

5th LTES Forum: Incorporating Energy Security Considerations in Long-Term Energy Scenarios Insights from the World Energy Trilemma 2024

World Energy Trilemma history



At its Centennial Congress, the World Energy Council community commits to the radical redesign of the World Energy Trilemma framework and tool, aiming to extend its use and empower regions, cities, and citizens to manage deeper decarbonization with justice and resilience.





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In the Assessment of

Practices - White Paper,

the Council community

measuring "3 As" - the

country's energy policy

2009

performance of the

Energy Policy and

published the first

framework for

and practices.

The aim of the annual assessment process

assessing 88 member countries was released at COP15 in Copenhagen, Denmark. In 2013 the Council extends the number of countries assessed beyond its membership to assess +120 countries alobally.

2024

World Energy Council leading the way in measuring and managing energy transitions for almost 25 years.

2008

In 2000, the UN Millennium Declaration was signed. The Millennium Development Goals, formulated in 2001, did not include energy.

In 2012, the UN Sustainable Energy for All initiative began work on the **Global Tracking Framework**, publishing it in 2013. In 2015, the UN Sustainable Development Goals are adopted, including a goal on affordable and clean energy.

In Energy for Tomorrow's World - Acting Now, the World Energy Council community responds to new demands for energy and sustainable development by establishing three sustainability objectives "3 As": Accessibility to modern, affordable energy for all; Availability in terms of continuity of supply and quality and reliability of service; and Acceptability in terms of social and environmental goals. These later became the three pillars of the World Energy Trilemma.

2000

In **Decidina** 0

Council community for the first time

the Future:

2050, the

Energy Policy

Scenarios to

World Energy

current state of the "3 As" at the regional level, exploring their evolution under four different plausible scenarios and setting out realistic global targets.

2007

WORLD ENERGY COUNCIL

ENERGY SECURITY

Reflects a nation's capacity to meet current and future energy demand reliably, withstand and bounce back swiftly from system shocks with minimal disruption to supplies.

ENERGY EQUITY

Assesses a country's ability to provide universal access to affordable, fairly priced and abundant energy for domestic and commercial use.

ENVIRONMENTAL SUSTAINABILITY

Represents the transition of a country's energy system towards mitigating and avoiding potential environmental harm and climate change impacts.

Evolving with Resilience and Justice



Environmental Sustainability: Encompass the global shift away from fossil fuels like oil, natural gas, and coal, towards renewable sources such as wind, solar, and lithium-ion batteries, and the existence of non-negotiable thresholds — planetary boundaries. A more holistic view of environmental impacts, including those associated with mining and mineral extraction. Key concepts such as circularity, biofuels, biodiversity, waterfood-energy nexus), and the importance of securing a social license to operate. ENERGY SECURITY

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ENERGY

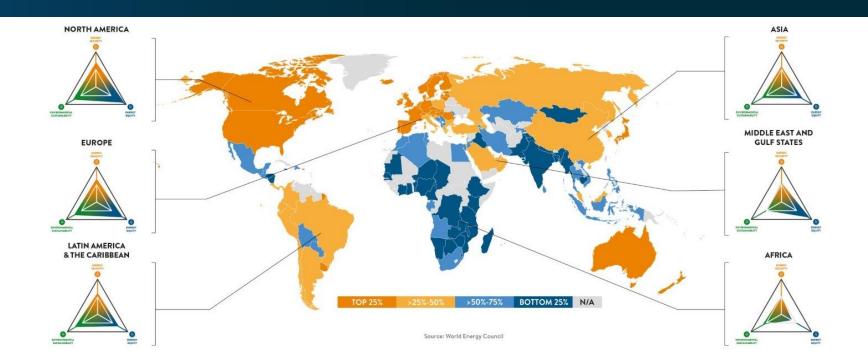
EQUITY

Energy Security: Scope has widened to address new challenges, like demand-driven shocks—highlighted by Europe reducing reliance on Russian gas post-Ukraine invasion—and a norm of continuous disruption that spans extreme weather, tech dependencies, critical minerals, and emerging threats to physical and cyber infrastructure.

Energy Equity: Equity has evolved beyond ensuring access to affordable energy; it demands consideration of the interplay between cost, price, and value, and the financial and societal impacts of changes in any of these dimensions—as well as the increased short-term costs of the shift to renewable energy.

Regional Realities





North America is

addressing its energy trilemma by focusing on infrastructure resilience, communitydriven energy equity, and environmental sustainability. **Europe** is currently reassessing its energy strategy with a new focus on security in relation to affordability and sustainability. Latin America and the Caribbean face complex energy scenarios, balancing security, equity, and sustainability amidst climate and political shifts.

Asia's energy transition is marked by robust demand driven by economic growth amidst climate threats and challenges to infrastructure resilience.

MEGS are at a

crossroads, transitioning from traditional oil and gas dominance, critical to maintaining global energy security, to renewable and nuclear energy amidst geopolitical shifts. Africa is confronting a critical phase in its energy development, characterised by rising demand, security challenges, and a transition towards cleaner energy

