a leader in integrating AI technologies, using AI to optimize cross-functional operations by analyzing extensive data on weather patterns and energy consumption. This enhances efficiency, improves forecasting accuracy, and streamlines maintenance.

Furthermore, AI is driving significant progress in thermal energy production, benefiting technologies like geothermal and concentrated solar power. By optimizing resource allocation and predicting energy demand fluctuations, precise machine-enabled control over thermal energy production improves reliability and cost-effectiveness.

In nuclear energy, AI algorithms enhance safety measures, refine reactor performance, and manage radioactive waste procedures, ensuring uninterrupted operations while minimizing environmental impact.

Beyond these applications, AI enhances exploration processes in fossil fuel extraction while minimizing environmental impact. Grid management systems powered by AI optimize energy distribution networks, adapting to fluctuating demand and integrating diverse energy sources without extra effort. Additionally, AI-driven energy storage solutions hold promise in mitigating the intermittency challenges linked to renewable energy sources, thereby expediting the shift towards a sustainable energy future.

AI models themselves require significant computational resources and energy.

- How to unlock the potential benefits of AI for the energy transition?
- What could/should be done to manage the risks, including the rise of electricity demand?
- How can we balance the energy cost of running these models with their benefits to the energy sector?
- How can the energy sector reduce the environmental impact of the physical infrastructure (like data centers and IoT devices) needed to support AI applications?
- How can the energy sector mitigate cybersecurity risks associated with AI-driven infrastructure, especially given the potential impact of cyber-attacks on energy reliability?
- How should be shaped the regulations on the use of artificial intelligence in the energy sector to prevent accidental and intentional disruptions?

12:15–13:15 **Lunch**

13:30–15:00 **Middle East turmoil: potential implications on the energy sector and beyond**

The recent escalation of the conflict in Gaza has added a new layer of uncertainty to an already tense global energy market, which was strained by the conflict between Russia and Ukraine. With the world's eyes on how instability in the Middle East could affect energy supplies and prices, it is crucial to analyze the potential repercussions and effects of these geopolitical realignments on the energy industry.

Although Israel and Gaza do not significantly contribute to global energy production, particularly to hydrocarbons supply, the instability generated by the conflict has the potential to indirectly affect

the flow and global prices of these essential commodities. The world's economic and energy interdependence means that any sign of turbulence in this region immediately raises concerns about the security of energy supply and global economic stability, highlighting the delicate network of connections that supports the international energy system.

In addition, the confrontation between superpowers is reshaping global alliances (BRICs enlargement and new global South dimension, new routes of energy trade in reactions to sanctions imposed and Russia and ongoing conflicts in Middle East, etc.)

Questions to be addressed include:

- How might a wider Middle East conflict affect the global economy?
- Are there any significant consequences for the development of East Mediterranean gas resources?
- Have threats to merchant chips passing through the Red Sea triggered new thinking about energy trade routes?
- Do we see any opportunities for the region out from the ongoing crisis and shifting geopolitical realities in the Middle East?

15:00–15:15 Coffee Break

15:15–16:30 Is the objective of a net zero by 2050/2060 achievable?

Achieving net zero emissions by 2050 is widely recognized as essential to limiting global warming to 1.5°C above pre-industrial levels. However, whether this target is realistically achievable depends on several challenging factors. Solar, wind, and other renewable sources need to scale up drastically to replace fossil fuels in energy production. This shift is happening but not uniformly worldwide, and storage solutions to balance intermittent renewable energy are still catching up. Large-scale CCS is essential for capturing emissions from sectors that are hard to decarbonize, like heavy industry. Though CCS technology is advancing, it is expensive and not yet deployed at the necessary scale. Newer technologies—such as hydrogen fuel, direct air capture, and nuclear fusion—are promising but need substantial investments and policy support to reach maturity and affordability by 2050.

Given the magnitude of efforts required to achieve net zero target by mid-century, there are more calls for considering other factors such as energy independence and sovereignty.

Questions to be addressed include:

- What are the key limitations for large-scale deployment of emerging technologies by 2050?
- How feasible is it to deploy and upgrade infrastructures that are needed to support a fully renewable energy system within the next few decades?
- What are the financing gaps in renewable energy and decarbonization projects? How can private and public sectors collaborate to close these gaps?
- How effective are carbon pricing and emissions trading schemes in driving emissions reductions? What changes could make these mechanisms more effective?
- What strategies are effective in gaining public support for net zero initiatives?
- How can we ensure that the shift to net zero is equitable, addressing issues like job losses in fossil fuel industries and ensuring affordable access to clean energy?
- How can carbon emissions data be standardized and verified internationally?
- How can countries coordinate policies to ensure global consistency and prevent "carbon leakage" (where emissions are merely shifted to other countries)?

16:30–16:45 Sum-up