



AUSTRIA

1. INTRODUCTION

Austria currently demonstrates a balanced approach across all three dimensions of the World Energy Trilemma: Energy Security, Energy Equity, and Environmental Sustainability. Austria has consistently performed well in terms of the trilemma, confirmed by a strong overall ranking in the fifth place globally in the World Energy Trilemma Index 2023.

Austria has a well-diversified energy mix that includes substantial shares from hydro- power and expanding wind and solar PV capacity, as well as imported natural gas, oil, and biomass. Hydropower is a historical backbone in the electricity mix and continues to represent the biggest share. However, recent geopolitical tensions have highlighted Austria's dependence on imported natural gas from Russia, which constituted until recently nearly 80% of the total gas consumption.

In response, Austria has initiated measures to strengthen its energy security, such as the establishment of a national gas reserve and efforts to diversify its sources of gas imports. The Integrated Austrian Network Infrastructure Plan (ÖNIP) developed by the Federal Ministry for Climate Action addresses the need for increased infrastructure development, particularly for electricity transmission and distribution grids, as well as gas network infrastructure. Despite these efforts, the challenge remains significant due to the need for robust infrastructure including grids and flexibilities to support increased decentralized renewable energy production.

Energy equity remains a pivotal goal for Austria's energy policy. The government has implemented temporary electricity price caps and suspended some network charges. Investment in modernizing the energy infrastructure, facilitating access to energy-efficient technologies for all socio-economic segments, and innovative financing mechanisms are vital. To address these challenges, Austria has been focusing on technological upgrades and improvements, such as the smart-meter roll-out and the support of energy-efficient appliances.

Austria has committed to ambitious climate goals, targeting 100% renewable electricity generation by 2030 and overall net-zero by 2040. Legislative measures, such as the Renewables-Expansion-Act (EAG) and the National Energy and Climate Plan (NEKP), set ambitious targets for reducing greenhouse gas emissions and increasing the share of renewable energy in the system.

However, integrating decentralized renewable energy systems—especially solar PV and wind—into the existing grid requires significant infrastructure investments and regulatory adjustments. The current pace of infrastructure development must accelerate to meet the 2040 decarbonization targets. Important aspects easily overlooked in the discussion are the heating demand and energy supply for industrial processes. The industry is aware of the leverage behind sustainable heating, although stringent legislation is still pending. Electrification will be the driver of the decarbonization of industrial processes and mobility, which is supported by regulatory frameworks.

Austria faces several key challenges in addressing the Energy Trilemma. These include managing energy price volatility, reducing geopolitical dependencies, overcoming infrastructure bottlenecks, and fostering technological innovation. Current and planned policy measures, such as the Renewables-Expansion-Act aim to address these challenges. However, rigorous implementation, supportive regulatory frameworks, financial incentives, and collaboration between governmental bodies and the private sector are crucial. Policy making must therefore focus on fostering resilience to external shocks while ensuring a just transition that leaves no one behind.

2. POLICY PATHFINDING FOR MANAGING THE ENERGY TRILEMMA

The insights from the 2024 World Energy Trilemma Report provide a critical lens through which to evaluate Austria's energy transition. Austria's journey reflects broader regional and global trends but is marked by distinct national characteristics influencing its energy policies and achievements.



The World Energy Trilemma 2024 Report emphasizes the importance of regional cooperation to build robust energy systems. For Austria, enhancing cross-border energy infrastructure and better integrating its market with neighbouring countries is essential. The recent separation of Austrian and German electricity price zones illustrates the complexity of regional integration but also signifies the tailored approach needed for national energy dynamics. Globally, the emphasis on storage technologies aligns with Austria's efforts to enhance energy security through large-scale pumped-storage power plants and grid-scale batteries, crucial for managing the intermittency of renewable energy sources.

Austria's energy transition must be resilient to external shocks, such as geopolitical tensions, underscoring the importance of energy security. Establishing a gas reserve and diversifying energy sources are critical responses. However, achieving energy price stability remains challenging, with rising energy costs disproportionately affecting lower-income households, while at the same time posing a risk to Austria's industrial competitiveness. Measures like electricity price caps and network charge waivers have been put into place temporarily during energy price spikes. Policies like these should not be an alternative to long-term investments and must be aligned with climate goals. A comprehensive approach that balances immediate relief with long-term investment is essential for achieving the energy transition.

Austria's legislative measures, such as the EAG and the implementation of the Renewable Energy Directive (REDIII) align well with global best practices by setting ambitious targets for renewable energy adoption. The implementation of these measures needs to be prioritized to meet the set targets.

To align with broader European and global strategies, Austria must adopt a holistic approach that incorporates aspects such as resilience, expansion of renewable capacity and (socio-)economic considerations into its energy policies. Accelerating the deployment of smart grids, advanced storage solutions, and promoting energy efficiency are critical steps forward. Ensuring that the regulatory framework facilitates a coordinated transition is essential.

A significant element of Austria's strategy to manage the energy trilemma is the Integrated Austrian Network Infrastructure Plan (ÖNIP), published by the Federal Ministry for Climate Action, Environment, Energy, Mobility, Innovation, and Technology in 2024. The ÖNIP addresses the need for increased infrastructure development and coordinated planning for electricity and gas grids, to support a holistic approach in the energy transition. This plan includes measures to strengthen grid resilience, reduce bottle-necks, and facilitates the integration of renewable energy sources as well as aspects such as new hydrogen infrastructure.

In midst of rising geopolitical tensions, the Austrian Security Strategy, published in 2024, provides a comprehensive framework to address the emerging challenges and geostrategic dimensions of Austria's security. This strategy acknowledges the geopolitical risks posed by the heavy reliance on Russian gas and highlights the need for diversification and enhancing the resilience of Austria's energy infrastructure.

3. BEYOND TRADITIONAL DIMENSIONS

To go beyond traditional dimensions, effective decision-making in Austria's energy transition must leverage digital tools, collaborative approaches, and community engagements.

Austria's extensive rollout of smart meters, already covering about 95% of households, is fundamental in the digital transformation of the energy sector. These meters enable precise data collection and the capability of real-time energy management, significantly improving energy efficiency and system reliability. Leveraging smart meter data could lead to the development of flexible pricing models and incentives that encourage energy-saving behaviour among consumers in the future. Smart meter could also be utilized for incentivizing grid-stabilizing behaviour via dynamic grid tariffs. Additionally, advanced data analytics and AI tools can enhance predictive maintenance, optimize energy distribution, and manage demand-side responses, contributing to the overall resilience of the energy system.



The smart meter roll-out as such does not ensure energy savings or any advancement per se; it is the analysis and the usage of the data they provide that unlocks energy efficiency potentials. By deploying advanced algorithms and AI, Austria can optimize the management of its energy grid, predict, and pre-empt potential failures, and dynamically adjust to changing supply and demand conditions. This level of intelligence is crucial for integrating renewable energy and managing a system based on fluctuating supply.

Innovation and research need to be an additional focus for driving the energy transition. Increased investments in research and development for digital grids, virtual power plants and digital twins are essential. Enhancing collaboration between industry and government can help in developing and deploying these technologies, fostering a conducive environment for innovation, which is necessary for knowledge and capacity building when it comes to green tech.

Collaboration among various stakeholders, including governmental bodies, utilities, and civil society, is crucial for a successful energy transition. Integrated energy systems that connect industrial, residential, and commercial sectors exemplify the value of a systemic approach. Policymakers should foster platforms for multi-stakeholder dialogues to ensure that diverse perspectives are considered in energy planning and execution. The goal is to create a continuous feedback loop where innovations can be rapidly tested and scaled.

Engaging a broad range of stakeholders across the energy value chain is essential for societal acceptance of the energy transition. Collaborative platforms that facilitate dialogue, innovation, and shared responsibilities can enhance the effectiveness of policy measures. Establishing energy communities that enable local participation in energy projects can foster a sense of ownership and ensure that the benefits of the energy transition are widely shared. The integration of renewable energy projects at the community level can encourage a more inclusive approach, promoting resilience and equity. These crucial concepts are enabled via the regulatory framework of the Renewables-Expansion-Act, which is one of the central measures in Austria for addressing the energy transition.

Austria's pathway to achieving the goals of the World Energy Trilemma involves navigating a complex set of challenges and opportunities. By leveraging digital innovations, fostering collaborative approaches, and ensuring robust community engagement, Austria can enhance its energy security, equity, and sustainability. Integrating technology with "humanised" policies will be key to accelerating the energy transition and achieving a resilient and fair energy system for the future.

Austria advances rapidly on its energy transition journey. Continuous innovation, robust policy frameworks, and inclusive practices are essential for Austria to meet its 2030 and 2040 energy and climate targets and contribute to a more sustainable global energy landscape.



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Austria Member Committee

Martin Heissenberger, Future Energy Leader