

World Energy Markets Outlook

From shock to strategy:
How the Hormuz crisis is reshaping
the global energy transition



The Hormuz crisis highlights the tensions between energy security, clean energy and industrial sovereignty. It is reshaping countries' energy policies and accelerating electrification.



6 lessons that will define energy thinking for the coming decade:

01 Energy sovereignty is being redefined

Shock

Global energy dependencies have become strategic risks.

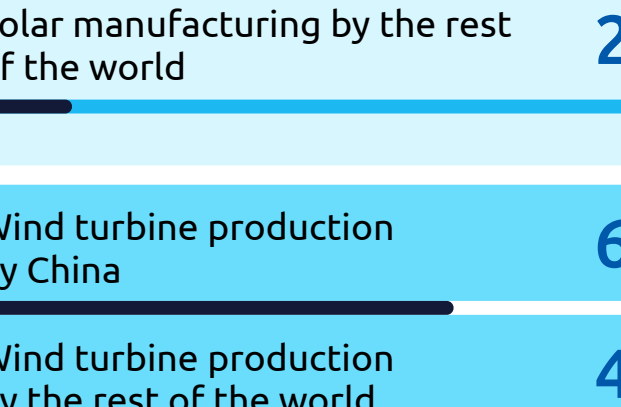
Strategy

Diversification, partnerships and investment in innovative technologies strengthen energy sovereignty.

A single chokepoint exposed the scale of global energy dependence.

Crude oil shipments through Hormuz have fallen by

81%



20%

of global petroleum trade passes through Hormuz in peacetimes

10bcf/d

Missing LNG volume worldwide (20% of trade)

20%

of global LNG trade passes through Hormuz in peacetimes.

Hormuz is the most visible example of a broader vulnerability. For many countries, energy supply – and thus citizens' standard of living – increasingly relies on outside countries. This creates risk.

Percent of global market controlled by China

Solar manufacturing by China **80%**

Solar manufacturing by the rest of the world **20%**

Wind turbine production by China **60%**

Wind turbine production by the rest of the world **40%**

Gallium by China **98%**

PV wafers by China **97%**

Graphite processing by China **95%**

Permanent magnets by China **92%**

Rare earth processing by China **87%**

Key Takeaway: The Hormuz crisis illustrates the risk of oil and gas energies dependencies. Renewable energies development creates a dependency on China technologies. Only Nuclear, Hydropower and geothermal are clean and sovereign energies.

02 Electrification is accelerating

Shock

AI, EVs, and heat pumps are driving new electricity demand.

Strategy

Increasing grid capacity is key to accelerating electrification.

EVs, heat pumps and AI data centers are pushing electricity demand higher, while AI can helps balance supply and demand.

The news for electric vehicles is very positive:

23 million+

projected electric car sales worldwide in 2026

1 in 4

new cars sold globally is an EV

23% yoy

increase in EV purchases in the EU after the Hormuz shock

-84%

decline in battery pack prices from 2015 to 2025

.....but the most extreme data-center forecasts are unlikely to materialize in full

Demand for data centers is growing faster than power infrastructure can support, with grid capacity and connections increasingly becoming the limiting factor. Data center electricity consumption is still expected to nearly double within five years.

2,600 GW

of American data center projects are waiting for grid connection

76-84%

of power executives cite permitting and interconnection delays as major constraints

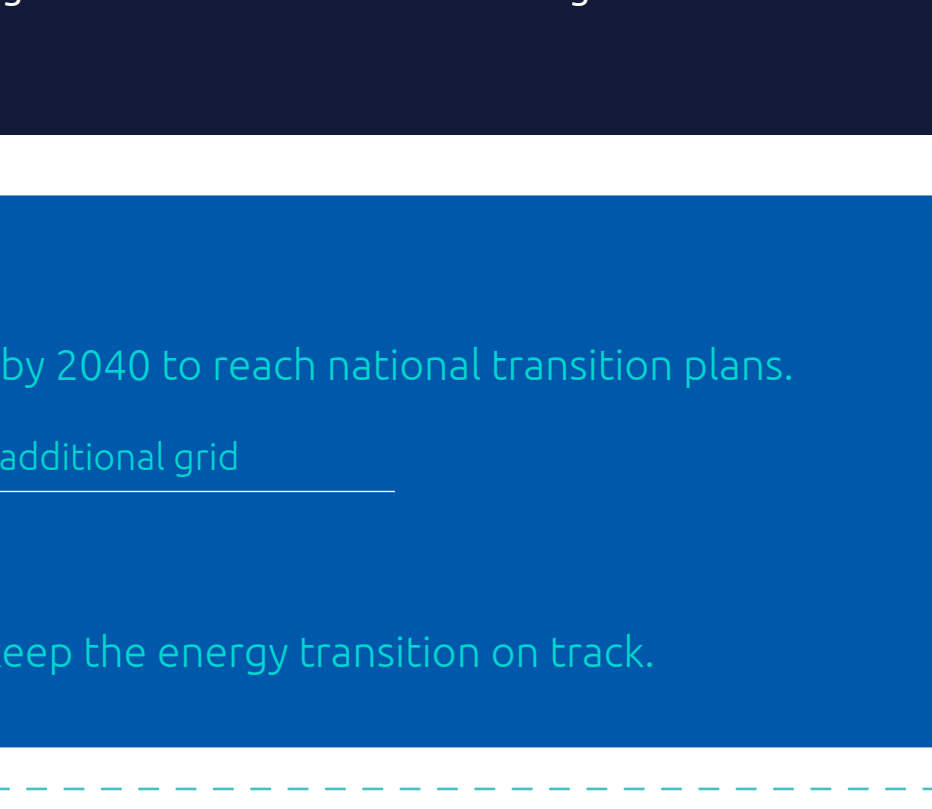
485 TWh to 950 TWh

Predicted rise in global data center electricity consumption between 2025 and 2030. (Despite the fact that most projects will not reach completion)

65-75% China

30-40% US

20% US



Key Takeaway: Electric vehicles and data centers both rely on robust grid infrastructure. Grid investments are critical to unlocking their growth.

03 Nuclear, hydropower and geothermal remain the only sovereign, dispatchable, zero-emission power sources

Shock

As demand rises and grids come under strain, intermittent renewables alone cannot guarantee reliable clean power.

Strategy

Backing renewables with nuclear, hydropower and geothermal enables grid balancing.

Nuclear power development is on the rise globally

2,677 TWh

Global nuclear power generation for 2024

416

Reactors in operation worldwide

31

Countries operated nuclear reactors

74

Reactors are currently under construction (totaling 66GW)

37 37

One half of all nuclear reactors under construction are in China

Lifetime extension of existing nuclear plants is one of the cheapest firm clean power options.

\$35-80/MWh

LCOE for existing nuclear fleet

Energy sovereignty requires power sources that are both clean and available when needed.

88%

Geothermal

83%

Nuclear

35%

Onshore wind

25%

Solar

For capacity factor, geothermal and nuclear are the clear winners

Key Takeaway: Expanding dispatchable clean generation can strengthen energy sovereignty while supporting a more resilient and reliable grid.

04 The grid is the backbone of the energy transition, and it needs both investment and reform

Shock

The grid is becoming the main bottleneck for renewables, data centers and expanding electrification.

Strategy

Expanding, modernizing and digitizing the grid lay the groundwork for clean and sovereign transformation.

80 million km

of grid will need to be added or refurbished by 2040 to reach national transition plans.

Existing Global Grid

Necessary additional grid

\$500bn

Annual grid investment needed by 2030 to keep the energy transition on track.

New energy projects – including many sustainable plans – are on hold.

More than 2,000 GW

US energy projects awaiting connection

375 GW

Renewables in EU awaiting grid connection

455 GW

Battery storage farms in EU awaiting connection

Key Takeaway: To enable new sources of supply and to satisfy an increasing demand while supporting long-term growth, grid investment and modernization must be a top priority.

05 Continuous technology improvement remains the transition's most reliable engine, with AI as a short-term frontier and fusion as a very long term one

Shock

There are no silver bullets, and some promised technologies, especially fusion, remain far from commercial impact.

Strategy

Strategic investments include:

- 1) Industrialization of innovative technologies
- 2) AI adoption across the electricity value chain
- 3) Demand flexibility
- 4) Increased R&D investment

Green energy continues to make strides.

Solar PV installed capacity tripled from 2020 to 2025.

2020 **714 GW**

2025 **2,350 GW**

Utility-scale solar LCOE fell by half between 2020 and 2025.

2020 **\$57/MWh**

2025 **\$28/MWh**

Wind and solar generation rose by 145% between 2020 and 2025.

2020 **2,412 TWh**

2025 **5,900 TWh**

Green hydrogen lags far behind expectations.

3 GW

of electrolyzers were operational worldwide at end-2025

\$5-12/kg

delivered costs remain high (compared to grey hydrogen at \$1/kg)

Utilities and grid operators are beginning to see the benefits of AI

34%

lower outage at Vattenfall

€87m

lower balancing costs at Terna

30%

fewer outages at E.ON.

Key Takeaway: Technology innovation remains the transition's most reliable accelerator, continuously improving the economics and performance of energy systems.

06 As it is unlikely that climate goals will be met, adaptation measures can no longer wait

Shock

Mitigation is not moving fast enough, and climate risk is becoming an infrastructure, insurance and financing problem.

Strategy

Adaptation has become an urgent priority, parallel to mitigation.

International public adaptation financing in 2023

\$26bn

Estimated annual cost of public adaptation for developing countries by 2035

\$310-365bn

Energy-related CO₂ emissions reached a new high in 2025

38.4 GtCO₂

energy-related CO₂ emissions, 2025

+2.7°C

Predicted temperature rise by 2100, given current policy

Global economic losses from natural catastrophes reached

\$220bn in 2025, with insurers covering half.



Climate adaptation actions E&U leaders can take:



Protect critical infrastructure

Utilities will need to strengthen grids, substations, generation assets, and transmission networks against floods, storms, wildfires, and extreme heat.

Invest in electricity plant resilience

Enable thermal power plants and nuclear plants to operate during heat waves without increasing river temperature. Adapt dams' electricity production to dry spells.

Accelerate grid modernization

Climate resilience strengthens the case for underground lines, smarter grids, digital monitoring, and distributed energy resources.

Accelerate new technology adoption

AI, predictive maintenance, weather forecasting, and grid analytics become more valuable as climate-related risks increase.

Key Takeaway: Building resilience against climate change is an imperative for utilities.