



Global Wind Power – Winning the Age of Electricity With Wind

Rebecca Williams, Deputy CEO, GWEC



GWEC'S CORE ACTIVITIES

GWEC is a non-profit trade association that acts as **the authoritative voice for the global wind energy industry**. Our members represent more than 1,500 companies, organisations and institutions in over 80 countries, including manufacturers, developers, component suppliers, research institutes, national wind and renewables associations, electricity providers, finance and more. GWEC's Task Forces and activities are listed below:



Intelligence

Market intelligence, policy analysis, technical expertise



Summits & Conferences

Creating business environments to discuss challenges, find solutions and network



Advocacy & Policy

Communicating the benefits of wind power and working on regulatory frameworks



Business Matching

Connecting members to the right people to grow your business



Collaboration

Sharing best practices and connecting stakeholders



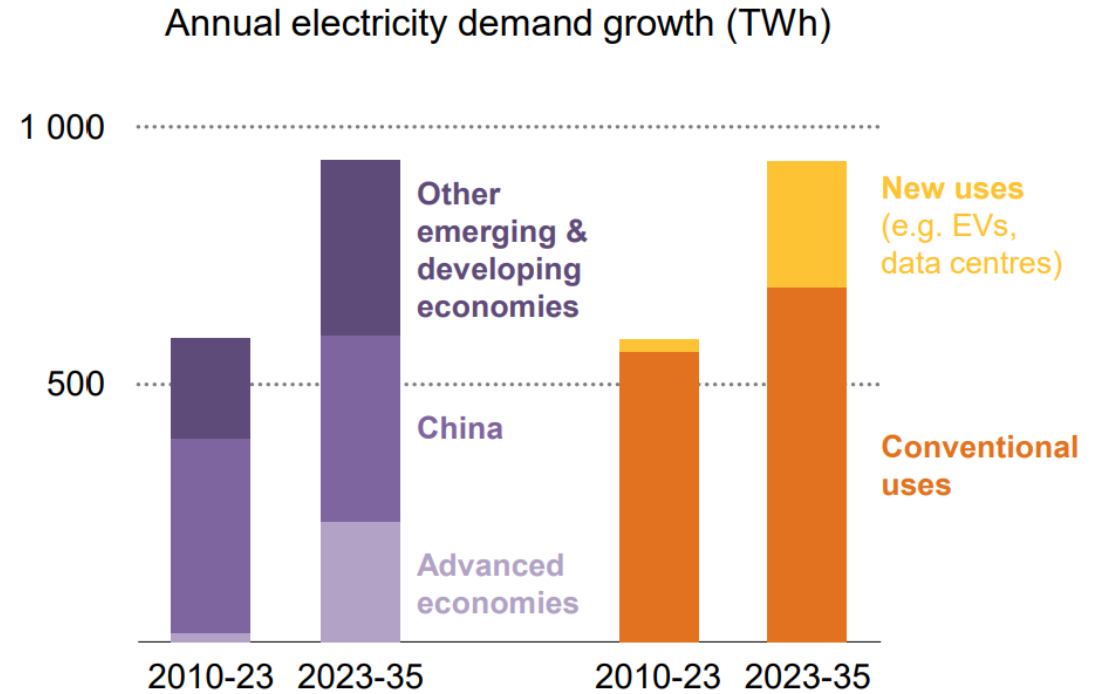
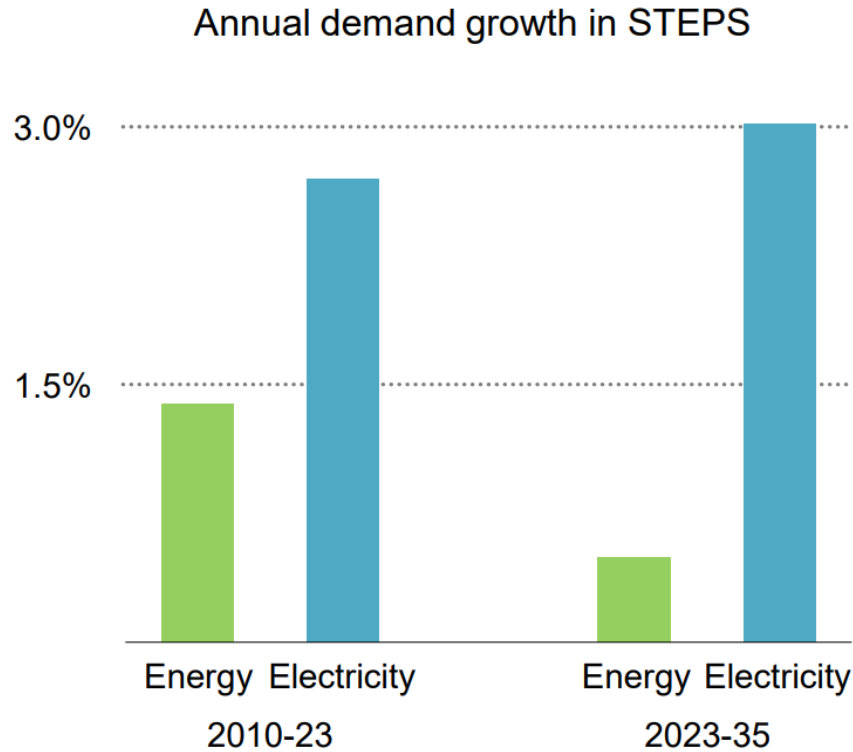
Capacity-Building

Establishing strong wind energy associations in emerging wind markets, transferring knowledge to stakeholders



Global Issues Affecting the Wind Sector “The Age of Electricity”

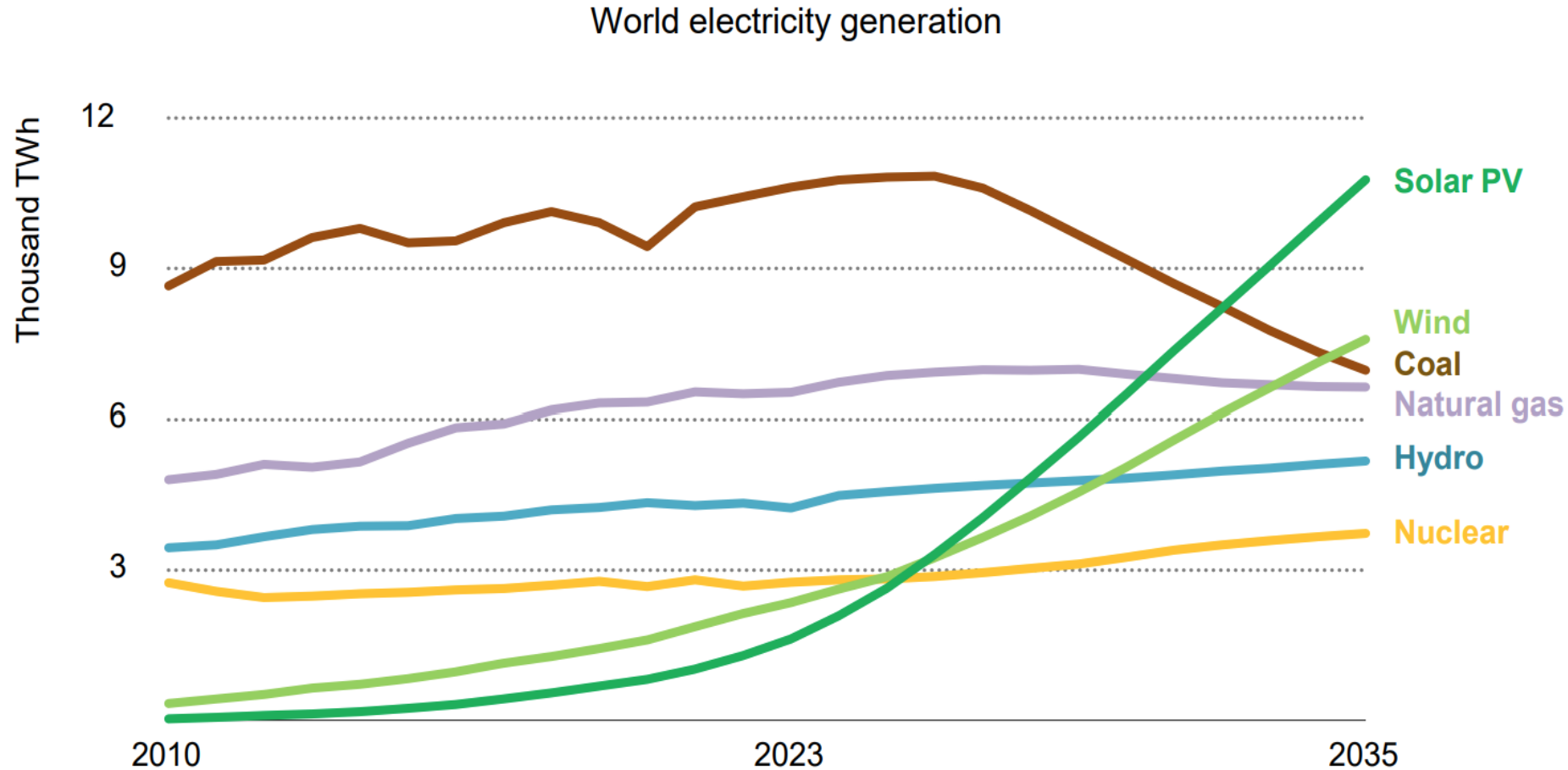
We are moving fast into the “Age of Electricity”, the next industrial revolution



Electricity is growing faster than all other energy sources and it's growing across a wide range of economies, as conventional drivers of growth are supplemented by new ones like EVs, data centres and heat pumps

Source: IEA World Energy Outlook 24

And renewable energy will be at the forefront of this modernisation



Source: IEA World Energy Outlook 25

Wind and Solar PV hit their stride and become the largest sources of electricity before 2035 in IEA scenarios



Global Issues Affecting the Wind Sector Extreme Geopolitical Uncertainty

IMPORTED FOSSIL FUELS AS A NATIONAL SECURITY VULNERABILITY

International Response to Recent Crisis

A growing number of countries and corporations have already taken extraordinary measures to prevent the recent oil shock from suddenly undermining their economy stability.

Philippines implements temporary 4-day work week in govt offices due to rising oil prices

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Indonesia to Accelerate Ethanol Blending as Oil Prices Surge

Bambang Ismoyo
🕒 March 9, 2026 | 5:47 pm

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Thailand, Vietnam encourage remote work to conserve energy as Iran war continues

Vietnam to remove fuel tariffs amid supply disruption due to Iran war

South Korea to impose fuel price cap to shield economy from energy shock

Authorities in Thailand requested that state offices maintain air conditioning at 26°C to save energy.

Oil Prices Spike: Bangladesh orders all universities closed from today as part of emergency measures to conserve fuel

Iran war fuel crisis forces Pakistan to close schools, take austerity measures

The steep austerity measures come as the US-Israeli war on the Islamic Republic shows no signs of slowing

Myanmar's Military on the Back Foot Over Fuel Shortages

But the junta is setting up a new propaganda unit in order to send more positive messages.

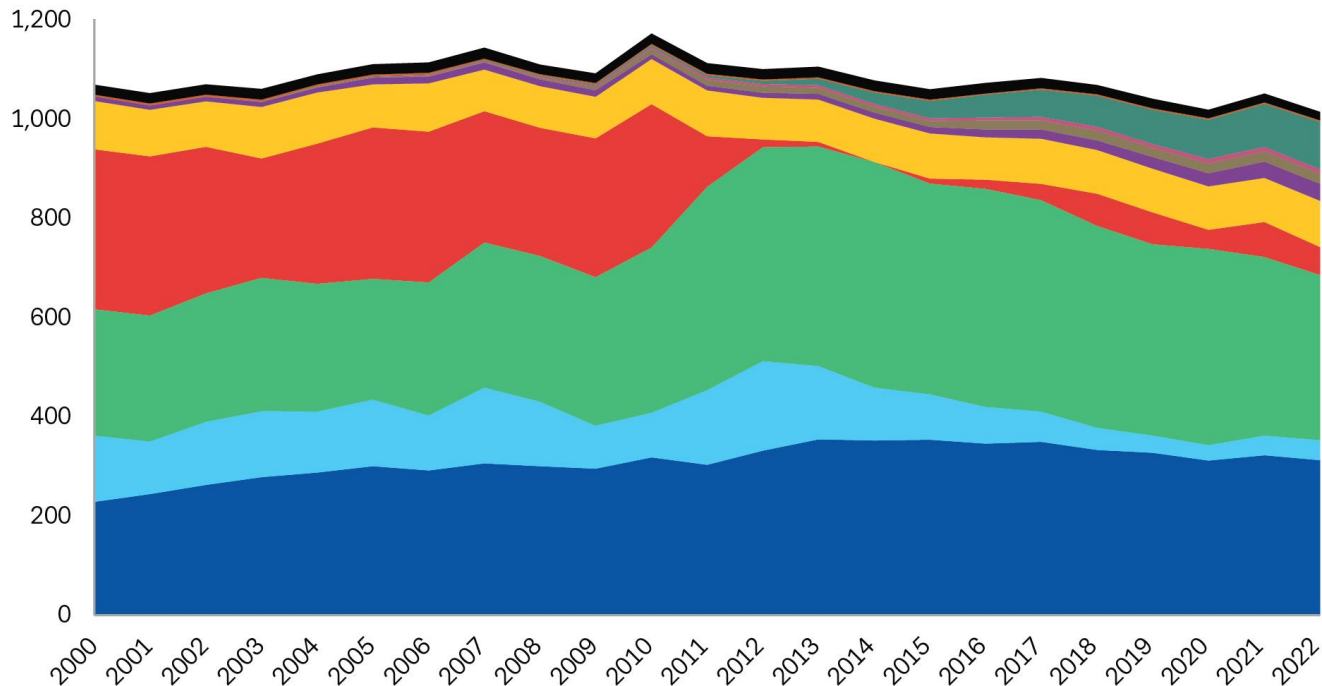
JAPANESE ENERGY IMPORTS (I)

A Source of Vulnerability in Uncertain Times

FIGURE 1

Japan's Electricity Generation by Source, Terawatt Hours

■ Coal ■ Oil ■ Natural gas ■ Nuclear ■ Hydro ■ Biofuels ■ Waste ■ Wind ■ Solar PV
■ Geothermal ■ Other



Source: "Japan: Energy Mix," International Energy Agency, n.d., <https://www.iea.org/countries/japan/energy-mix>.

CSIS | ENERGY SECURITY AND CLIMATE CHANGE PROGRAM

Energy import dependency

- **Oil: ~99.7%**
- **LNG: ~97.7%**
- **Coal: ~99.6% imported**

Net energy imports

- **~ 87% of total energy supply**

Fossil fuel imports in 2024

- **~ USD 171 Billion (~5% of GDP)**

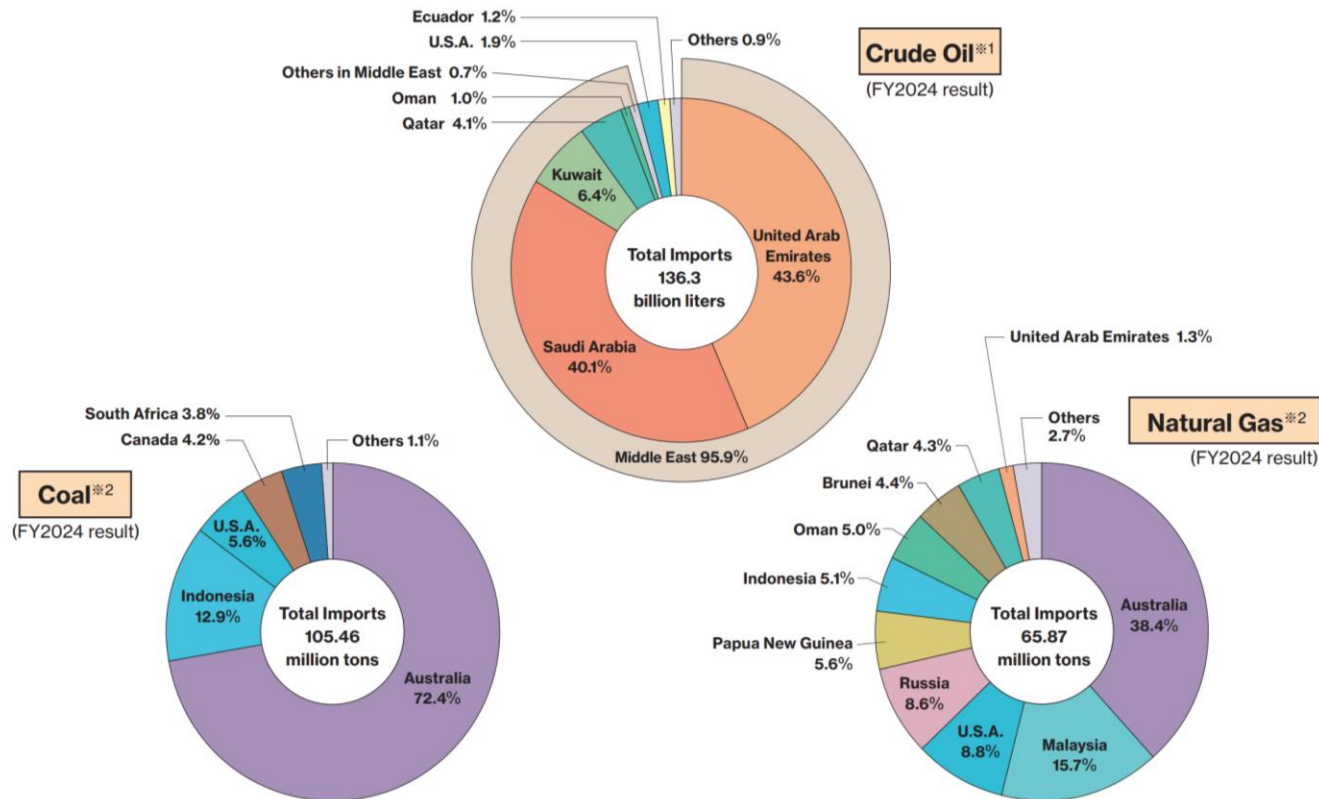
Direct Effect on Japanese Economy

- **10% increase in oil prices reduces around 0.1 percentage point off Japan's real GDP** ([Morgan Stanley](#))

JAPANESE ENERGY IMPORTS (II)

A Source of Vulnerability in Uncertain Times

- ~ 93–95% of crude oil imported from the Middle East



*Source: Japan's Agency for Natural Resources and Energy, YEARBOOK OF MINERAL RESOURCES AND PETROLEUM PRODUCTS STATISTICS

Maritime Chokepoints of Japanese Fossil Fuel Imports:

- **Strait of Hormuz (80%)**
- **Strait of Malacca**
- Sunda Strait
- Lombok Strait
- Makassar Strait
- **Taiwan Strait**
- Miyako Strait



WHY WIND

System-level Rationale for Wind Development

THE STRATEGIC VALUE OF WIND

A Technology at the Service of National Security

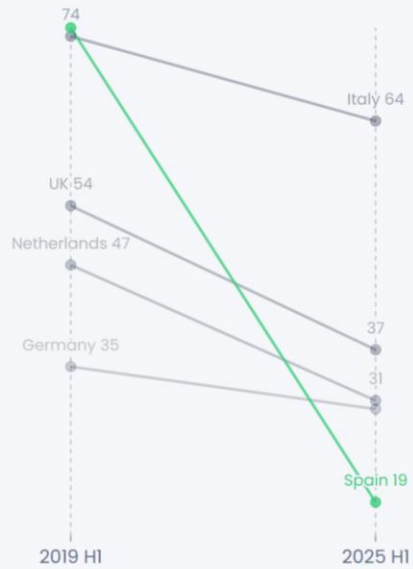
Wind power solutions, integrated into a modern, smart, renewable-based energy system, offer significant strategic advantages in the context of ever turbulent global fossil fuel markets.

- Wind energy delivers **long-term value and price certainty**.
- **Wind has high capacity factors and can provide competitive, scalable power**
- With no fuel costs and abundant domestic resource potential, it strengthens energy sovereignty and **reduces exposure to external shocks**.
- Once a PPA is signed, **wind prices are predictable** for long periods, often 20 years.
- Every mature market for offshore wind has witnessed **significant cost reductions** at about 2-3GW of build out.
- In 2022, 1GW wind farm alone would have avoided USD 928 million in imported gas costs, and the 30 GW target for 2030 would have avoided USD 27.8 billion.



Spain curbed the influence of expensive gas and coal power, becoming one of the cheapest electricity markets in EU+UK

Fossil influence on electricity price (% hours)



Average wholesale electricity price (€/MWh)



Source: [ENTSOE](#), [LCCC](#), [Montel](#), BFF • Fossil influence measured by % hours when electricity price is above the cost of gas power.

Top 5 countries in EU+UK by installed gas generation capacity.

EMBER

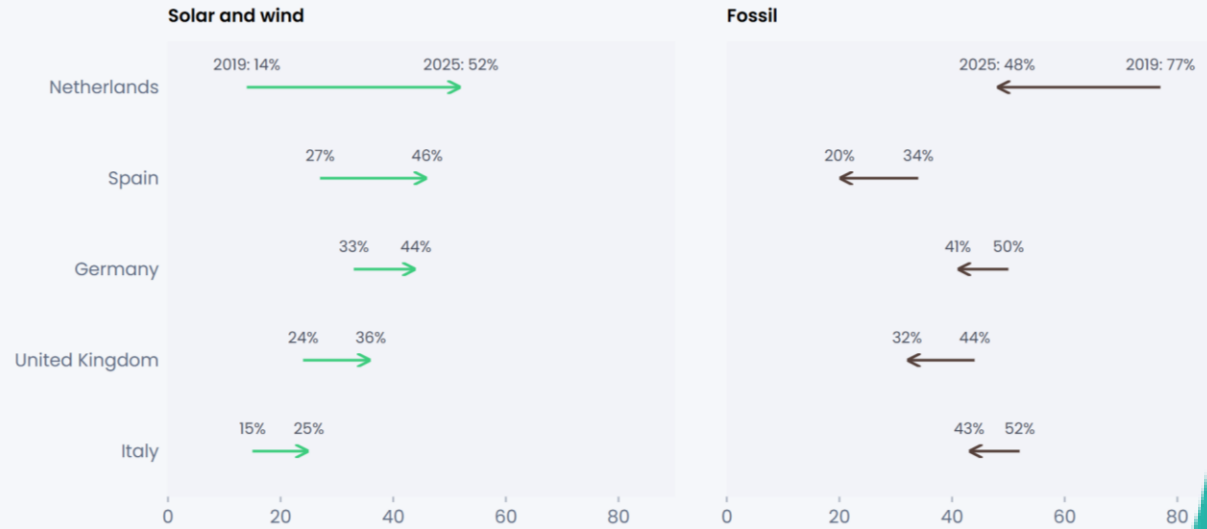
Source: [Monthly electricity data](#), Ember

Rapid solar and wind growth strengthens Spain's position as a low-fossil power leader

Share of electricity demand in H1 2019 → H1 2025 (%)

Top five EU+UK countries by installed gas generation capacity

Generator ● Solar and wind ● Fossil



EMF

Electrification with **renewable energy** is the only way to reduce energy security risks from fossil fuel dependence. By using **domestic solar and wind**, countries cut exposure to volatile global markets and geopolitical disruptions, stabilizing costs and **strengthening resilience across the energy system**.

RENEWABLE ENERGY AS A NATIONAL SECURITY IMPERATIVE

International Response to Recent Crisis

A growing number of countries and corporations have already reaffirmed the need to increase the share of renewable energy following the Middle East crisis.

President Lee Jae Myung Advocates Renewable Energy Transition Amid Iran Crisis

President Directs Differential Rates to Balance Regional Energy, Cut Transmission Costs

By Kim Tae-jun

Updated 2026.03.05. 13:17



President Lee Jae Myung speaks at a Cabinet meeting held at Cheong Wa Dae on the 5th. /News1



Photo used for illustrative purpose only. Wind turbines, which generate renewable energy, at a farm in the desert road of Suez outside of Cairo, Egypt September 1, 2020. Amr Abdallah D. Reuters Images

RENEWABLE ENERGY

Egypt to add 2,500MW of renewable capacity to national grid

The talks reviewed plans to secure adequate fuel supplies for and maintain uninterrupted electricity production

Staff Writer, Daily News Egypt

Middle East war strengthens case for renewables, says Microsoft energy chief

Oil and gas price shocks triggered by conflict reignite discussion about building defences to volatile fuel costs



Starmer's answer to Iran energy shock: Go green faster

The U.K. is doubling down on clean energy, not despite the Iran crisis — but because of it.

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BUSINESS | ENERGY | Last updated March 6, 2026, 6:53 PM

Geothermal energy seen as shield against Middle East supply shocks

By Alena Mae S. Flores

March 7, 2026, 2:00 AM

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GWEC's ROLE

Guiding the Industry in Challenging Times Filled
with Opportunity

GWEC'S INITIATIVES TO RESPOND TO GEOPOLITICAL UNCERTAINTIES

Supporting Industry Efforts to Promote Energy Sovereignty

Updated Global Supply Chain Report

GWEC is considering to update the findings of its 2023 report Mission Critical: Building the Global Wind Energy Supply Chain for a 1.5°C World to the new environment.

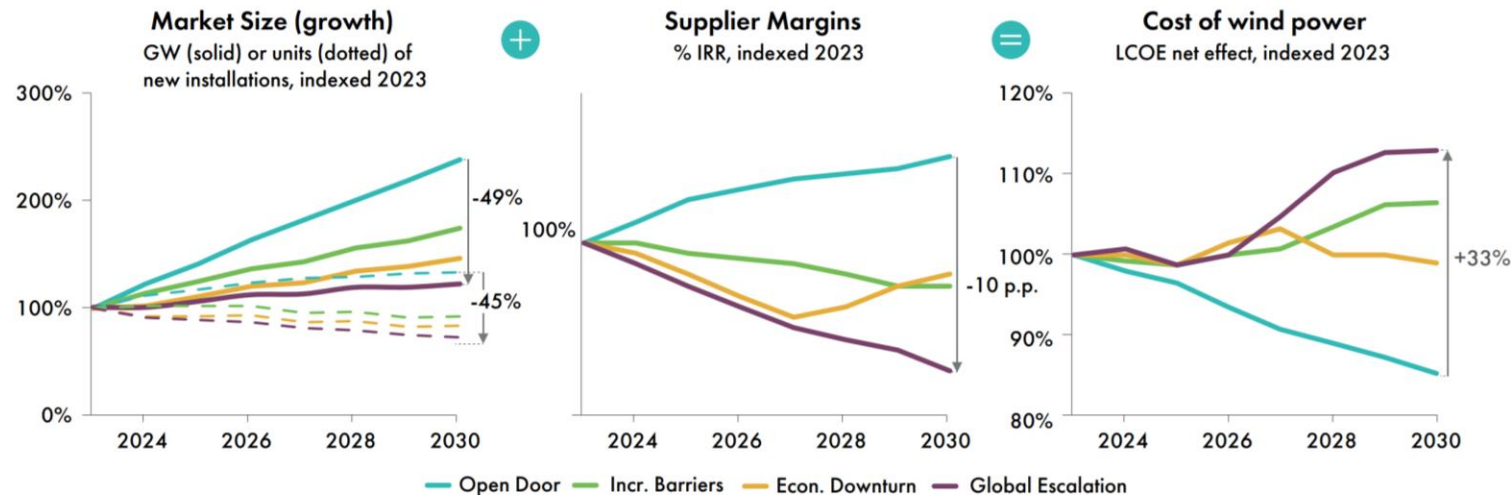
This means understanding where the industry stands today and updating its advocacy accordingly. GWEC is starting this process by analyzing the impact of protectionist policies on critical wind power inputs, starting with EU policies on steel trade.

Creation of Energy Security Hub

GWEC will soon launch an Energy Security Hub, providing timely insights and intelligence on the latest developments in prices for key wind component imports, geopolitics, and other critical factors affecting the global wind energy supply chain.

This dashboard is designed to support informed decision-making and enhance industry resilience in an increasingly complex and interconnected energy landscape.

Global developments will impact wind market size, sustainable returns and cost curves





Status of Global Wind Power in 2026



Seizing Growth Opportunities In A More Volatile World

The wind industry is growing at an accelerated rate.

We will go from 117GW in 2024, to 150GW in 2025, to over 160GW in 2026

Unfavourable headlines but numbers speak for themselves.

'You can bend the truth, but you can't bend the laws of physics and economics'

90% of new power installations last year were renewables.

Wind has the lowest LCOE, lowest lifecycle emissions of RE tech, and has strong system and economic benefits

Seizing Growth Opportunities in a More Volatile World

Accelerated growth in China

Wind winning out against all competitors without subsidy and industry pledge of at least 120GW of installations annually for the next five years

Faster growth in India

Driven by intelligent system design and highly competitive prices

Record installations in the US

Up until 2028 despite Trump due to Safe Harbour rules. Takes industry through current political cycle

Progress on grid restrains in some markets

Due to better grid management, intelligent market design and grid investments and hybridization

Some progress in Europe

Excellent results from AR7
North Sea Cooperation
Permitting Reform

Pickup in growth in Middle East and Central Asia

Wind doing well in cost terms against all comers (including solar PV) in Saudi, Egypt, Central Asia

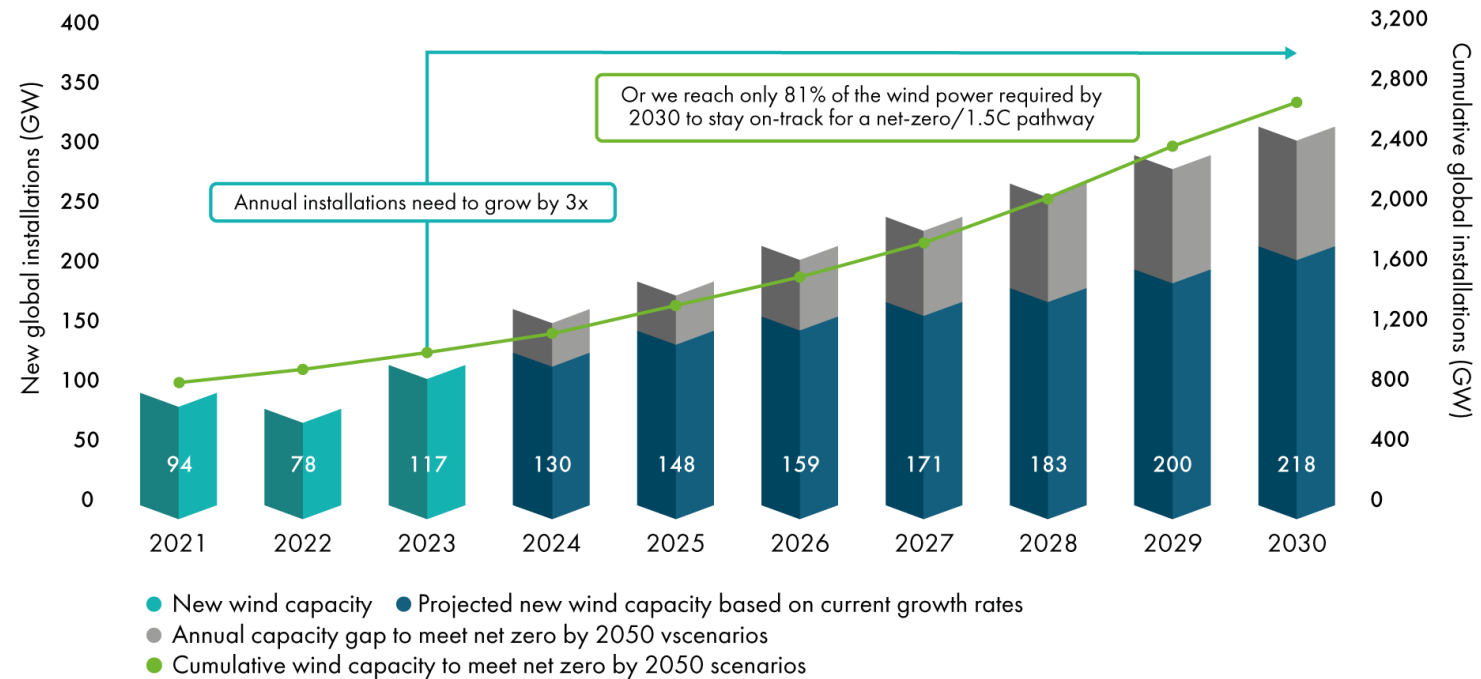
Large pipeline of auctioned projects

Significant group of new countries overcoming regulatory roadblocks or introducing wind on a large scale for first time
(S Korea, Vietnam, Philippines, Colombia)

Closing The Gap

Closing the gap projected for wind energy capacity required by 2030 to stay on track for a 1.5°C pathway is challenging, but progress is being made.

Wind power installations need to triple by 2030 to achieve a 1.5°C pathway



Source: GWEC Market Intelligence; IEA Net Zero by 2050 Roadmap (2023).

The Outlook for Wind is Considerably More Optimistic Than in Q4 2024

- 2024 was the wind industry's **industry's best year** with 117 GW of new installations added worldwide,
- Total global capacity has now reached **1,136 GW**, an **11% increase** from the previous year.
- In our Q3 Outlook, GWEC Market Intelligence has **raised global installation forecast** for 2025 by 8.8% (13.3 GW) compared with the Q1 Outlook.
- 2025 is now on course for more than **150 GW of new capacity**; making it another record year.
 - Top 5: China, the US, India, Germany, and the UK
- By **2030, there will be 2,196 GW** of wind installed across the world.

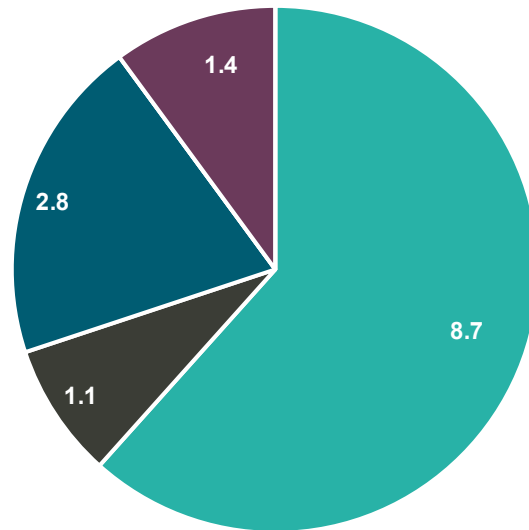


Preliminary numbers show 11 GW of new offshore capacity added in 2025 - bringing the total to 94.2 GW

At the end of **2025**, global offshore wind capacity reached **94.2 GW**.

- China added **8.7**
- Europe commissioned **2.8 GW**
- Asia ex China added **1.1**

GW installed OFW Capacity 2025 by Region



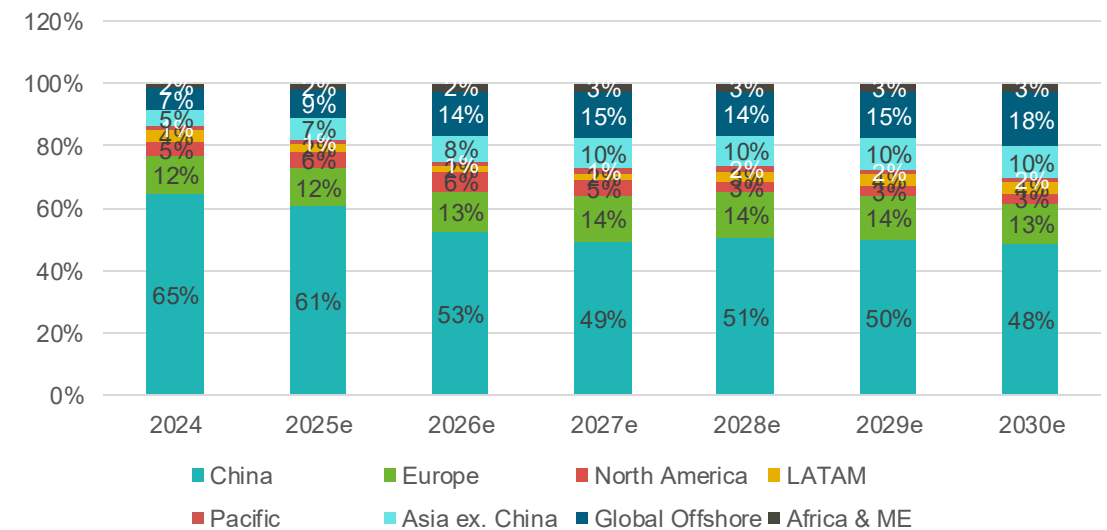
■ Africa ME ■ China ■ Asia excluding China ■ Europe ■ LatAm ■ USA ■ Pacific

China Remains Dominant: Market Diversification Is The Prize

Upside ex-China throughout 2025-2030 should be our objective...

- **China** will account for 52% of total new onshore wind additions
- **Europe** will have ~13% of new installations on average during the forecast period
- **North America** will be ~4% global market share on average
- Emerging markets in **APAC, Africa, MENA** will deliver more consistent growth
- Market dominance of China will decline slightly through the outlook period, faster growth in other markets can increase diversification further
- **Offshore wind** is expected to grow from 7% in 2024 to 18% by 2030
- GWEC estimates an additional **1,060 GW of wind capacity will be installed between 2025 and 2030**
- Global cumulative capacity will be around **2,196 GW by 2030**
- Global wind capacity should reach at least **2.7 TW by 2030**, to meet the policy target of 3x.

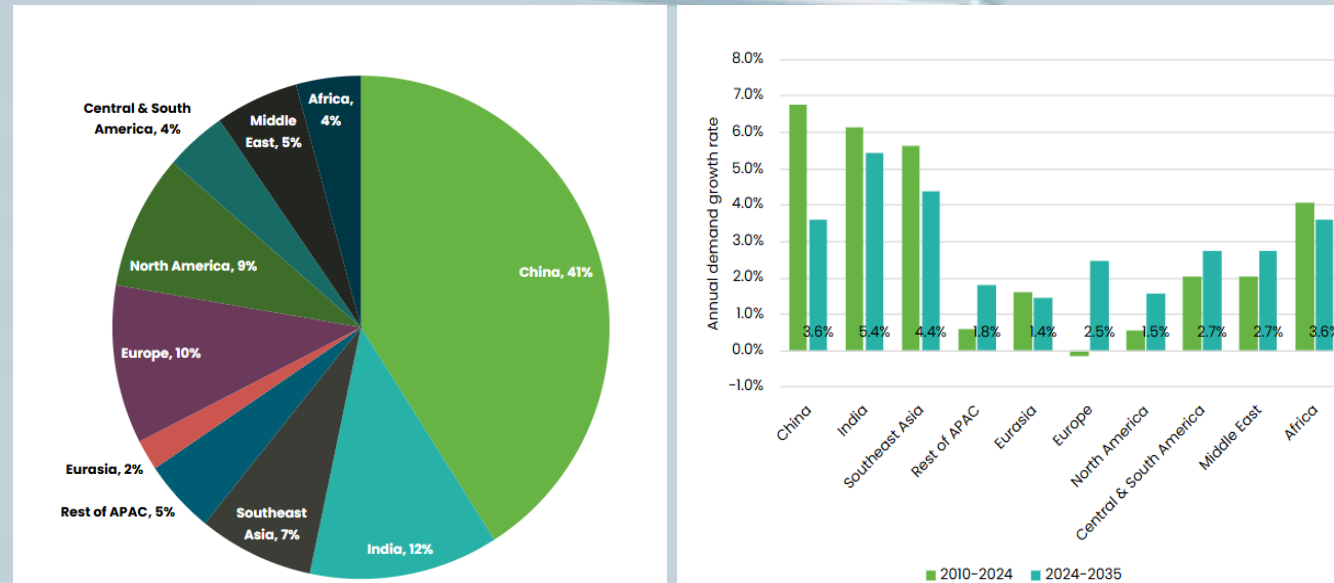
New wind energy capacity outlook by region (%)



Source: GWEC Market Intelligence | Global Wind Market Outlook Q3 2025 Update

Why Asia, Why Now?

- ✓ Asia is driving global electricity demand growth - Global electricity demand rose sharply in 2024 and is forecast to continue growing at close to ~4% annually through 2027, driven especially by emerging markets. Most of this growth comes from Asia's fast-expanding economies.
- ✓ Asia, inc China and India, contributes 66% of global electricity demand growth from 2024-2035
- ✓ Southeast Asia's electricity demand is set to rise 4% annually to 2035 in the STEPS, outpacing the 3% growth in overall energy demand.
- ✓ With Mainland Asia as the dominant contributor to demand growth, countries cannot rely solely on fossil fuels, both for climate and for energy security, especially as electricity use climbs across sectors
- ✓ Delaying infrastructure like offshore wind means locking in fossil fuels to meet near-term need, increasing price and supply risks for rapidly growing economies.



Current Policies Scenario, World Energy Outlook 2025, International Energy Agency
Rest of APAC includes Australia, New Zealand, Taiwan, and other APAC countries and territories.

Eurasia includes Caspian countries and territories, and Russia

Asia Resilience Demonstrated Through Strong Progress in Region Despite Global Conditions

Most Individual Markets Showcase Strong Political Will in 2025

- SK - Passing and implementation of the OSS bill; Establishment of new Climate Ministry
- JP - Revision of the bidding system and support mechanism after Mitsubishi withdrawal
- Aus* - Victoria auctions delayed and 3 companies have since pulled out (RWE, BlueFloat and AGL) but strong political commitment despite this
- TW - Round 3.3 expected for 2026 with market reforms incl removal of 60% LCR
- India - Expected to restart OFW tenders in 2026
- PH & VN showed strong momentum with OFW pipeline

Regional Picture and Networks Strengthened

- Tripartite RE export agreement, which includes OFW, between Malaysia, Singapore and Vietnam through new subsea cable
- ASEAN Power Grid - endorsement of enhanced APG MOU, approval of TOR for ASEAN Subsea Power Cable Development Framework, APG Financing Initiative (ADB, World Bank, ASEAN Secretariat)
- Multilateral Framework to Advance the Development and Industrialization of Floating Wind signed between FLOWRA (Japan), FEM, HHWE, Innovation Norway and ORE Catapult
- Bilateral agreement between local associations JWPA and TOWIA to strengthening cooperation in OFW development and supply chains in Asia

Looking Ahead at 2026

- Ensuring all APAC markets continue to implement the 'route-to-market' with awareness of regional synergies (i.e regional tender planning coordination)
- Supply Chain & Infrastructure - Multilateral cooperation in wind supply chains and exploring possibilities of shared use of infrastructure
- Narrative building - enhance information integrity and awareness in the region (from local -> national -> sub-regional / regional)
- Finance - Financing package deployed for first OFW projects in EMDE's
- Continue positioning APAC as THE OFW growth region amid global concerns

Seizing The Opportunities

We believe that wind will come out of the current period stronger

- The **wind industry will be flourishing** long after the current US administration has ended. The post-Trump regime is likely to be strongly favourable to wind and will have to pay catch up with energy demand
- The European Commission under the Danish Presidency has **ambitious plans to address permitting** reform and speed up onshore and offshore wind deployment, the UK remains committed to its ambitious offshore wind plans
- In Asia, several **key countries** with strong power demand growth have worked through regulatory issues and are **ready for faster deployment** (South Korea, Vietnam, Philippines)
- While the COP process is becoming more polarized, a clear **group of high ambition countries has emerged** and are pushing for 3xRenewables, with a large majority of countries committed to the Paris goals
- Understanding among governments has grown around the **importance of addressing grids and planning restraints**
- **Economics and supply chain issues** are hampering gas revival, nuclear ambitions remain limited in reality by high costs, planning and public acceptance. Governments are casting a critical eye on solar PV dominance in RE installation mix due to system impacts, seeking more diverse mix (eg India, Vietnam, Brazil)

Seizing The Opportunities in Japan

We believe that wind will come out of the current period stronger

GWEC recommendations

- Assessment of Offtake mechanism
 - Introduce lower/upper limit price to avoid unrealistic bid and reflect current market status
 - Reform the current price scheme from FIP to FIT or CfD until market reaches sufficient maturity
 - Widening the access to CPPA and mitigating risks
- Other Bottlenecks in the Market
 - More visibility of the certification requirements and allow developer's risk acceptance to mitigate procedural bottleneck
 - Introduce COD-based target instead of auction-based target to allow necessary investment from contractors/suppliers, promoting supply chain development in Japan
 - Minimize the curtailment and introduce the compensation mechanisms

