

MONGOLIA



1. INTRODUCTION

Mongolia ranks 76th globally in the 2024 World Energy Trilemma Index, showcasing strengths in Energy Equity but revealing significant vulnerabilities in Energy Security and Environmental Sustainability. Despite these challenges, the country has made considerable progress through targeted reforms and the implementation of its ambitious Vision 2050 roadmap, aimed at transforming its energy landscape.

At the heart of Mongolia's energy challenges lies Energy Security. Chronic electricity shortages and an overreliance on imported energy severely impact daily life and economic productivity. Aging infrastructure, coupled with insufficient investment and funding, worsens these challenges. Frequent power cuts not only slow down industrial growth but also disrupt public services, leaving many people without reliable electricity. Despite these hurdles, Mongolia has made progress in renewable energy development. As of 2023, the country has three operational wind farms, nine solar farms, and several small hydropower plants, which collectively account for 18.3% of the total installed capacity but only 9.6% of total electricity production. To meet its target of a 30% renewable energy share by 2030, Mongolia must significantly accelerate progress in renewable energy deployment, grid modernization, and storage capacity advancement.

In terms of Energy Equity, Mongolia has prioritized reforms to ensure fair access to energy for all its citizens. Energy subsidies have played a critical role in making energy affordable, but structural inefficiencies in pricing and market design persist. Recognizing this, the government established the National Energy Reform Committee in 2024, marking a significant shift toward modernising the energy sector. The committee has outlined key objectives, including fostering competition among producers, enhancing private sector participation, and streamlining regulatory frameworks. A working group in parliament has been tasked with revising essential laws, such as the Law on Renewable Energy and the Law on Energy, to align with these goals. The reform process began in November 2024 with the adjustment of electricity tariffs to reflect actual costs, and additional changes, such as increases in heat prices, to be indexed eventually, are scheduled for 2025.

From an environmental perspective, Mongolia has enormous potential to harness its abundant solar and wind resources. The country's geographical location offers an advantage, with vast open spaces and high solar radiation levels ideal for large-scale renewable energy projects. Four of the government's 14 mega-projects focus on renewable energy, emphasizing solar and wind power development. These projects aim to achieve energy independence and reduce Mongolia's reliance on coal, a primary contributor to its carbon footprint. The transition to renewable energy is not only an environmental imperative but also a crucial step toward achieving economic resilience and sustainability.

While Mongolia faces significant obstacles, its commitment to transformative reforms and strategic investments demonstrates a clear vision for the future. By addressing energy security issues, advancing equity reforms, and leveraging its renewable potential, Mongolia is poised to enhance its performance across all dimensions of the Energy Trilemma. These efforts will ensure a more secure, sustainable, and equitable energy system, laying the foundation for long-term economic and social progress.

2. POLICY PATHFINDING FOR MANAGING THE TRILEMMA

Like many Asian countries, Mongolia relies heavily on coal, with over 80% of its electricity generated from this source. This is also common across the region, where coal remains a primary energy source due to its abundance and long-standing infrastructure.

The challenges Mongolia faces are further compounded by aging infrastructure and geographical barriers, issues that are also common throughout Central Asia. These concerns are visible in Mongolia's limited grid capacity and heavy reliance on imported electricity from Russia and China,



which accounts for around 22-25% of its supply. During the past two heating seasons, disruptions in Russian electricity imports led to routine blackouts, exposing the vulnerability of Mongolia's energy system and sparking a policy shift toward diversifying energy sources and strengthening domestic capacity.

To address these challenges, Mongolia has taken steps to improve energy resilience through diversification and modernization, and economic initiatives.

The National Energy Reform Committee has been established and has initiated significant legislative reforms, that are in line with strategic policy documents of Mongolia's Vision 2050, which provides a comprehensive development strategy, and the New Recovery Policy, particularly its Energy Recovery component, aimed at addressing critical developmental challenges. Proposed legislative reformative actions will include:

- **Indexed Energy Tariffs:** The government is working on policy reforms to restructure energy tariffs and provide financial incentives for renewable energy adoption, making clean energy more accessible to all citizens. Adjusting energy tariffs to reflect actual costs ensures fair pricing over time, making energy more equitable and affordable for consumers. This change is not only crucial for equitable and affordable energy price but also ensures stability of the investment environment that fosters international collaboration.
- **Privatization of State-Owned Energy Entities:** Transitioning from state-controlled to private sector involvement aims to enhance transparency, efficiency, and attract investment in the energy sector.
- **Export Opportunities:** Developing policies to facilitate energy exports leverages Mongolia's renewable energy potential, contributing to economic growth and regional energy security.

Mongolia is addressing power shortages and enhancing resilience by integrating renewable energy sources and developing storage solutions. Recent deployment of storage systems, supported by organizations such as the Asian Development Bank, combine solar power with storage in remote areas to ensure reliable electricity. These initiatives not only increase domestic generation capacity but also improve the integration of renewables into the national grid.

Additionally, international financing institutions and development banks are collaborating with the Mongolian government to modernize grid infrastructure and enhance system reliability. These efforts align Mongolia with global priorities, reducing import dependency and strengthening its transition toward a resilient, self-sufficient energy system.

Despite recent efforts to enhance reliable power generation, reduce reliance on energy imports, and secure sovereign loans to modernize outdated energy infrastructure, significant challenges remain in achieving a just energy transition.

As coal remains the primary source for enduring the heating season, energy costs for heating create significant disparities. Residents in urban areas connected to the central heating system benefit from relatively stable and affordable heating, while those living in traditional ger dwellings, which make up a large portion of Ulaanbaatar's population, rely on burning raw coal or coal briquettes. This practice not only increases heating costs for these households but also exacerbates environmental and health challenges due to high levels of air pollution during the winter months. The reliance on such traditional methods highlights the stark inequities in energy access and underscores the urgent need for sustainable and equitable heating solutions.

Furthermore, while the government has introduced regulations to encourage domestic power generation from distributed renewable energy sources and approved a feed-in tariff, the initiative faces significant challenges. The lack of comprehensive regulations to ensure that producers receive adequate economic benefits to reduce initial investment has hindered its effectiveness. To address affordability more effectively, further subsidies and reforms are anticipated, aiming to alleviate the financial burden of energy costs on households while promoting a transition to renewable energy resources.



Despite ongoing challenges such as urban-rural disparities, coal dependency, and financial barriers, Mongolia has made significant improvements in its energy transition. Progress in wind, solar, and energy storage projects, along with tariff adjustments and legislative reforms, reflects its commitment to enhancing energy security, promoting sustainability, and driving economic growth.

To achieve its renewable energy targets by 2030, Mongolia must accelerate efforts to address equity, resilience, and sustainability. By fostering community involvement, implementing comprehensive reforms, and improving affordability, Mongolia can position itself as a regional leader in energy transition and contribute meaningfully to global sustainability goals.

3. BEYOND TRADITIONAL DIMENSIONS

Mongolia's energy transition journey has faced significant hurdles, shaped by its remote location in the heart of Asia, thousands of miles from Western markets, and landlocked between two major powers, Russia and China. This unique position, coupled with the extreme climate of harsh winters temperature dropping to -40°C and scorching summers exceeding 40°C , adds layers of complexity to balancing energy security with global sustainability goals. Over the past three decades, however, international collaboration has been pivotal in transforming Mongolia's renewable energy landscape, driving crucial policy reforms, and fostering sustainable development, helping the country address the challenges inherited from its Soviet-era legacy of coal dependence and pollution.

One of the most impactful early examples of such collaboration is the National 100,000 Solar Ger Electrification Program, supported by the World Bank and other global donors. This programme brought portable solar home systems to over half a million nomadic herders, significantly improving their quality of life and setting a precedent for large-scale renewable energy adoption. Another example the Asian Development Bank (ADB) has supported projects such as grid modernization and energy storage systems, while the European Bank of Reconstruction and Development (EBRD), Green Climate Fund (GCF), and other financing institutions has provided low-interest loans to encourage private-sector investment in clean energy. These programmes highlighted the effectiveness of public-private and international partnerships in overcoming logistical and financial barriers, addressing energy equity, and enhancing resilience.

Numerous international organizations, governments through their embassies, banks and financing institutions, and climate funds have contributed to Mongolia's progress in energy transition. Their efforts have supported projects addressing renewable energy development, infrastructure modernization, and policy reforms.

Despite this progress, Mongolia continues to face gaps in its energy infrastructure and digital capabilities, which require sustained investment and innovation. Community-based approaches, such as renewable energy cooperatives, can empower local populations and ensure equitable benefit-sharing. Meantime, positive changes have emerged in decision-making processes during the latter half of 2024, with greater diversification and broader representation from the energy sector contributing to more inclusive and effective policymaking.

Looking ahead, Mongolia aims to foster a more investment-friendly environment and strengthen public-private partnerships to attract critical financing and collaboration. By continuing to work with international partners and prioritizing legislative improvements, Mongolia seeks to create a sustainable energy future that benefits its people, reduces import dependency, and strengthens regional cooperation.



Acknowledgements
Mongolia Member Committee
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