Kazakhstan's Energy Transition: The Gap Between Climate Strategy and Board-Level Decisions

Capacity shortages and grid deterioration, coal lock-in, a delayed bet on nuclear generation and pressure from the EU CBAM — findings of a closed expert roundtable (Astana, 8 September) set against official statistics and Kazakhstan's national commitments.

Sector	Focus	Analytical Basis	Risk Profile
Power Generation & Grids	Energy Transition & Corporate Governance	Roundtable + UN and national data	High Structural Transformation

1 Purpose and Scope

Context & Coverage

This brief summarises the positions of participants in a closed roundtable held under the Chatham House Rule — representatives of conventional power, renewables, the oil and gas and nuclear sectors, and national and quasi-state companies — and sets them against Kazakhstan's national commitments: the Strategy for Achieving Carbon Neutrality by 2060, the updated 2025 NDC (an unconditional 17% emissions reduction by 2035 relative to 1990 levels, and up to 25% conditional) and SDG 13. The analysis centres on the ability of the energy system and corporate governance institutions to translate Kazakhstan's long-term climate and energy targets into timely investment decisions.

2 Key Insights

Sector Signals

01 Structural Constraints of the Energy System

Capacity shortages, a high level of grid deterioration and limited interconnection between individual power zones remain systemic constraints. According to publicly available industry estimates, consumption stands at around 120.5 billion kWh against generation of around 118 billion kWh; grid wear is estimated at approximately 76%, with losses of around 13%.

02 Coal Dependence and Climate Targets

Coal retains a dominant role in generation (55–75%), while Kazakhstan is simultaneously scaling up renewables towards 2030 and implementing long-term climate commitments. This creates a risk of misalignment between the near-term need for reliable capacity and long-term decarbonisation.

03 Nuclear Power as a Long-Term Option

Since the BN-350 reactor was decommissioned in 1999, the country has had no operating nuclear power plants. The first large-scale nuclear plant is planned as a project with a long implementation horizon. Kazakhstan's status as one of the world's largest uranium producers coexists with its reliance on foreign suppliers for key reactor technologies.

04 Divergent External Pressures

Against a less clear-cut trajectory for the voluntary ESG agenda, mandatory carbon requirements are tightening. The EU CBAM, in force since 1 January 2026, raises the significance of the carbon intensity of electricity and products for Kazakhstan's export-oriented industries. The EU accounts for ~44% of Kazakhstan's exports; costs for steel and aluminium exporters may exceed €100 million per year.

3 Why the Issue Matters

Strategic Implication

Energy security and climate commitments increasingly intersect at the level of near-term investment decisions. Investment in carbon-intensive assets may increase the risk of locking in the generation mix over the long term and of future carbon costs, while delays in grid modernisation and the commissioning of reliable capacity also carry economic and systemic risks. For boards of directors, the key task becomes weighing the cost of action against the cost of delaying a decision under conditions of high uncertainty.

4 Sector-Level Engagement

Collaborative Frameworks

Strengthening interaction between the state, shareholders and boards of directors

greater transparency in the allocation of authority and accountability in strategic decision-making; assessment of existing mechanisms for the formation and accountability of governing bodies in the quasi-state sector.

Localisation through cooperation

use renewable energy project mechanisms to develop local supply chains; assess the applicability of oilfield services experience to auxiliary equipment and the construction scope of nuclear projects, taking into account the limited localisation potential of key reactor technologies.

The "science — technology — industry" nexus

develop R&D and cooperation between energy companies and universities; adapt international approaches and technologies to the national context rather than replicating them mechanically.

Data standardisation and MRV

develop a unified methodological framework for assessing transition and climate risks and for comparable corporate data, taking into account the development of the national MRV system and requirements related to NDC implementation and Article 6 mechanisms of the Paris Agreement.

5 Challenges, Opportunities and ESG Implications

Risk & Value Drivers

Key Challenges

Ageing grids and generation assets, limited inter-zonal connectivity and flexibility; an investment gap under tariff and social constraints; the risk of technological and carbon lock-in of long-lived assets; dependence on foreign technologies in critical segments; insufficient integration of climate and transition risks into strategic and investment decisions.

Opportunities

Grid and flexibility modernisation as no-regret investments; energy efficiency and demand-side management; diversification of the energy mix; development of local value chains, R&D and engineering capabilities; MRV and low-carbon power as drivers of export competitiveness; scenario planning as a tool for managing the cost of waiting and lock-in risk.

ESG and sustainability implications: for Kazakhstan, the question is no longer whether the economic costs of the energy transition will arise, but when, where and in what form they will materialise. Delaying the transformation does not eliminate these costs and may increase them through the EU CBAM, in its definitive phase since 2026, changing financing conditions for carbon-intensive assets, and the risk of carbon lock-in of long-lived infrastructure. Since CBAM takes into account the carbon price paid in the country of production, developing a national carbon regulation system could reduce the burden on exporters and retain resources for modernisation within the country. Transition risks are compounded by physical risks — rising temperatures, water stress and shifts in the seasonal demand profile — which must be factored into assessments of energy system reliability. A just transition for coal-mining regions and the protection of vulnerable consumers make the distribution of costs among the state, companies and consumers part of the economics of the transition. For boards of directors, the key asymmetry lies in the differing reversibility of decisions: long-lived carbon-intensive assets narrow future strategic options, whereas grids, flexibility, energy efficiency and methane emissions reduction retain their value across a wide range of scenarios. International practice (IFRS S2, TCFD recommendations) calls for stress-testing major investment decisions against multiple energy transition pathways, using an internal carbon price and assessing the risk of early asset impairment and the cost of delay on the basis of verified emissions data, as well as integrating the results into strategy, risk appetite, CAPEX and the board's accountability framework.

6 Recommended Sector Direction

Actionable Roadmap

1. **Prioritise grids, flexibility and system reliability:** develop inter-zonal links, including the North–South corridor, consistently modernise grid infrastructure and build an adequate reserve of flexible capacity. These investments are among the most resilient across energy transition scenarios and reduce the risk that infrastructure becomes a constraint on the commissioning and efficient use of new generating capacity.
2. **A balanced tariff and investment model:** link tariff decisions and investment incentives to transparent, measurable commitments on asset modernisation, reliability and efficiency, while providing targeted mechanisms to protect vulnerable consumers. This allows energy affordability and social impacts to be treated as part of the economics of the energy transition rather than as a separate factor.
3. **Scenario planning and CAPEX stress-testing:** at board level, test the strategy and major investment decisions against different scenarios for demand, tariffs, carbon regulation and the generation mix. For long-lived assets, account for the risk of carbon lock-in, potential early impairment and the cost of delaying a decision; for nuclear generation, take into account the official commissioning horizon of the first plant in 2035–2036 when assessing transitional-period capacity needs.
4. **CBAM readiness and robust MRV:** develop reliable accounting and verification of the carbon footprint of export products, expand export producers' access to low-carbon power and assess the economic viability of emissions abatement technologies, including CCUS for selected assets. The development of national carbon regulation should also be considered in terms of its interaction with external carbon pricing mechanisms and the preservation of the competitiveness of Kazakhstan's exports.
5. **Localisation through capabilities and cooperation:** focus localisation on economically and technologically justified segments of the value chain, leveraging the potential of large-scale renewables, grid and nuclear infrastructure projects to develop engineering and manufacturing capabilities, R&D and cooperation between companies and universities. International technologies and practices should be adapted to the national context rather than mechanically replicated.
6. **Corporate governance of the energy transition:** ensure a clear allocation of authority and accountability among the shareholder, the board of directors and the executive body, and integrate climate and energy scenarios into strategy, risk appetite, CAPEX and investment procedures. IFRS S2 and TCFD approaches can serve as the methodological basis for scenario analysis; however, its practical value depends on the extent to which the results actually inform the board's strategic and investment decisions.

The Bottom Line

Kazakhstan's energy transition targets are already in place; the bottleneck now lies in translating them into decisions over the coming decade, which will largely shape the energy system on the path to 2060. A resilient transition will depend not on choosing a single "right" technology, but on investing in solutions that retain their value across a wide range of scenarios — grids, flexibility and readiness for carbon regulation — and on a governance system in which the authority of boards of directors matches their accountability for long-term decisions.