

World Energy Markets Outlook

How are AI and sovereignty driving a new energy paradigm in an uncertain world?



A new *energy landscape* shaped by geopolitics, economic forces, and the transformative potential of AI



- » Consumer-centric flexibility is emerging as the hidden lever of the transition.
- » Record investments in renewables, batteries, and digital infrastructure are creating new opportunities.
- » But rising demand, fragile supply chains, and policy gaps keep progress uneven.

! The energy transition cannot wait, it requires decisive action now, combining policy, investment, and market innovation.

Rising Resource Risks

The backbone of the energy transition-critical materials, is under strain.



- Demand Surge**
Without intervention, demand for critical materials will jump 60% by 2060.
- Strategic Oversight**
National strategies and corporate agendas are failing to tackle resource criticality.
- Beyond Rare Metals**
Copper, alloy steels, and concrete - essential for low-carbon infrastructure, face supply chain fragility and CSR scrutiny.
- Market Misalignment**
Price volatility, not planetary limits, is the real barrier to scaling production.

! Resource scarcity is not a distant challenge; it's a strategic risk that could stall the energy transition if ignored today.



We Remain Off Track On Our Targets

The clock is ticking, and the world is not on track to meet net zero targets.

! Momentum is building, though without alignment of markets, technology, and policy, the finish line will keep moving further away.

Decarbonization Challenges

Global efforts are still insufficient to limit warming to 1.5–2°C.

Policy Gaps

Ambition without coordinated reforms and scaled-up investment will fail to deliver impact.

Tech Hurdles

Hydrogen and carbon capture remain promising but prohibitively expensive and infrastructure intensive.

Energy and *geopolitics* are now inseparable.

Global Positions

- CHINA**
Leads in green technologies, exporting at low cost to expand influence.
- US**
Prioritizes energy dominance, emphasizing oil and gas amid climate skepticism.
- RUSSIA**
Strong in nuclear engineering and expanding gas ties with China and India.
- EUROPE**
Faces investment gaps and heightened security concerns.

! National strategies are defining the winners and losers of the transition.

Consumption-Side Flexibility: *The Underutilized Lever*

The market is shifting from supply-driven solutions to dynamic, consumer-centric flexibility.

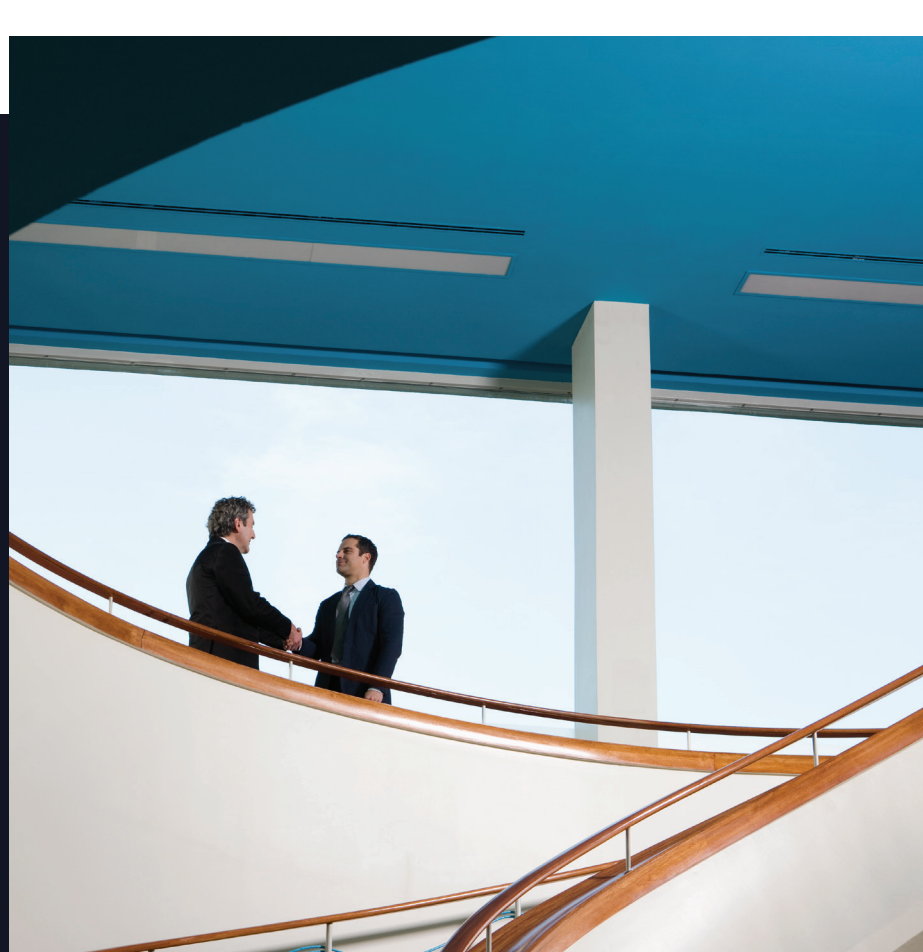


- Emerging Players**
Renewables, storage operators, and aggregators are shaping new value streams.
- Consumer Engagement**
Storing energy off-peak and using it during peak periods is no longer niche-it's essential for grid stability.
- Regulatory Action**
Capturing this value requires innovative frameworks, dynamic pricing, and regulatory foresight.

! The energy transition will fail without unlocking the potential behind the meter, it's time to rethink consumption, not just production.

Key Takeaway: *Act Decisively or Risk Falling Behind*

The energy transition is a strategic, economic, and geopolitical imperative. Success will depend on bold, coordinated action:



- 1 Secure critical materials and diversify supply chains.
- 2 Embrace consumption-side flexibility and digital solutions.
- 3 Integrate geopolitical realities into energy planning.



Explore the full WEMO 2025 insights and recommendations



About WEMO

The World Energy Markets Outlook (WEMO) is Capgemini's flagship annual research report. Now in its 27th edition, the report draws on the expertise of a global team of over 100 specialists and offers data-driven insights from across the energy landscape. WEMO 2025 explores rising energy demand, the accelerating impact of AI and digital infrastructure, record investments in renewables and batteries, and the evolving role of hydrogen and nuclear technologies. It also examines grid resilience, fossil fuel dynamics, and the policies and innovations shaping the next decade of energy. It provides a comprehensive guide for industry leaders navigating the shift to a low-carbon, technologically advanced energy system.