

Three Energy-related “Dominances”, Shaping Global Energy Landscape

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From September 8, I had the privilege of visiting the United Kingdom to participate in the 45th Oxford Energy Seminar, hosted by the renowned UK energy think tank, the Oxford Institute for Energy Studies. This seminar, held over nearly two weeks, brings together high-level participants from OPEC member states, international oil majors, and other global energy stakeholders for intensive lectures and discussions. The roster of speakers included senior ministers from oil-producing countries, top executives from major energy firms, and distinguished experts, making it a truly elite gathering. Under the Chatham House Rule, participants engaged in candid and dynamic exchanges, and I found the experience to be immensely valuable. In this brief reflection, I will summarize a few key impressions drawn from the discussions I was able to attend—though they represent only a small portion of the overall seminar.

While the topics covered were diverse, a unifying theme emerged from my viewpoint: how should we interpret and respond to the ongoing energy transition? Perspectives from major powers such as the United States, the European Union, Russia, China, and Japan were presented and debated. Additionally, insights from oil-producing nations and international energy corporations enriched the discussion, adding depth and nuance.

Given that many participants are directly involved in the energy industry and frequently engage with the realities of energy markets, the discussions were grounded in a strong sense of realism. While there was a broad understanding of the ideals behind global efforts such as carbon neutrality, there was also a shared recognition of the gap between these ideals and the current geopolitical and economic realities. As I have argued in recent essays (Issues No. 747 and 750 of *Perspective on the International Energy Landscape*), there is a growing trend in global energy discourse toward confronting these realities head-on. The Oxford seminar reaffirmed this shift.

One particularly striking insight that emerged from the seminar—though not explicitly addressed in any single lecture—was the notion that three different forms of "dominance" are currently shaping the global energy landscape. These dominances are not isolated; rather, they are in a state of mutual contention, each influencing and being influenced by the others.

What are the three forms of energy-related dominance? The first concerns dominance in the world of traditional fossil fuels, particularly oil and gas. This can be closely associated with the concept of "energy dominance" advocated by Trump 2.0. The second relates to dominance in the clean energy sector, especially across its entire supply chain. This includes issues at the upstream end of the supply chain, such as critical minerals including rare earth. These are also crucial factors that will significantly influence the future of energy transition. The third involves dominance in fields related to the new information revolution. It is connected to the question of who will lead and shape the future of strategically important technologies, such as generative AI. Since the outcome of this new information revolution—symbolized by the future of generative AI—is expected to have a major impact on the

security of energy supply worldwide, particularly in terms of electricity, this too is a key issue closely tied to energy issues.

The first form of dominance concerning oil and gas is fundamentally a matter unfolding on a stage centered around the United States under the Trump 2.0 administration. The shale revolution, which began in the mid-2000s, fundamentally transformed the U.S. energy supply-demand balance and reshaped global energy markets. Today, the United States stands as the world's largest producer and a major exporter of oil and gas. Maintaining influence over these key energy commodities remains a strategic priority for any nation capable of doing so. It is expected that Trump 2.0 will continue to leverage this dominance to drive U.S. economic growth and maximize national interests. While it remains uncertain whether all of President Trump's ambitions will be realized, fossil fuel dominance will undoubtedly serve as a critical lever in U.S. policy on energy geopolitics. Importantly, this dominance is not exclusive to the United States. Saudi Arabia, with its unmatched spare oil production capacity, has significantly increased its global influence. This underscores how fossil fuel dominance continues to shape international energy dynamics in profound ways.

The second form of dominance concerns the supply chains underpinning clean energy technologies—renewables, batteries, electric vehicles, and others. When surveying the global landscape of these supply chains, China's overwhelming presence becomes immediately apparent. In some cases, such as solar panels, China's global manufacturing share exceeds 90%. As the adoption of clean energy technologies accelerates, demand for critical minerals—such as rare earths—will inevitably rise. China's dominance is particularly pronounced in the refining and processing stages of these minerals, even more so than in mining. The supply structure for rare earths is heavily concentrated in China in particular. In the nuclear energy sector, which has recently regained global attention, Russia plays a dominant role in the fuel cycle. Together, China and Russia are leading the international nuclear energy market. In response, countries around the world are striving to localize strategic materials, technologies, and manufacturing capabilities. Efforts to build resilient supply chains through alliances and partnerships are also intensifying. Nevertheless, the entrenched dominance of China (and Russia) in this domain is formidable. Given their competitive advantages in resource endowment and manufacturing, it is likely that this dominance will persist—and may even strengthen. The global community must grapple with how to respond to this reality.

The third and most rapidly evolving form of dominance relates to strategic information technologies, particularly generative AI. This domain is witnessing fierce global competition, primarily between the United States and China. The expansion of data centers to support AI applications has triggered a paradigm shift in the energy sector, especially in electricity demand. As seen in discussions surrounding Japan's 7th Strategic Energy Plan, the potential surge in electricity demand driven by the new information revolution—and the need to ensure security of power supply—has become a shared global concern. Generative AI and related technologies are poised to transform societies and economies, making competition over core technologies increasingly intense. This issue extends into cyberspace, where the race to secure dominance in strategic digital infrastructure could shape the future of energy in the 21st century. The outcome of this competition should be closely watched, as it may determine the next global leader in the energy-information nexus.

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