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EVs: flexing their muscles

The development and adoption of electric vehicle technologies can create an infrastructure that offers both flexibility and resilience as electrification increases. *Page 13*



Powering Germany's net zero future

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France has bet heavily on new nuclear power and renewables in its pluriannual energy programme (PPE) covering the period to 2035. The third PPE was delayed by two years but now gives some certainty to the country's power industry. *Page 7*

Solar PV boom powers Africa's energy transition

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Ørsted gets back on track

Danish renewables project developer Ørsted has reported a set of solid annual results, indicating the company is making progress in getting its business back on track after a challenging year. *Page 9*

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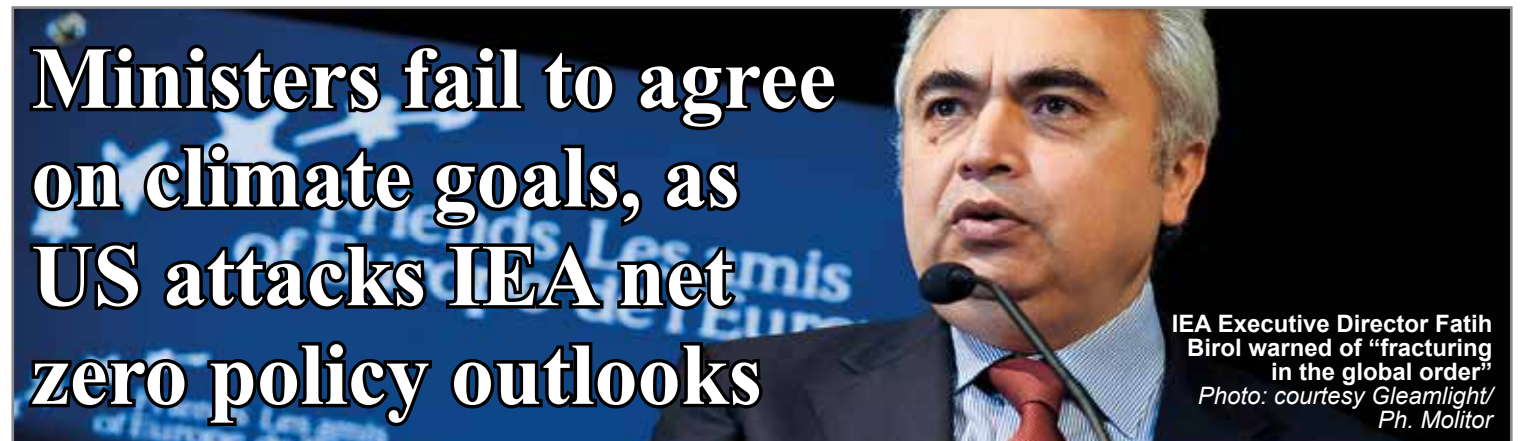
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Ministers fail to agree on climate goals, as US attacks IEA net zero policy outlooks



IEA Executive Director Fatih Birol warned of "fracturing in the global order"
Photo: courtesy Gleanlight/Ph. Molitor

The International Energy Agency's efforts to advise energy ministers on the best path to net zero came under a sustained attack by the US Energy Secretary during the IEA's recent ministerial meeting. **Junior Isles**

World energy ministers failed to reach agreement on tackling climate change during a recent International Energy Agency (IEA) meeting dogged by a relentless attack by US energy Secretary Chris Wright on net zero policies.

Despite an attempt by countries including France, Spain and the UK to keep renewables at the heart of the discussion, ministers, encouraged by the US, ended the meeting with no joint position on tackling climate change.

Ministers have failed to reach agreements in past IEA ministerial meetings, but the lack of a joint communiqué set this apart from previous meetings, where there was consensus

on tackling climate change.

Instead, a meeting summary prepared by chair Sophie Hermans, the Dutch Energy Minister, focused largely on energy security. It affirmed the "continued importance of oil and gas" and noted that a "large majority of ministers had stressed the importance of the energy transition to combat climate change", citing the UN COP28 climate agreement in Dubai for a global transition to net zero emissions.

Fatih Birol, the IEA's Executive Director warned that "fracturing in the global order" is leading to divisions over global energy policy and said that ministers "agreed in different discussions that energy security is the

fundament of everything".

In a gathering in New York, just ahead of the IEA ministerial, Climate Rights International said United Nations member states should reject pressure from the US to oppose a critical UN General Assembly resolution on climate change and states' legal obligations to protect the climate system and the rights of future generations.

The draft resolution, sponsored by Vanuatu and based on a landmark 2025 advisory opinion on climate change by the International Court of Justice (ICJ), calls for concrete action to translate the ICJ's legal determinations into binding and concrete

climate action.

However, the US' Trump administration is now pressuring governments worldwide to block the resolution, claiming it poses "a major threat to US industry," and dismissing human induced climate change as exaggerated.

On February 14, at the annual Munich Security Conference, US Secretary of State, Marco Rubio, dismissed those committed to climate action as a "climate cult," making clear the administration's contempt for scientific consensus, legal obligations, and the millions already suffering from climate devastation. Rubio's comments

Continued on Page 2

Global electricity demand set to grow strongly, says IEA report

Global power demand is set to grow by more than 3.5 per cent per year on average over the rest of this decade, with electricity generation from renewables, natural gas and nuclear all expanding to keep pace, according to a new report by the International Energy Agency (IEA).

According to 'Electricity 2026' – which includes forecasts for electricity demand, supply and carbon dioxide (CO₂) emissions over the five-year period through 2030 – electricity demand is on course to grow at least 2.5 times as fast as overall energy demand through 2030. As the "Age of Electricity" takes hold, this is driven by rising industrial use of electricity, the continued uptake of electric vehicles, higher air conditioning use and the expansion of data centres and AI.

"At a moment of significant uncertainty across energy markets, one certainty is that global electricity demand is growing much more strongly than it did over the past decade. In this Age of Electricity, the increase in global power consumption through 2030 is set to be equivalent to adding more

than two European Unions," said IEA Director of Energy Markets and Security Keisuke Sadamori. "Meeting this demand will require annual investment in grids to rise by 50 per cent by 2030. Expanding flexibility will also be crucial as power networks continue to evolve – so will a strong focus on security and resilience."

While emerging and developing economies remain the main engines of electricity demand growth, consumption from advanced economies is also rising after 15 years of stagnation – contributing to a fifth of the total increase in power demand through 2030.

The report finds that global electricity generation from renewables – boosted by record deployment of solar PV – is now in the process of overtaking generation from coal, after virtually drawing level with it in 2025 based on the latest available data. Nuclear power output also rose to a new record. The momentum behind low-emissions sources of generation continues to 2030, by which time renewables and nuclear are together set to generate 50 per cent of global

electricity, up from 42 per cent today.

Natural gas fired output is also set to grow through 2030, supported by rising electricity demand in the US and the continuing shift from oil to gas for power in the Middle East. Coal fired generation loses ground globally as renewables expand, returning to 2021 levels by the end of the decade. As a result, global CO₂ emissions from electricity generation are expected to remain roughly flat between now and 2030.

The report emphasises that these trends – growing demand, an increasingly weather-dependent mix of power generation sources, and evolving electricity consumption patterns and technologies – require a rapid and efficient expansion of both electricity grids and system flexibility. Today, more than 2500 GW worth of projects – encompassing renewables, storage, and projects with large loads, such as data centres – are currently stalled in connection queues worldwide.

Analysis in the report finds that as the expansion of grids advances, deploying grid-enhancing technologies

and implementing regulatory reforms that enable more flexible grid connections and usage could allow for the integration of up to 1600 GW of queued projects in the near term. Together, these measures would allow the grid to be used more efficiently and unlock substantial capacity.

The report finds that installations of utility-scale battery storage have risen sharply, providing an important source of short-term flexibility. Markets such as California, Germany, Texas, South Australia and the UK have all seen strong growth in utility-scale battery capacity deployment in recent years.

Electricity 2026 also notes that the affordability of electricity remains a key and growing concern, with elevated prices putting pressure on households, industries and businesses. As a result, policymakers are focusing on policies, market designs and regulations that deliver additional investment as well as greater flexibility and efficiency across all parts of the power system, including demand, supply and the use of infrastructure.

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followed the repeal of the “Endangerment Finding” that provided the legal basis for the US government to regulate emissions.

“Vanuatu and other Small Island States are facing existential threats from a climate crisis they did not cause,” said Brad Adams, Executive Director at Climate Rights International. “Countries around the world – all of whom are also facing the impacts of global warming – must stand with Vanuatu at the United Nations and oppose Trump’s bullying tactics.”

In an effort to advance climate action, last month the UN moved to entice corporate leaders back to global COP climate talks, arguing that the summit process is entering a “new era” that is focused less on pledges and will bring more opportunities for investment.

The shift in approach comes as many companies have backtracked on green pledges amid a political backlash led by US President Donald Trump, who has attacked clean energy policies and withdrawn from the UN climate treaty.

Simon Stiell, Executive Secretary of the UN climate arm, said efforts to address climate change would not be met “without bringing the real economy closer into the COP process”.

He told the *Financial Times*: “This new era is about speeding up and scaling up implementation [of UN agreements], which will mean new opportunities for corporate and financial leaders.”

Global investment in clean energy technology reached \$2.2 trillion in 2025, double the \$1.1 trillion spent on fossil fuels, according to the IEA. China accounted for more than a quarter of global energy investment, spending over \$600 billion on clean energy in 2024.

“Leaders of major economies like China, the EU and almost all others are calling it the trend of the future, and a central driver of growth and jobs,” Stiell said.

The UN’s latest move to accelerate climate action came as the EU’s Earth observation service Copernicus warned that the world’s goal of limiting global warming to 1.5°C is on course to be breached more than a decade earlier than previously thought if recent rates of warming continue. Scientists said that on this basis the threshold would be breached by 2030.

“To all intents and purposes, the 1.5°C limit is now dead in the water,” said Bill McGuire, Professor of geophysical and climate hazards at University College London. “Whichever way you look at it, dangerous climate breakdown has arrived, but with little sign that the world is prepared, or even paying serious attention.”

Copernicus said the global average temperature over the past three years had surpassed 1.5°C above pre-industrial levels, topping off the warmest 11-year stretch on record. The COP Paris 2015 agreement target is based on long-term warming measured over decades, which now stands at around 1.4°C.



McGuire: to all intents and purposes, the 1.5°C limit is now dead in the water

UK and California strike clean energy deal, as Trump revokes ‘endangerment finding’

Photo by Photo by Griffin Wooldridge

The UK and California have agreed to collaborate on clean energy. The move has been criticised by the US government, which is simultaneously looking to dismantle greenhouse gas emission legislation and relax limits on pollutants from coal fired plants. **Junior Isles**

California’s Democratic governor Gavin Newsom is ruffling federal government feathers after signing a high-level agreement on clean energy cooperation with UK Energy Secretary Ed Miliband.

The agreement, aimed at boosting technology sharing and mutual investment in the global race for clean power, is seen as a move by both men to cast themselves as clean energy leaders as governments falter over the drive to net zero.

US President Donald Trump told *Politico* that it was “inappropriate” for Britain to sign energy deals with Newsom. Referring to him as “Newsom”, Trump said: “The worst thing that the UK can do is get involved in Gavin.”

The UK government said that deepening ties with the wealthiest state in the US could further open up the Californian market to its domestic

clean energy sector, drive export opportunities and support skilled jobs.

The agreement came less than a week after the US Environmental Protection Agency (EPA) repealed a landmark ruling known as the “endangerment finding”. The 2009 finding provided a legal basis for regulating carbon dioxide and other greenhouse gases and underpinned the EPA’s authority to clamp down on emissions from fossil-fuel extraction, power generation and transport.

Commenting on the decision, Trump said: “This radical rule became the legal foundation for the green new scam – one of the greatest scams in history.”

The move is the most significant in the President’s campaign to dismantle environmental regulations that he argues have hurt American industry and driven up prices for consumers.

The endangerment finding, adopted during the Obama-era after years of legal wrangling, determined that pollution from six greenhouse gases – including carbon dioxide and methane – constituted a danger to public health and could therefore be regulated by the EPA under the 1970 Clean Air Act.

The environmental agency has since used the authority to clamp down on emissions from transport, power generation, manufacturing and fossil fuel extraction.

Environmental protection groups say the move is by far the most significant rollback on climate change yet attempted and are set to challenge it in the courts.

Manish Bapna, Chief Executive of the Natural Resources Defense Council, said in the *FT*: “This cynical and devastating action by the Trump EPA

will not go forward without a fight. We will see them in court – and we will win.”

Environmentalists will likely face several battles with the EPA as it continues to roll back climate-related rules while promoting fossil fuel use.

Last month the EPA also loosened limits on the emission of hazardous air pollutants such as mercury, cadmium, lead, chromium and arsenic from coal power plant.

As a result of the repeal, coal-burning power plants will be allowed to emit more than twice as much mercury as they currently do.

Specifically, they will no longer need to adhere to the limit of 1.2 pounds of mercury per trillion British thermal units of heat input (lb/TBtu) and instead must comply with the previous mercury release limit of 4.0 lb/TBtu.

Battle-tested electricity system needed for Europe, says Eurelectric report

Eurelectric, the organisation representing Europe’s electricity companies has published a new report assessing how prepared the power sector really is, and setting out concrete recommendations for utilities and policymakers.

The report ‘Battle-tested power systems: Resilience and preparedness for Europe’s electricity sector’ was launched at the Munich Security Conference last month against the backdrop of Russia’s war against Ukraine.

Russia’s military strategy in Ukraine has made electricity infrastructure a prime target, exposing the vital role power companies play in sustaining society under attack. Utilities have become the *de facto* second line of defence, keeping essential services running during crises, said the report.

Even without being directly at war, Europe is already facing hybrid threats ranging from sabotage and cyberattacks to disinformation. According to Eurelectric, in 2024, at least 11 attacks damaged critical infrastructure, while 23 cyberattacks affected Europe’s energy sector since 2022. Regardless of the perpetrator, these incidents are increasing in scale and frequency, placing growing pressure on power utilities to maintain reliable supply, it said.

“We live in a new reality of increasing threats. This requires a fundamental shift in mindset,” said Eurelectric’s President Markus Rauramo. “Preparing for, responding to and recovering from both physical and hybrid attacks must be a key element of power com-

panies’ strategies going forward.”

To this end, the report finds that while awareness of risks is growing, preparedness across the sector remains uneven. With critical infrastructure already under strain, the report warns that the time for action is now.

“This report turns hard lessons from Ukraine into practical action for the rest of Europe,” said Kristian Ruby, Eurelectric’s Secretary General. “It shows what utilities can do today – from improving crisis coordination and training, to hardening assets, securing communications and stockpiling critical equipment – to better prepare for, respond to and recover from attacks.”

To strengthen sector preparedness,

the report calls on utilities to:

1. Improve situational awareness and crisis readiness, including cooperation with authorities and regular exercises;

2. Protect critical asset by reinforcing infrastructure, stockpiling equipment, strengthening repair capabilities, and embedding cyber resilience by design.

The report also said that on the policy side, the EU can take steps to accelerate implementation of key legislation at national level, as well as support critical infrastructure resilience through investment frameworks and defining a strong governance structure with guidance on how to identify threats in its revision of Europe’s energy security architecture.

Renewables progress but gap remains between project commitments and realisation

Despite continued low-carbon technology investment and progress, shortfalls in project realisation ahead of 2030 threaten to impact interim goals set by countries and companies in the path to reaching net zero by 2050, according to McKinsey & Company.

In its recently launched ‘Tracking the energy transition: where are we now?’, McKinsey offers insights on nine key decarbonisation technologies. Building on previous research conducted in 2023, which focused on Europe and the US, the latest analysis was expanded to include China as well as battery energy storage systems (BESS) and nuclear energy.

With intermediate 2030 decarboni-

sation mandates fast approaching, the company says understanding progress is critical. The analysis shows that the world continues to make strong progress in clean energy deployment – with renewable capacity rising by 585 GW, or 15 per cent; a 25 per cent increase in EV sales to around 17 million units sold worldwide; and accelerated build out of solar photovoltaic enabled by low costs.

However, despite this progress, noticeable gaps in projects reaching final investment decision (FID) remain in each region in relation to both many established low-carbon technologies like solar PV and wind, as well as emerging technologies like green

hydrogen and sustainable fuels. While investment in low-carbon technologies has been considerable, when combining the operational, FID, and under-construction capacity for each technology in China, Europe, and the US, the analysis suggests that 2030 milestones may not be met.

Even when planned capacity is factored in, the projects still fall short of 2030 goals, with the analysis highlighting notable discrepancies between announced projects and those with committed funding. This comes as less than only 15 per cent of low-emissions technologies required to meet Paris-aligned goals have been deployed, while global emissions rose

9 per cent between 2015 and 2024.

“The progress landscape is nuanced by region and technology and while achieving energy transition commitments remain paramount for countries and companies alike, recent announcements indicate that shifting priorities and slowing momentum have led to project pauses and cancellations across technologies,” said Diego Hernandez Diaz, McKinsey Partner and co-author of the report. “By understanding which technologies are reaching 2030 deployment benchmarks and which aren’t, and why, stakeholders can better understand where rapid course correction is required to accelerate decarbonisation.”

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Brazil faces choices over electricity system expansion

- Co-locating with solar may offer the best battery option
- Nuclear decisions loom

Janet Wood

Among strategic options for rolling out battery storage at large scale in Brazil, co-locating it with PV plants is the option with the best return on investment and the simplest to implement, according to a new study highlighted in *PV Magazine's Energy Storage* publication.

A recent study, 'Storage at the Edge: Distributed BESS as a Technical and Regulatory Solution for Brazil's energy Transition' evaluated three strategies for adding batteries into Brazil's National Interconnected System

(SIN) from technical, economic, and regulatory perspectives, based on real operational data from the 12-month period between July 2024 and June 2025.

It found that standalone battery systems operating as independent market agents would encounter regulatory barriers. Brazilian regulations do not recognise storage, nor do they allow dispatch or compensation through system services markets. Nevertheless, return on investment (ROI) could reach 13.4 per cent, just above the minimum viable ROI of 10-11 per cent.

A second option, so-called 'behind-

the-meter' storage, would see batteries installed at low-voltage consumer units, with or without distributed generation, to shift electricity use from night-time peaks to midday solar surpluses.

It found it would require batteries totalling 40 GWh/8.6 GW but economic benefits for consumers are modest, with savings under the current tariff limited to around 5 per cent.

Finally, it examined batteries co-located with distributed photovoltaic systems to shift solar PV injection into the grid. It said this strategy would require 18 GWh/6 GW of batteries.

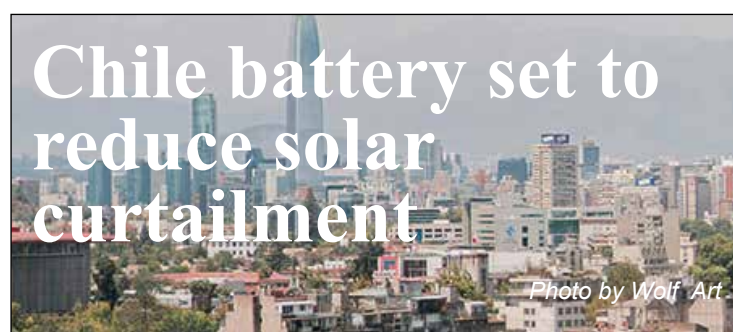
But the scheme is simple to implement and benefits from Brazil's energy compensation scheme: each MWh injected during peak hours converts to about 1.6 MWh of off-peak credit for low-voltage consumers.

The report said incorporating location constraints, real-time dispatch, or coordinated prosumer participation could increase the systemic value of distributed storage, but the Brazilian energy system has no provision for this or for the necessary data exchange.

Meanwhile, the Brazilian government has said it expects to decide later this year on whether to resume

construction of the Angra 3 nuclear power plant – under construction or suspended for more than 40 years – or abandon it. Brazilian Management Minister Esther Dweck told *Reuters* that the debate remains open but warned that cancelling the project could undermine Brazil's broader nuclear power strategy.

"The cost of not continuing is very close to the cost of continuing," she said. Last year Brazilian development bank BNDES estimated that it would cost \$4.65 billion to complete Angra 3 but abandoning it would cost a similar amount.



Chile battery set to reduce solar curtailment

Photo by Wolf Art

A \$325 million financing package has been agreed for a 141 MW/677 MWh battery in Chile that will support a portfolio of solar generating facilities. The project includes refinancing for a co-located 141 MW solar PV, and support for 18 distributed generation solar plants totalling 121 MW. DNV was engaged by Toesca to provide market consultancy for this diverse portfolio, spanning geographies from the Atacama Desert to the Biobío Region.

In 2025 Chile sourced more than 60 per cent of its electricity generation from renewable sources, with solar power accounting for more than 30 per cent of total generation capacity. It is said to be phasing out coal faster than any other developing economy. However, in the first 11 months of 2025, renewable curtailments reached 5 TWh

(around 15 per cent of the available wind and solar generation), highlighting the urgent need for storage to fully harness the nation's abundant solar and wind resources. The battery, one of the country's largest, is being developed by T Power, the renewable energy platform managed by Chilean asset manager Toesca.

DNV said the financing, arranged with institutions including SMBC, Natixis and BCI, "underscores strong investor confidence in Chile's renewable energy sector". Due diligence included quantitative and qualitative reviews of complex power purchase agreements, and optimising the financial viability of the battery through advanced revenue stacking analysis, power price forecasting and stabilised price modelling.

Data centres drive surge in gas fired plant

The US is leading a surge in new gas fired power generation driven by the expansion of data centres, according to Global Energy Monitor (GEM), which said projects in development are expected to grow existing global gas capacity by nearly 50 per cent.

In the US, it said a third of the 252 GW of gas power in development is set to be situated on site at data centres. Texas is the centre of the US expansion, with 57.9 GW of new gas power under way last year. For example, tech giant Meta is building a \$1.5 billion data centre, powered by gas, in El Paso. In western Pennsylvania a coal plant site is set to host the largest gas fired plant in the US, also in order to service data centres.

The plan for the 3200-acre Homer

City site, about 50 miles east of Pittsburgh, has divided the local community, according to Tom Pike, Director of Campaigns at the Clean Air Council, a local green group.

He said: "The coal plant was an environmental monstrosity, but it was a pillar of the local economy, and some people are nostalgic for that. But no one wants to live next to a data centre." He added: "The power generated will be used in service of private profit rather than to keep households' lights on."

The US accounts for nearly a quarter of all global gas capacity in development, followed by China, Vietnam, Iraq and Brazil, and in 2026, new gas additions are set to surpass a 2002 annual record of 100 GW.

Offshore wind struggles against headwinds in US

Photo by Damir K, Pixaby

- Nova Scotia and Massachusetts join forces
- Trump administration promises further costly disruption

Janet Wood

Nova Scotia in Canada and Massachusetts in the US have signed a new Memorandum of Understanding (MOU) to cooperate on offshore wind energy. The aim is for Nova Scotia to supply electricity to Massachusetts.

Massachusetts is seeing a rapid increase in energy demand for electrification and data centres. It is expected that offshore wind projects in Nova Scotia will help meet this demand, while the US offshore wind industry is struggling in the face of President Donald Trump's attempts to shut the industry down.

The Province of Nova Scotia and the Government of Canada jointly identified four initial offshore wind energy areas off the Nova Scotia coast in July 2025. Recently the Canada-Nova Scotia Offshore Energy Regulator initiated the process for the first licensing round

and it completed a call for information and pre-qualification process in January 2026. A formal call for bids is expected in the coming months.

Tim Houston, Premier of Nova Scotia, pitched his province as a safe harbour for developers and suppliers to do business in, saying: "We are a predictable and reliable regulatory jurisdiction."

In a positive development, five projects offshore of the US east coast have had orders to stop work quashed. Judge Royce Lamberth of the District of Columbia found the government's reasoning was "arbitrary and capricious". The five projects will soon start generating electricity.

Abby Watson, President at Groundwire Group, a consulting firm, told the *FT*: "You can't ask for better evidence than producing electrons at a time when people are panicking about not having enough electrons."

Industry and state leaders want to

help projects access funding and the supply chain. New York State Energy Research and Development Authority President Doreen Harris said the state had pledged \$300 million to prepare ports for offshore wind development. "We know that the market has been tested in ways that we could not have anticipated in just one year," she said.

However, Juan Gabriel Sanchez, a business development manager at Belgian offshore energy company Jan De Nul group, said any positive sentiment is "optimistic but not realistic", as the Trump administration vowed more disruption to increase costs for developers. Suppliers say they are turning their focus to markets outside the US.

"We are concentrating in Europe and other places which will pick up this year like Australia, New Zealand and Taiwan," said Tomas Fertig, Vice-President of Business Development at Entron Wind.

US Defense Department forced back to coal fired electricity generation

US President Donald Trump has directed the US Department of Defence to buy coal-generated electricity. He ordered Defence Secretary Pete Hegseth to strike agreements with coal power plants selected by the departments of defence and energy. He also allocated \$175 million to upgrade coal power plants in Kentucky, North Carolina, Ohio, Virginia and West Virginia.

The order relies on a cold war-era law that allows the White House to give directions to industry on national

security grounds. The Department of Energy has already forced five coal plants to stay open past their retirement dates, but the move has prompted legal challenges even from plant owners.

One plant owner in Colorado called the move unconstitutional.

"Keeping these plants open should be a continuing priority both from a national security and an economic perspective," said Michelle Bloodworth, Chief Executive of America's Power, an industry group.

Julie McNamara, Associate Policy Director with the Climate and Energy programme at the Union of Concerned Scientists, said: "Forcing the use of increasingly unreliable and relentlessly uneconomic coal plants will risk outages and send high electricity costs higher."

The Defense Department is by far the biggest consumer of energy in the federal government, using 0.60 quadrillion Btu in 2024. The coal industry is said to have excess stock of 2.6 quadrillion Btu.

Power-hungry Asian data centres attract huge investment

- Adani Group plans to invest \$100 billion by 2035
- Thailand earmarks nearly \$1 billion to ease data centre electricity supply bottleneck

Syed Ali

The surge in data centres is driving investment in the electricity sector in India and Thailand.

Last month India's Adani Group said it will invest \$100 billion by 2035 to build renewable-energy-powered data centres designed for Artificial Intelligence (AI) workloads, marking one of the country's largest private commitments to digital infrastructure.

The investment aims to establish a sovereign energy and computing backbone to support India's growing AI ecosystem. The group said the initiative could catalyse an additional \$150 billion in investments across servers, sovereign cloud platforms, advanced electrical systems and related infrastructure, forming a projected \$250 billion AI ecosystem.

The roadmap expands AdaniConex's existing 2 GW national data centre capacity to 5 GW. The platform is designed to integrate renewable

generation, grid resilience and high-density AI computing infrastructure within a unified architecture.

The group is partnering with Alphabet's Google to develop a gigawatt-scale AI data centre campus in Visakhapatnam, Andhra Pradesh and is developing additional campuses in Noida in the Delhi-National Capital Region (NCR). It is also collaborating with Microsoft on projects in Hyderabad and Pune in the southern and western Indian states of Telangana and Maharashtra, respectively. Discussions with other global technology firms are underway to establish further AI campuses.

Adani Group's Chairman, Gautam Adani, said: "Nations that integrate energy and computing capacity would define the next phase of technological growth."

The renewable energy backbone will be anchored by Adani Green Energy's 30 GW Khavda project in Gujarat, of which more than 10 GW is

operational. The group has separately committed an additional \$55 billion to expand its renewable energy portfolio, including large-scale battery energy storage systems.

The announcement came as new data was published for ongoing solar capacity additions to the country's generating mix.

In its Q4 and Annual 2025 India Solar Market Update, released last month, Mercom said India added 36.6 GW of solar capacity in calendar year 2025, up nearly 43 per cent compared to 25.6 GW in 2024. The year marked record installations, surpassing annual capacity additions of all previous years. It noted that annual installations crossed the 30 GW mark for the first time.

Meanwhile, the Electricity Generating Authority of Thailand (EGAT) announced that it is spending Baht 31 billion (\$997 million) to upgrade the power transmission system in the Eastern Economic Corridor (EEC), in

a bid to ease a bottleneck for electricity supply to data centre development projects.

Thailand has sufficient electricity to ensure 24-hour operations for data centres, but still needs to increase transmission capacity.

"We are now a global data centre base. These data centres require a vast amount of electricity," said Prasert Sinsukprasert, the Energy Permanent Secretary.

EGAT allocated Baht 1.5 billion from its budget to upgrade the transmission capacity at Phan Thong, which supplies electricity to Amata City Chon Buri and Amata City Rayong, an industrial complex in Rayong province.

"The goal is to increase total transfer capability to 1150 MW, from 600 MW at present," said Sinsukprasert.

Four data centres in Amata City Chon Buri are under construction and should benefit from the improved transmission system, which receives electricity from gas fired power

plants. They are expected to drive up power demand in the industrial estate.

According to the Board of Investment, 16 new data centres will be developed in the EEC between 2026 and 2030, demanding 3600 MW of electricity.

Data centre operators who want clean energy can participate in the government's pilot direct power purchase agreement scheme, which allows them to directly buy electricity from power companies. The scheme has an electricity generation capacity of 2000 MW, which is likely to increase in the second phase, he said.

Peer-to-peer power trade in the renewables category remains prohibited in Thailand.

Last year, electricity consumption in Thailand was more than 33 000 MW during the peak period, while supply was 55 000 MW. "We don't have problems with generating electricity," said Sinsukprasert, noting that reserve was greater than 30 per cent.

Battery storage will support Australian renewable projects

Syed Ali

Australia has announced multiple battery energy storage system (BESS) projects that will support its ongoing expansion of renewable energy.

In February AEMO Services Limited (ASL), a subsidiary of the Australian Energy Market Operator (AEMO), awarded long-term energy service agreements to six BESS projects in New South Wales through Tender Round 6. All six projects are based on lithium-ion battery technology, with nominal storage durations ranging from 8.7 hours to 11.5 hours. The selected projects together account for 1170 MW of capacity and 11.98 GWh of storage.

The six BESS projects represent about 9 per cent of New South Wales' peak electricity demand. They include the 100 MW/870 MWh Ebor BESS by Bridge Energy, the 250 MW/2 414 MWh Bowmans Creek BESS by Ark Energy, the 158 MW/1440 MWh Armidale East BESS by FRV Services Australia, the 233 MW/2676 MWh Bannaby BESS by BW ESS Australia, the 100 MW/1080 MWh Kingswood BESS by Iberdrola Australia, and the 330 MW/3500 MWh Great Western battery by Neoen Australia.

In October last year, Australia announced the results of Tender 4 under the Capacity Investment Scheme, which aims to support the national renewable energy target of 82 per cent. A total of 20 projects were selected with a cumulative capacity of 6.6 GW, exceeding the initial plan of 6 GW. Of these, 12 hybrid projects integrating wind or solar generation with BESS will contribute over 3500 MW/11 400 MWh to the grid.

The news came as the Victorian state government announced plans to hold an auction for offshore wind farms in August, ending a year-long delay and continued uncertainty for

the industry in Australia.

The auction, marking Australia's first open tender for offshore wind projects, is seeking to meet the state's target for 2 GW of offshore wind generation by 2032 and 9 GW by 2040. The Victorian government will open tender for the first 2 GW of capacity after the original auction, slated for September 2025, was delayed.

Lily D'Ambrosio, Victoria's Minister for Energy and Resources, said: "We want to give industry the certainty it needs to invest and help us keep building the renewable energy Victoria needs to push down energy bills."

A previous auction, slated for September 2025, was delayed because of global investment hurdles and the risk of attracting too few bidders. The Victorian government said that the offshore wind industry is expected to support over 6000 jobs and generate investment in the billions.

Leanne Olden, an expert in renewable energy projects at law firm Pinsent Masons, said: "This announcement is welcome news for the industry because it adds greater certainty to the viability of offshore wind projects. Offshore wind is an important part of Australia's long-term transition to renewable energy."

In December, all state and federal energy ministers except Queensland's, endorsed the Nelson review's recommendations, including the development of an 'Electricity Services Entry Mechanism' (ESEM), which aims to ensure long-term investment in Australia's National Energy Market (NEM) by providing revenue support for new generation capacity.

The ESEM is to replace the Capacity Investment Scheme (CIS), the federal government's current underwriting mechanism for renewable projects, from 2027. The auction design will be released after consultation with the offshore wind industry.



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Philippines and Indonesia clean energy targets under threat

Fresh doubts are emerging over whether Indonesia and the Philippines, both major coal users, will fulfil their energy transition ambitions.

Last month the Indonesian government said it would reverse its plan for the early retirement of the Cirebon 1 power plant in West Java, raising concern about a commitment made in 2024 to phasing out fossil fuel power plants over the next 15 years.

In December, however, the government said it would keep Cirebon-1 open, citing its long potential lifespan and supercritical technology, which burns coal more efficiently than older plants. It said it would seek older and less efficient plants to close instead. The move sent a “mixed signal” on the government’s commitment, said Dinita Setyawati, Asia energy analyst at energy think-tank Ember.

It also highlights the need for funding to build “cleaner, alternative power plants to satisfy the energy needs”, she said. That might be better achieved with a “market-led energy transition”, including deregulation of electricity distribution and perhaps

subsidies, Dinita added.

The news follows findings that the Philippines, another large Asian coal user, could miss its most ambitious green energy target.

In late January global research firm S&P Global said the country may fail to meet its ambitious renewable energy targets under its clean energy scenario by 2050 due to persistent permitting delays and transmission infrastructure hurdles.

S&P Global Commodity Insights APAC Power and Renewables Director Vince Heo said during an industry forum that systemic challenges, particularly grid limitations, are likely to cause the country to miss the government’s highest benchmarks.

“I think the major one is the grid issue. There’s a big gap between the government target and the Green Energy Auction. They always have a very big number, but when GEA-4 was announced, we discounted the actual capacity to be installed, knowing there will be challenges in meeting all these targets,” he said.

Under the government’s 2023-2050

Philippine Energy Plan (PEP), the clean energy scenario aims for a renewable energy share of 56.92 per cent by 2040 and 64.86 per cent by 2050.

“We are running software to see whether the system balance could be met, and it’s clearly not in the Philippines. You don’t have good grid planning here. Based on our forecast, the Philippines has to rely more on firm capacity, which is still coal and gas,” Heo said.

S&P Global’s forecast suggests the country will more likely reach a 27 per cent share by 2030 and 50 per cent by 2050, aligning only with the government’s less aggressive base case scenario.

Heo said the lack of energy storage within the power grid remains a critical weakness. Even with a projected 7 GW of solar projects becoming operational, the system cannot yet handle the intermittency of solar power.

He said the Philippines has poor grid planning and will have to continue relying on firm capacity from coal and gas to maintain system balance.

China emissions plateau as renewables outpace new coal fired plant build

China’s carbon emissions fell in almost all major sectors, including power generation, as growing demand is increasingly met by renewables, according to analysis by the Centre for Research on Energy and Clean Air (CREA).

The research carried out for climate website Carbon Brief showed CO₂ emissions likely declined 0.3 per cent for 2025. Although there is some uncertainty about the figure, the analysis suggests it is the first time that emissions have stayed flat or declined for a full calendar year at a time when energy demand was rising.

“Because the relative drop is so small, we can’t say with certainty yet that it’s a fall, therefore the ‘flat or falling’,” explained CREA lead analyst Lauri Myllyvirta. “The really significant implication is that emissions aren’t rising rapidly like they did until 2023,” he said.

Commenting on the analysis Peter Chalkey, Director of the Energy and Climate Intelligence Unit (ECIU) said: “Suggestions that carbon dioxide emissions from China, the world’s biggest emitter, are flat or falling are highly significant. Even if more coal power stations are being built, they aren’t being used at capacity as evidenced by emissions from China’s electricity generation sector falling.”

Although China has 85 coal fired units scheduled to open in 2026, according to Global Energy Monitor,

2025 marked a historic shift as coal fired power generation decreased 1.9 per cent and new non-fossil generation finally outpaced electricity demand growth.

According to a recent report from Wood Mackenzie power demand grew 5 per cent in China in 2025, or 494 TWh, yet for the first time in a decade, coal fired power generation did not increase to help meet this demand. Instead, the incremental demand was met by carbon-free generation, with the rapid growth in renewables and constant development of nuclear and hydro capacity.

“At the heart of this transformation is the unprecedented expansion of renewable energy capacity,” said Sharon Feng, Senior Research Analyst for Wood Mackenzie. “China’s wind and solar capacity has risen more than tenfold to 1842 GW over the past decade.”

Since 2015, the levelised costs of energy (LCOE) for utility solar and onshore wind have plummeted by 77 per cent and 73 per cent, making renewable energy competitive with fossil fuels. This economic shift has unleashed massive investment, with investors and developers racing to capture market share, added Feng.

Beyond renewables, China has seen nuclear capacity expand from 27 GW in 2015 to 62 GW today, which, combined with hydropower, now provides 445 GW.




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France passes bill setting out energy plans to 2035

■ Six new nuclear reactors planned ■ Renewables targets slimmed

Janet Wood

France has bet heavily on new nuclear power and renewables in its plurianual energy programme (PPE) covering the period to 2035. The third PPE was delayed by two years but now gives some certainty to the country's power industry. The industry had feared a 'de facto' moratorium if the PPE was not finalised, but the programme now provides developers and authorities with a clear direction.

The strategy has to meet relatively

flat energy demand and has three pillars: so-called 'energy sobriety'; rollout of renewable energy for heat and power; and strengthening nuclear power – reversing previous plans to close 14 of France's 57 nuclear reactors.

The target for solar is 80 GW by 2035, 10 GW down from the draft plan published last year. Onshore wind targets are also less ambitious than planned: 40 GW in 2035 compared to an early target of 45 GW by that date, with repowering of existing wind farms prioritised. The offshore wind target is 15

GW by 2035, with a further 3 GW previously proposed now due by 2027.

The energy bill sets out plans to build six new nuclear reactors, the first of which is not expected to go online before 2038. The government will decide whether to go ahead with an additional eight reactors before the end of President Emmanuel Macron's term in 2027. That year, however, could see the new policy altered under a 'review clause' that can be triggered in 2027.

Under the revised energy plans, the French government aims to reduce

fossil fuels' share of overall energy consumption from 60 per cent in 2023 to 30 per cent by 2035.

The success of this plan also depends on massive electrification, with an estimated demand of 618 TWh in 2035. Environment Minister Monique Barbut said France wanted "one in three cars purchased" to be electric in 2026 – a leap from the one in five new EVs sold last year.

The contentious energy policy bill, which has seen proponents of nuclear and renewables at loggerheads, will be

passed by decree rather than by a parliamentary vote.

Finance Minister Roland Lescure, who also holds the energy portfolio, said: "We need to stop our internal family squabbling. We need both nuclear and renewables."

With the bill passed, the country will move into the implementation phase – launching tenders, accelerating grid connections, supporting the various sectors and fine-tuning system operation. Among the upcoming tenders will be one for tidal power projects.

Tidal power sector looks forward to commercialisation in its second decade

Ten years after the first tidal pilot plants entered the water in Scotland, the Netherlands and France, the industry says it is ready for large-scale deployment. Recently France published details of commercial tenders for 250 MW of tidal energy capacity to be awarded by 2030, and the UK has awarded a fourth round of support to tidal projects, awarding contracts to four projects totalling 140 MW at £265/MWh.

Rémi Gruet, Ocean Energy Europe CEO, said the French government's confirmed intention to develop a tidal industry "will benefit the entire value chain, from energy producers to public

bodies to consumers".

Meanwhile, ocean energy developer Minesto has been selected for in-depth investment advisory support by the European Investment Bank (EIB) under the PDA (Project Development Assistance) programme. The Minesto investment case chosen for the programme is a 10 MW 'Dragon' tidal energy array at a site within EU waters.

The EIB advisory to Minesto will include capital structuring and financial modelling to facilitate fundraising, aiming to raise capital of €25 million. The first EU site is in addition to opportunities being pursued in the Faroe Islands and North Wales.

Battery plus solar makes attractive combination at utility scale

European Energy has inaugurated what it claims is Northern Europe's "largest combined solar and battery" park: Kvosted, in Viborg Municipality in Central Jutland, Denmark. The project adds a 50 MW/200 MWh battery to the existing 100 MW solar farm to create a "fully integrated hybrid asset".

The battery, which has been operational since December 2025, demonstrates European Energy's approach to enhancing asset value through storage integration and flexible system operation.

The expansion was supported with an 11-year, €21.5 million loan from the Nordic Investment Bank. The battery enables solar output to be stored and delivered to the grid when production is lower, and provides flexibility

services to the grid.

"By integrating battery storage into the existing solar park in Kvosted, the project has been transformed into a hybrid asset with greater operational flexibility and a broader revenue base. This strengthens the long-term value and resilience of renewable energy projects," said Knud Erik Andersen, CEO of European Energy.

Meanwhile, Fortis Renewable Energy BV has signed a mandate letter with the European Bank for Reconstruction and Development (EBRD) for the potential financing of a 270 MW solar farm in Serbia, combined with a 72 MWh battery. The Sremska Mitrovica project is expected to become the largest solar PV facility in Serbia and one of the largest in the Western Balkans.

UK renewables boost after 'largest ever' contract round

Photo by Pixabay

■ Secretary of State claims an 'era of abundance'
■ Renewables increase as domestic gas supplies fall

Janet Wood

The UK has celebrated its largest ever Contracts for Difference (CFD) allocation round, which will see contracts offered for a record 201 projects totalling 14.7 GW of renewable energy.

Allocation Round 7 (AR7) saw new onshore wind agreed at a price of £72.24/MWh and new solar at £65.23/MWh. The government claimed the price level for both were under half the cost of building and operating new gas power stations, which it put at £147/MWh.

AR7 resulted in 157 solar projects totalling 4.9 GW, 28 onshore wind projects totalling 1.3 GW, and in an earlier phase 12 offshore wind projects totalling 8.4 GW. The government said it "puts the UK on track for its 2030 clean power target".

Energy Secretary Ed Miliband said: "These results shows once again that

clean British power is the right choice for our country, agreeing a price for new onshore wind and solar that is over 50 per cent cheaper than the cost of building and operating new gas."

He added: "By backing solar and onshore wind at scale, we're driving bills down for good and protecting families, businesses, and our country from the fossil fuel rollercoaster controlled by petrostates and dictators. This is how we take back control of our energy and deliver a new era of energy abundance and independence."

Campaigners claimed that current clean power projects will cut the UK's gas demand and limit gas imports by over 80 TWh per year. That total is said to be more than three times as much as might be produced in 2030 if new drilling licences are issued in the UK's North Sea gas fields.

Such licences are thought likely to add just 25 TWh to dwindling North

Sea supplies. North Sea supplies have been replaced by liquefied natural gas (LNG) imports, of which around 70 per cent comes from the USA, a figure that President Trump has announced plans to increase.

Jess Ralston, Energy Analyst at the Energy and Climate Intelligence Unit highlighted the decline in North Sea gas and said: "Once solar panels and wind turbines are installed, we aren't dependent on any country for the sun or wind to power them, and so these latest auction results point to an ever more energy independent UK."

Meanwhile, the government has granted development consent for the 1.5 GW Outer Dowsing offshore wind farm, being developed by TotalEnergies, Corio Generation and affiliates, and Gulf Development. The wind farm is one of six offshore wind projects selected in an earlier allocation round, AR4.

Europe finds Russian nuclear fuel hard to replace

Europe risks relying on Russia to supply enriched uranium for its nuclear stations for many years to come, according to recent comments from Orano and Urenco.

Russia is a leading supplier of enriched uranium, with the state-owned nuclear company Rosatom accounting for about 44 per cent of annual

enrichment capacity, according to the World Nuclear Association. Enrichment companies Orano and Urenco are expanding capacity but that will take several years.

Speaking to the *Financial Times*, Urenco Chief Executive Boris Schucht noted that Russia had been using its enrichment business "as a

geopolitical instrument," while Orano Chief Executive Nicolas Maes said planned new supply had already been largely acquired by US companies ahead of a full US ban on Russian uranium in 2028.

Then-President Joe Biden banned Russian uranium imports into the US in 2024, with exemption waivers

available until 2028. But in Europe, "this framework doesn't really exist", Maes told the *FT*.

The European Commission said in May last year that it would propose a ban on Russian nuclear fuels and technology as part of a broader effort to reduce EU dependency on Russian energy. However the ban has been

delayed by internal EU politics, with countries like Hungary and Slovakia opposed to similar bans on Russian gas and oil.

Meanwhile some countries such as Sweden have stopped using Russian fuel, while others such as Hungary, Slovakia and the Czech Republic have stockpiled it.

8 | International News

Solar PV boom powers Africa's energy transition

Photo by: Kindel Media

- Major shift towards rooftop and distributed systems
- Broader participation across more countries

Nadia Weekes

Africa recorded its fastest year of solar power growth in 2025, with installations rising by 54 per cent year-on-year, according to a new report by the Global Solar Council (GSC).

While utility-scale projects funded by development finance continue to expand, a growing share of capacity is being deployed through private rooftop and commercial systems. This shift is driven by rising electricity demand, grid constraints, higher tariffs, and falling technology costs.

"Solar-plus-storage is the hope of Africa. This is the technology that can bring energy access, sustainable development, green growth and resilience to natural disasters and extreme weather," said GSC Chief Executive

Sonia Dunlop.

Of the 4.5 GW added in 2025, 90 per cent was installed in the top 10 solar markets, led by South Africa (1.6 GW), Nigeria (803 MW), Egypt (500 MW) and Algeria (400 MW). Emerging markets like Morocco, Zambia, Tunisia and Botswana also added substantial capacity, reinforcing a trend towards broader market participation.

Although utility-scale installations accounted for 56 per cent of capacity in 2025, they represented only 15 per cent of hardware imports on average over the past four years, suggesting massive, under-reported growth in the distributed and commercial sectors.

Financing models have not kept pace with this shift. Around 82 per cent of clean energy finance in Africa still comes from public and development

sources geared towards large projects. Private investment more than doubled to \$40 billion between 2019 and 2024 but remains poorly suited to distributed solar, which requires smaller ticket sizes and local currency financing.

As deployment shifts towards distributed, consumer-led and commercial solar, existing finance, planning and regulatory frameworks risk becoming misaligned with how the market is evolving. This could potentially slow deployment, raise system costs and limit the economic value of solar.

To reach a projected 33 GW by 2029, the GSC calls for finance models fit for distributed and consumer-led solar, accelerated investment in storage, and streamlined permitting to reduce risk and attract private capital.

African countries should adopt na-

tional storage strategies to drive higher solar penetration and system reliability, and improve grid planning transparency. Tariff frameworks must be structured to improve bankability while protecting vulnerable consumers. Also, skills development, local manufacturing, improved data collection and better planning are encouraged.

In a separate development, energy firm SolarAfrica secured ZAR 1.5 billion (\$94 million) from FirstRand Bank Limited and Investec Bank Limited to develop the 114 MW SunCentral 2 project in the Northern Cape. Alongside SunCentral 1, which reached financial close in 2024, and the forthcoming SunCentral 3, the 342 MW of capacity forms Phase 1 of the broader 1 GW SunCentral vision.

SolarAfrica reports a 3 GW pipeline

under development across the country. By combining utility-scale renewable generation with flexible delivery via wheeling – transporting energy across the national grid – it enables companies to access greener energy without the upfront capital outlay traditionally associated with on-site solar systems.

CEO David McDonald noted that this model allows commercial and industrial customers to plan for growth with a dependable energy mix despite rising tariffs.

Founded in 2011, SolarAfrica provides a suite of capex-free green energy solutions to the commercial and industrial sectors in Southern Africa through on-site solutions such as solar energy and battery storage, together with virtual solutions like wheeling, trading and aggregation.

Masdar joins Octopus to unlock Africa opportunities

London, UK-headquartered Octopus Energy has agreed to collaborate with UAE-based Masdar to scale clean energy across Africa by deploying local grids and distributed energy systems.

One of the biggest roadblocks facing African businesses is under-investment in grids, flexibility and system integration. Masdar will collaborate with Octopus initially in South Africa, with plans to extend to other countries.

"This is about delivering projects that make energy cheaper, cleaner, and un-

lock real opportunities for businesses and industry," said Greg Jackson, Founder and CEO of Octopus Energy.

Masdar CEO Mohamed Jameel Al Ramahi said the two companies share a commitment to expanding access to renewable energy across the globe. Masdar's \$450 million Power Africa Initiative aims to catalyse investments across clean energy solutions, grids and distributed assets and technologies to boost African economies.

The two companies will also partner

to free up hidden capacity across the UK's distribution network to power data centres. By using Octopus's Kraken-powered technology combining on-site solar, batteries and flexible grid connections, the data centres will be able to access the power they need without long waits for grid connection.

Masdar signed a framework agreement in 2023 to license Octopus' Kraken technology platform to flexibly manage its battery storage portfolio in the UK.

Iraq solar plan aims to stabilise grid

Source: <https://middle-east-online.com>

Iraq has approved a plan to build more than 120 solar power plants across the country under a strategy to boost clean energy and support the stability of the national electricity grid.

The project, which will be funded through billing revenues from all types of energy, is part of efforts to reduce shortages through the introduction of

smart and rapid solutions.

The solar power plants will connect to the distribution network via 11 kV and 33 kV lines.

The substations will be located close to load centres, reducing technical problems associated with the lines and minimising energy losses during transmission.

Oman to join Gulf electrical interconnection project

- Stronger Gulf grid to support renewables expansion
- Solar and wind projects bring green electricity targets within reach

Nadia Weekes

Work has begun on a direct connection of the Oman electricity network to the Gulf Cooperation Council Interconnection Authority system.

The project aims to boost the Gulf grid so it can accommodate rapid growth in electricity demand, major changes in electrical loads, and increased electricity generation. It will also support renewable energy projects and improve the network's ability to respond to emergencies.

As many as six mega solar power projects with an aggregate capacity of around 6 GW are due to be brought into operation by 2030-31, according to Nama Power and Water Procurement Company (Nama PWP), the single buyer of electricity and water in the

Sultanate of Oman.

While each of the projects is provisionally planned to have a capacity of 1 GW, individual project capacities may be adjusted based on site allocation and the results of detailed resource assessments. Scheduled commercial operation dates will be finalised accordingly.

Oman targets 30-40 per cent of total electricity generation from renewables by 2030, increasing to approximately 60-70 per cent by 2040.

"A key objective of this target is to release domestic gas committed to the power sector, making it available to stimulate industrial and economic development and contribute towards achieving Oman's net zero target by 2050," Nama PWP said, adding that low costs are now driving renewable

energy development on economic merits alone.

Nama PWP's renewable energy pipeline for delivery through to 2030-31 comprises a total of 24 solar and wind projects, as well as one waste-to-energy scheme.

Meanwhile, Chinese wind turbine manufacturer Goldwind has announced the successful installation of its first wind turbine at the Riyah-2 wind farm project in Nimr West in Dhofar Governorate. Riyah-1 is currently nearing completion at nearby Amin. The twin wind farms will have a combined generation capacity of 234 MW, making this the largest wind project in Oman to date.

Once operational later this year, the wind farms will supply clean electricity to Petroleum Development Oman

(PDO), supporting the decarbonisation of its oil and gas operations.

In the traditional energy arena, Nama PWP has signed power purchase agreements (PPAs) with a Nebraska-led consortium and a Korea Western Power (KOWEPO)-led consortium for the development of combined cycle gas turbine (CCGT) power generation projects in Misfah and Duqm, respectively. The PPAs have a total value of approximately OMR 1 billion (\$260 million).

The two projects will utilise advanced combined cycle technology, enhance fuel efficiency and reduce carbon emissions. Once operational, they are expected to contribute to the stability of the national grid and support economic and industrial growth across Oman.

Minister of Energy and Minerals, Salim Nasser Al Afi, said the power projects "represent a strategic step in strengthening the national energy system and reflect our commitment to achieving the objectives of Oman Vision 2040 and the Net Zero Target 2050".

The Duqm CCGT project, which is positioned in one of Oman's main economic hubs, is expected to generate \$400 million in export orders for South Korean power equipment and materials suppliers.

KOWEPO CEO, Jung Bok Lee, said his company was committed to delivering it safely and to the highest standards. "KOWEPO will work closely with the government of Oman and local stakeholders to make Duqm IPP a flagship success."

Photo by Enrique: <https://www.pexels.com>

- EBITDA up 1 per cent on previous year
- Fourth-quarter earnings up 7 per cent year-on-year after US wind projects re-start

Junior Isles

Danish renewables project developer Ørsted has reported a set of solid annual results, indicating that it is making progress in getting its business back on track after a challenging year.

The company's annual report for 2025 showed the world's largest offshore wind farm developer has taken significant steps to deliver on its strategic priorities during the year. This includes a strengthened capital structure through the successful completion of the rights issue, and the finalisation of the divestment programme for 2025 and 2026 earlier than planned and with higher proceeds than expected, as well as a strong operational performance.

EBITDA (excluding new partnership agreements and cancellation

fees) was DKK25.1 billion (\$3.96 billion), up 1 per cent on the previous year, and within the guidance range of DKK24-27 billion. This returned a net profit for the year of DKK3.2 billion. Fourth-quarter earnings came in at DKK8 billion, up 7 per cent year-on-year.

Commenting on the annual report for 2025, Rasmus Errboe, Group President and CEO of Ørsted, said: "2025 was a defining year for Ørsted. I'm satisfied with the large steps we've taken to create a stronger, more focused, and more competitive Ørsted, even if we still have a lot of work ahead of us. We've strengthened our financial foundation and focused our business on offshore wind, and we now have financial flexibility to pursue attractive offshore wind opportunities in Europe and select markets in

Asia Pacific.

"I'm satisfied with the good progress across our offshore construction programme, which will grow our installed capacity within offshore wind to more than 18 GW by the end of 2027. In 2025, we also delivered strong operational performance within guidance, and we increased offshore generation by 6 per cent compared to 2024 – despite wind speeds below the norm – driven by higher availability rates from our offshore wind farms and ramp-up of generation from Gode Wind 3 in Germany."

He also noted that its two major US offshore wind projects – the Sunrise and Revolution projects – are back on track to complete as scheduled after a court lifted a suspension imposed by the Trump administration citing national security grounds.

The costs of the interruption, however, resulted in a DKK600 million impairment. The company is now trying to restore its fortunes after problems with its US offshore wind projects caused major financial strain, culminating in October when it had to raise around \$9 billion in a rights issue.

Buoyed by its solid results, the company said EBITDA excluding new partnership agreements and cancellation fees is expected to be above DKK28 billion in 2026, and gross investments are expected to be DKK50-55 billion.

Ørsted recently strengthened its financial position with the sale of its European onshore business to Copenhagen Infrastructure Partners (CIP). The transaction includes Ørsted's full European onshore portfolio of onshore wind, solar and BESS projects

in Ireland, the UK, Germany, and Spain. It comprises 578 MW in operational capacity, 248 MW under construction, and a multi-gigawatt development pipeline. Closing is expected in Q2 2026, subject to regulatory approvals.

Ørsted CFO Trond Westlie, said: "Ørsted's European onshore business has developed a very solid pipeline and project portfolio, and I'm very satisfied that we've found a new owner of that business in CIP, as we've decided to concentrate our efforts on offshore wind in our core European markets."

He added: "The divestment of our European onshore platform finalises the divestment programme that we've laid out, and we've now substantially strengthened Ørsted's financial position."

Continued market momentum drives Siemens Energy to strong start

Siemens Energy has made a strong start to the year, building on the positive momentum from the prior fiscal year.

Announcing its results for the first quarter of fiscal year 2026 that ended December 31, 2025, the German power sector equipment supplier said revenue increased by 12.8 per cent to €9.7 billion compared to the prior year on a comparable basis (excluding currency translation and portfolio effects). All segments reported growth.

Profit before Special items of Siemens Energy sharply improved year-over-year to €1159 million (Q1 FY 2025: €481 million), primarily due to the profit improvement at Siemens Gamesa and Grid Technologies.

"We have made a very strong start to the financial year. Sustained high demand in our gas turbines and grid technologies businesses is making a significant contribution to overall

performance," said Christian Bruch, President and CEO of Siemens Energy AG. "Also in the wind business, there are early signs of a modest improvement."

Siemens Energy's orders amounted to €17.6 billion. The main growth driver was the strong order intake at Gas Services, while both Grid Technologies and Transformation of Industry achieved double-digit growth rates.

In the recent quarter, Gas Services achieved its highest order intake ever. The positive development was based on a sharply increased volume from large orders and was primarily driven by demand in the new units business from the US, Poland, Turkey as well as Taiwan.

It said it is scaling up its US production for grid and gas turbine equipment to support strong growth in the market, which is experiencing an

unparalleled surge in electricity demand, driven by rapidly expanding data centres, artificial intelligence infrastructure and next-generation industrial electrification.

Bruch said, however, that while the US was an "excellent market" because of the AI wave, some of President Donald Trump's policies had been "painful" for the company and customers. He called on the Trump administration to deliver more policy "stability" as he unveiled a \$1 billion investment in its US operations.

For fiscal year 2026, Siemens Energy anticipates that current favourable trends in the energy sector will continue. It forecasts for fiscal year 2026, comparable revenue growth (excluding currency translation and portfolio effects) in the range of 11 per cent to 13 per cent and a profit margin before Special items between 9 per cent and 11 per cent.

Corporates selective on clean tech company funding

Corporate funding for smart grid companies increased significantly in 2025, while funding for energy storage companies fell slightly, according to Mercom Capital Group, LLC, an integrated communications, research, and media firm focused exclusively on clean energy markets.

Its recent report on funding and mergers and acquisitions (M&A) activity for the global smart grid sectors for the fourth quarter and annual 2025 revealed that corporate funding in the smart grid sector increased 38 per cent year-over-year (YoY) in 2025 to \$3.3 billion across 84 deals, compared to \$2.4 billion across 67 deals in 2024, with deal activity rising 25 per cent.

Venture capital (VC) funding for smart grid companies increased 6 per cent YoY in 2025 to \$1.8 billion across 68 deals, compared to \$1.7 billion across 56 deals in 2024.

Smart charging companies accounted for the majority of smart grid VC

funding in 2025. Other categories that attracted VC investment included grid optimisation, distributed generation and integration, smart grid communications, and data analytics.

Its report examining the energy storage sector, however, found that corporate funding for energy storage companies – including VC funding, debt, and public market financing – fell. According to Mercom, corporate funding reached \$16.2 billion in 119 deals in 2025, a 19 per cent decrease YoY, compared to \$19.9 billion in 116 deals in 2024 with a 3 per cent YoY increase in deal activity.

"The energy storage market adjusted to a more complex policy and financing environment in 2025. While total funding declined, investment activity remained resilient, with venture capital increasingly directed toward companies aligned with current incentive structures," said Raj Prabhu, CEO of Mercom Capital Group.

TenneT Holding agrees to sell stake in TenneT Germany to German government

European grid company TenneT Holding has reached an agreement with Kreditanstalt für Wiederaufbau (KfW), acting on behalf of the German government, on the sale of a 25.1 per cent stake in TenneT Germany for approximately €3.3 billion (3.89 billion).

TenneT Holding will retain at least 28.9 per cent of the shares in TenneT

Germany. This gives TenneT Holding full participation in all important decisions. The synergy benefits of the collaboration between TenneT Netherlands and TenneT Germany will largely be retained, as both companies are jointly developing infrastructure that connects wind farms in the North Sea to the electricity grid in Europe.

Manon van Beek, CEO and Chair of the Board, said: "We warmly welcome the German state via KfW as a shareholder in TenneT Germany. The German state represents one of the most important stakeholders for TenneT in Germany. This co-shareholding creates valuable additional involvement, with particular attention to the

increasing investment agenda and the new geopolitical reality. TenneT remains committed to ensuring a reliable, sustainable and affordable electricity supply."

This investment strengthens the financial position of TenneT Germany as the owner of strategic infrastructure in Germany. The transaction follows

an equity commitment of €9.5 billion of institutional investors APG, GIC and NBIM. The involvement of private investors and the German government strengthens TenneT Germany's capital base. This, said TenneT, provides certainty for the necessary grid reinforcement in Germany and contributes to a robust and resilient European grid.

10 | Tenders, Bids & Contracts

Americas

Lincoln Electric to expand Terry Bundy plant

GE Vernova has won a contract from Lincoln Electric Systems to supply two LM6000VELOX gas turbines for the Terry Bundy Generating Station (TBGS) in Lincoln, Nebraska. The new units will increase plant output by around 100 MW.

The expansion is scheduled to become operational in 2029. In addition to increasing capacity, the upgrade will enhance efficiency and operational flexibility, and strengthen plant reliability.

The LM6000VELOX provides a quick start-up time of ten minutes to full power, and provides operational flexibility with a high cyclic life to help stabilise the grid.

Jason Fortik, LES Vice President of Power Supply, said: "These turbines give us confidence that we can expand capacity while maintaining the efficiency and reliability our customers expect."

Hyosung wins US UHV transformer contract

Hyosung Heavy Industries has won a \$550 million contract in the USA to supply 765 kV ultra-high voltage (UHV) transformers, reactors, and related equipment to a US transmission system operator.

Compared with existing 345 kV and 500 kV systems, 765 kV transmission networks enable long-distance, high-capacity power delivery while significantly reducing energy losses.

While the US government currently levies tariffs of up to 50 per cent on certain power equipment and related components, Hyosung is able to skirt such pressures by having acquired a UHV transformer production plant in Tennessee. As a result, the company has supplied nearly half of all 765 kV UHV transformers currently installed across the US transmission grid.

Jenbacher gas engines power AI growth

VoltaGrid has placed an order with Innio Group for 1.5 GW to reinforce the company's power generation for AI. Under the terms of the agreement, Innio will supply a total of 300 Jenbacher gas engines from its Type J624 and J620 series. The engines will be packaged into 25 MW units, with delivery scheduled for 2028.

The integrated platform delivers prime, backup, and peaking power within a single system for operational flexibility. The system maintains full power and efficiency at high ambient temperatures with excellent transient performance capable of managing the highly volatile load fluctuations typical of AI computing environments.

TotalEnergies to supply 1 GW solar to Google

TotalEnergies has signed two new long-term PPAs to deliver 1 GW of solar power to supply Google's data centres in Texas. The power will be generated from two sites in Texas: Wichita (805 MW) and Mustang Creek (195 MW). Construction at the sites is due to start in Q2 2026.

Marc-Antoine Pignon, Vice President Renewables U.S. for TotalEnergies, said: "We are pleased to sign these agreements to supply renewable electricity to Google in Texas, representing the largest renewable PPA volume ever signed by TotalEnergies in the United States."

Asia-Pacific

Envision Energy wind turbines in Vietnam

Envision Energy has signed a contract with Vietnam's REE Group to supply a total of 16 EN-226/8.XMW offshore wind turbines for two near-shore wind projects in Vinh Long Province, Vietnam. The two projects are the 48 MW V1-3 Phase II and the 80 MW V1-5&6 Phase II.

Full grid connections for both projects are scheduled for October 2026.

Edward Hou, Senior Vice President & President of Asia-Pacific at Envision Energy said: "This collaboration marks the first nearshore offshore wind project cluster delivered under Vietnam's Power Development Plan VIII and opens a new chapter for offshore wind development in Southeast Asia. Envision is committed to delivering this project as a regional benchmark, providing strategic support for REE Group's energy transition."

Valmet to automate Daklo hydro plants

Valmet will supply automation systems for Daklo 1-3 Power Company Limited's Daklo 1 and Daklo 3 hydropower plants currently being built in Kon Plong Ward, Quang Ngai Province, Vietnam. The order was placed by Industries Equipment and Solution Company (IESC), which has signed a contract with the EPC contractor to deliver the systems.

The automation system will control and monitor all essential hydropower processes, ensuring safe, reliable, and high-performance electricity generation.

Daklo 1 (12 MW) and Daklo 3 (22 MW) hydropower plants are currently under construction. These run-of-river plants are due to enter commercial operation in Spring 2027.

Valmet will supply its distributed control systems and electric governors for both plants. The scope also covers engineering, design, supply, and commissioning of the complete automation system.

Europe

RWE and Vestas sign UK wind turbine agreement

RWE has awarded a contract for Vestas to supply offshore wind turbines to its Vanguard West project in the UK. Under the terms of the contract, Vestas will supply, deliver, and commission 92 of its V236-15.0MW offshore wind turbines.

The project is scheduled for commissioning in 2029, located 45 km off the Norfolk coast of the UK. The wind farm will connect to the on-shore grid via dedicated export cable infrastructure.

Nils de Baar, President of Vestas Northern & Central Europe and Global Offshore, said: "The momentum behind offshore wind in Europe is building with the UK government, stepping up its commitment in AR7 and projects like Norfolk Vanguard West moving forward. This combination of industry partnership and government commitment sends a powerful signal about the UK's determination to drive forward its renewable energy ambitions."

Wärtsilä to supply Belgian BESS

Gramme Storage 1 has selected Wärtsilä to supply a 50 MW/100 MWh battery energy storage system (BESS) in central Belgium for the Gramme 1 project. The site is scheduled for completion by Q2 2027.

Gramme 1 will comprise Wärtsilä's GridSolve Quantum2 energy storage system and its control and optimisation software, GEMS. Wärtsilä will also deliver the project under an engineered equipment delivery (EEQ) contract, with guaranteed asset performance under a separate long-term service agreement.

Gramme 1 is Wärtsilä's first energy storage project participating in Belgium's Capacity Remuneration Mechanism (CRM). This is designed to ensure Belgium's energy supply security by enabling assets to deliver essential grid services such as frequency and voltage support that contribute to electricity system resilience and dependability.

Multiple European contracts for Nordex

So far in 2026, Nordex has won orders from several European countries for a total wind power capacity of 365 MW.

Nordex obtained an order for the supply and installation of 14 N163/6.X turbines totalling more than 90 MW in the UK. The project is scheduled for completion in 2028.

In Türkiye, the Nordex Group received orders for different turbine types for new projects as well as for several wind farm extensions, amounting to a total of 78 MW.

In 2027, a new wind farm in Lithuania will be equipped with seven N175/6.X turbines in the cold climate version with the Nordex Advanced Anti-Icing System (AIS), providing a total of 47.6 MW. The project is expected to be completed by 2028.

Nordex Group received an order from Bürgerwindpark BHU Betriebs for eight N163/6.X wind turbines for the Bosbüll Holm Uphusum (BHU) community wind farm spanning three villages in the North Frisia region of Schleswig-Holstein in Germany. The overall capacity is 56 MW. The installation of the turbines is scheduled for early 2027, with commissioning expected to be completed by fall of the same year.

It also won an order from the Swedish renewable energy company OX2 for the supply and installation of wind turbines for the Fageråsen Wind Farm in Sweden. The order comprises 27 Nordex N163/6.X turbines, which will be installed on 119-m tubular steel towers, representing a total installed capacity of 189 MW.

All contracts include multi-year service and maintenance agreements.

Prysmian wins £2 billion cable contract

Prysmian has been awarded a £2 billion contract to supply the cable for SP Energy Networks and National Grid Electricity Transmission's subsea Eastern Green Link 4 project.

Prysmian will manufacture and deliver over 640 km of cable for the 2 GW subsea electricity link, which will use high voltage direct current (HVDC) to connect Fife in Scotland and Norfolk in England. The project is scheduled for completion in 2033.

The contract includes 530 km of subsea HVDC cable as well as over 116 km of underground cable.

The project is a joint venture between SP Energy Networks and National Grid Electricity Transmission.

International

ACWA Power wins Kuwait CCGT contract

ACWA Power, Gulf Investment Corporation (GIC) and the Ministry of Electricity, Water, and Renewable Energy of Kuwait have signed an Energy

Conversion and Water Purchase Agreement (ECWPA) to develop the \$4 billion 2.7 GW Az-Zour North Phase 2 & 3 project in Kuwait.

The consortium is led by the Kuwait Authority for Partnership Projects (60 per cent), ACWA Power and GIC (with a combined 40 per cent stake). It plans to build a 2.7 GW combined cycle gas turbine (CCGT) power plant and a seawater reverse osmosis desalination facility.

Construction will be carried out by a consortium led by SEPCO III. The project's gas turbines will be supplied and serviced by GE Vernova, while ACWA Power will be responsible for the long-term O&M of the project throughout its 25-year term.

The project will use natural gas as the primary fuel for power generation, with gasoil as a back-up fuel. The Ministry of Electricity, Water, and Renewable Energy will purchase the total power and water capacity from the facility.

Gridworks to develop Ethiopia's grid

The UK investor Gridworks has signed agreements to develop and finance around £350 million in electricity transmission projects in Ethiopia. The projects are the first public-private partnerships in Ethiopia's transmission sector.

One of the projects will connect Ethiopia's Somali region to the central and northeastern power grids, improving access in these areas.

A second project will enable development of wind and solar power plants in the northeast and strengthen electricity interconnections with neighbouring Djibouti.

Ahmed Shide, Ethiopia's Finance Minister, said that the projects will bolster industrial growth by making electricity supply more reliable. He said they would also accelerate electrification for millions of households.

Floating solar plant for University of Lagos

China Civil Engineering Construction Company (CCECC) has won a contract to build a 7 MW floating solar power station for the University of Lagos (UNILAG) in Nigeria.

The facility will be installed on the lagoon waters surrounding the university campus, and it will be Nigeria's first floating solar power project. CCECC said the project would be the first floating solar power plant in any tertiary institution in Nigeria.

CCECC and UNILAG have yet to announce a timeline for the project.

Floating solar technology, which places photovoltaic on bodies of water, reduces land use and can improve energy efficiency by cooling the panels naturally.

Zimbabwe to build solar panel manufacturing plant

Zimbabwe has announced plans to build a solar power panel manufacturing plant. The plan hopes to attract foreign investment into renewable energy and clean technologies while building domestic clean energy production capacity.

Zimbabwe aims to achieve 2640 MW of renewable energy capacity by 2030, with plans to add 1575 MW of solar, 275 MW of bioenergy, 150 MW of small hydropower, and 100 MW of wind power.

Among the projects under development are the 100 MW Runde River solar park, being developed by Energywise, the 30 MW Vungu solar plant is being developed by Infracore, Prospect Lithium Zimbabwe is constructing a 70 MW solar plant, and Afreximbank is funding the 1 GW Kariba floating solar project.



Hydrogen

Global deposits of white hydrogen spark new exploration frontier

The raw facts of cost and infrastructure have forced the ‘concept’ of hydrogen as a future fuel to face reality in a way that has made its supporters take pragmatic and disciplined steps towards actually making hydrogen deliver on the promise that fires our imaginations about clean and plentiful energy. Costs and infrastructure are where it is at, but the easy availability of a natural source would move things along.

Gary Lakes

“Drill, baby, drill,” is the mantra of the oil industry, but as the world moves into spring 2026, more and more interest is being shown in drilling for ‘white,’ or natural hydrogen, which, like oil and gas, can be found in large deposits in the Earth. This is encouraged by the discovery of hydrogen deposits and by concerns over the high capital costs of green electrolysis, which requires a renewable source of electricity to power the process of producing ‘green hydrogen.’

The American Midwest, France and regions of Africa and Australia have been identified as locations where large deposits of white hydrogen might be lying in wait.

The US state of Michigan is one such location. In January this year, Governor Gretchen Whitmer signed an executive directive establishing the Michigan Geologic Hydrogen Exploration and Preparedness Initiative on

the chance that Michigan may some day in the near future become a primary energy producer.

Drilling for natural hydrogen is being driven by costs and the desire to get hydrogen to a market price of \$1/kilogram. If the cost of producing it could be driven down to that price, hydrogen would likely be well on its way to becoming a widely-used new source of energy that could push fossil fuels out of the system, bringing the benefits of an improved global environment.

Throughout 2026, green hydrogen will have to live with the so-called ‘market realism’ of pricing. Green hydrogen is produced at a cost of between \$4 and \$8 per kilogram – impacted by the costs of using green electricity and electrolyzers. Should white hydrogen come on-stream, like oil or gas, its projected price upon entering the market is forecast at under \$1 per kilogram.

That is due to the fact that green hydrogen is a manufacturing process, while white hydrogen is an extraction

process. If a reservoir of high purity natural hydrogen is discovered and developed, it would bypass multi-billion-dollar wind farms and massive water supplies. Essentially, the process would be: drill; process; and pipe.

In the US, the economics are bolstered by the Section 45V Clean Hydrogen Production Tax Credit.

Under 2026 guidelines, producers of near-zero-carbon geologic hydrogen can claim up to \$3.00 per kilogram in credits. For a producer extracting gas at \$0.80 per kg, the federal subsidy effectively creates a negative cost scenario, fuelling a private investment surge that topped \$500 million in the first months of this year alone.

The natural hydrogen deposit in the American Midcontinent Rift runs from Lake Superior, through Michigan and south as far as Kansas. Such ‘hydrogen belts’ are being discovered in other countries as well.

In the Lorraine Basin in France, white hydrogen was discovered by accident

during methane testing. The deposit is estimated to hold up to 250 million tonnes of H₂ – enough to meet current global demand for years.

Bourakébougou, Mali, is still the world’s only ‘commercial’ site. It has been powering a local village for over a decade, serving as the proof-of-concept that natural hydrogen can be extracted safely and continuously.

On the Yorke Peninsula of Australia recent wells have confirmed purities as high as 95 per cent, with high concentrations of helium as a lucrative byproduct.

And in Spain’s Aragon region of the Pyrenees Mountains, projects are targeting deep structural traps where tectonic pressure has squeezed hydrogen into accessible reservoirs.

Despite the excitement, the industry faces something likened to a teenage growth phase. The challenge for 2026 is infrastructure. Hydrogen is the smallest molecule in the universe; it leaks through standard steel pipes and

embrittles metal.

The Michigan initiative includes a mandate for the Department of Environment, Great Lakes, and Energy (EGLE) to report by April 1, 2026, on whether existing natural gas pipelines can be repurposed or if a ‘Hydrogen Backbone,’ like that planned in the European Union, must be built from scratch.

“We are moving from ‘Can we find it?’ to ‘Can we move it?’” Governor Whitmer said about the nascent hydrogen industry. “The Midcontinent Rift represents tens of billions [of dollars] in potential economic activity. If we can solve the transport puzzle, we aren’t just decarbonising Michigan, we’re providing the world with the cheapest clean fuel in history.”

As drilling rigs traditionally used for oil and gas begin to pivot toward these white hydrogen deposits, the 2026 energy landscape looks less like the usual laboratory and more like a new frontier.

Gas

Gas market remains volatile in March with weather key factor

The global natural gas market is entering the final weeks of winter in a state of high-tension equilibrium. After a January that saw historic price spikes and the single largest storage withdrawal in American history, the industry is now bracing for a “shoulder season” that looks anything but calm.

Gary Lakes

Driven by the scars of winter storm Fern, a looming storage crisis in Europe, and a sophisticated game of cat-and-mouse in the Arctic, the February-March transition has become a critical pivot point for global energy security in 2026.

In the US, the story of the last month can be summed up in one word: volatility. In late January, storm Fern blanketed the Lower 48 in an Arctic deep freeze that paralysed production and sent demand to record heights. At its peak on January 23, the Henry Hub spot price hit a staggering \$30.72/MMBtu, a level not seen since the Texas freeze of 2021.

The aftermath has left the US grid significantly leaner. According to the Energy Information Administration’s (EIA) February 10th report, the week ending January 30th saw a net withdrawal of 360 billion cubic feet (Bcf) – the largest single-week draw in US history.

This massive depletion has forced the EIA to hike its March price forecast by nearly 40 per cent, now anticipating prices to hover around \$4.12/MMBtu. While early February saw a brief price collapse as mild air returned, traders are now watching a late-winter chill model that suggests another cold snap could hit by early March. With inventories now 8 per cent below previous projections, the US market is “coiled” – any surprise freeze could trigger a second, albeit likely smaller, price explosion.

Across the Atlantic, the narrative is less about weather and more about a looming “refill” crisis. European Union gas storage levels have plummeted to roughly 34 per cent – dangerously below the 5-year average for mid-February. In France and Germany, the situation is even tighter, with some reserves dipping toward the 25 per cent mark.

The primary concern for European policymakers is not just surviving the rest of this winter, but preparing for the next. The “winter-summer spread”

– the price difference between current gas and future summer gas – has flattened. Traditionally, traders buy cheap gas in the summer to store for the winter; however, current summer futures are trading at a premium due to the desperate need for refills. This removes the financial incentive for private companies to store gas, potentially forcing EU governments to step in with expensive subsidies to ensure tanks are full by November. As a result, the European benchmark TTF price remains elevated near €41/MWh, as the continent competes aggressively with Asia for every available LNG cargo.

While the West grapples with supply, Russia is actively rewriting the logistics of the Arctic. Recent satellite intelligence and maritime reports from mid-February highlight the rapid expansion of a shadow fleet of LNG carriers.

Despite heavy Western sanctions on the Arctic LNG 2 project, Russia has successfully deployed its first domestically-built Arc7-class icebreaking

tanker, the Alexey Kosygin.

This vessel, along with a network of floating storage units (FSUs) off the Kola Peninsula, allows Russia to bypass traditional port regulations. By conducting ship-to-ship transfers in international waters, Russia is successfully moving sanctioned gas to energy-hungry markets in Asia. This shadow supply line adds a layer of unpredictability to the global market, as it bypasses the transparent tracking that typically informs price models in the West.

The volatility of the last two weeks is also triggering long-term policy shifts in the Southern Hemisphere and Asia.

In Argentina, a landmark agreement was signed on February 12 between YPF, Eni, and XRG to fast-track a massive floating LNG project in the Vaca Muerta shale region. The project aims to turn Argentina into a global exporter, a move seen as vital to diversifying supply away from traditional geopolitical hotspots.

And following in the wake of a

political uprising last year in Bangladesh and new elections in mid-February, the new leadership in the country is signalling a move toward restructuring gas tariffs and reducing the heavy reliance on expensive spot-market LNG that crippled the economy during the January price spikes.

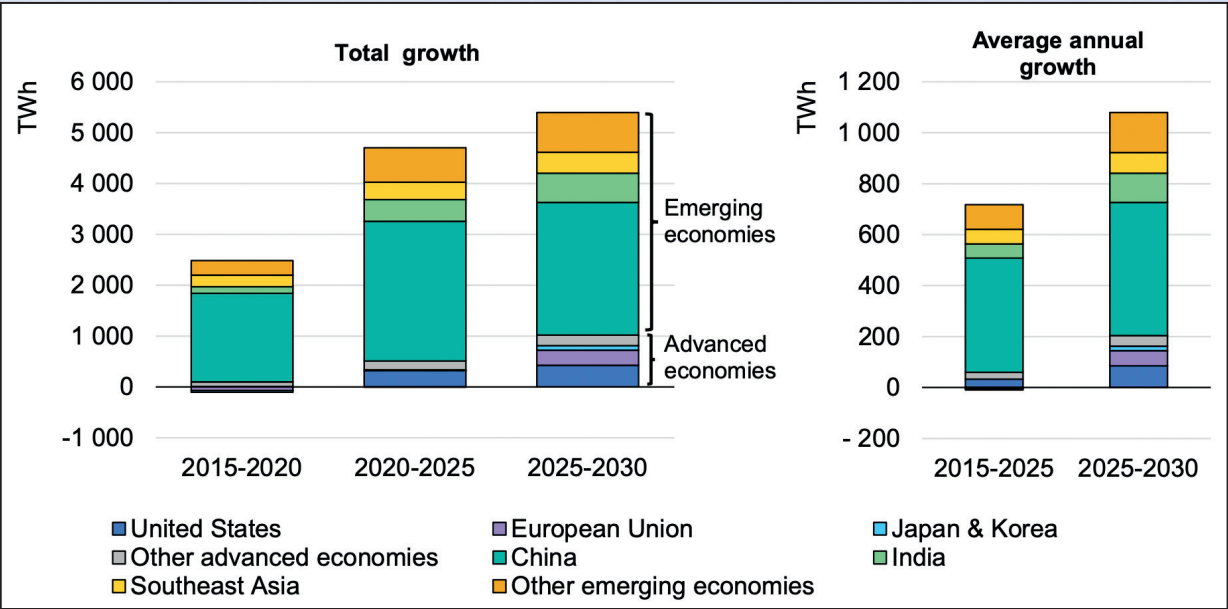
As we look toward the “shoulder season” – the period between winter heating and summer cooling – the market remains on high alert. The EIA’s latest quarterly report suggests that a wave of new LNG supply from North America and Qatar is coming, but it won’t arrive in time to soothe the immediate March anxiety.

For now, the global gas market is a hostage to the thermometer. If March brings a lion of a cold front, the depleted storage in the US and the precariously low levels in Europe could send prices soaring once more. If a lamb arrives and the weather stays mild, the industry will breathe a sigh of relief – only to begin the most expensive and difficult storage-refill season in a decade.

Snapshot of Electricity 2026 IEA report

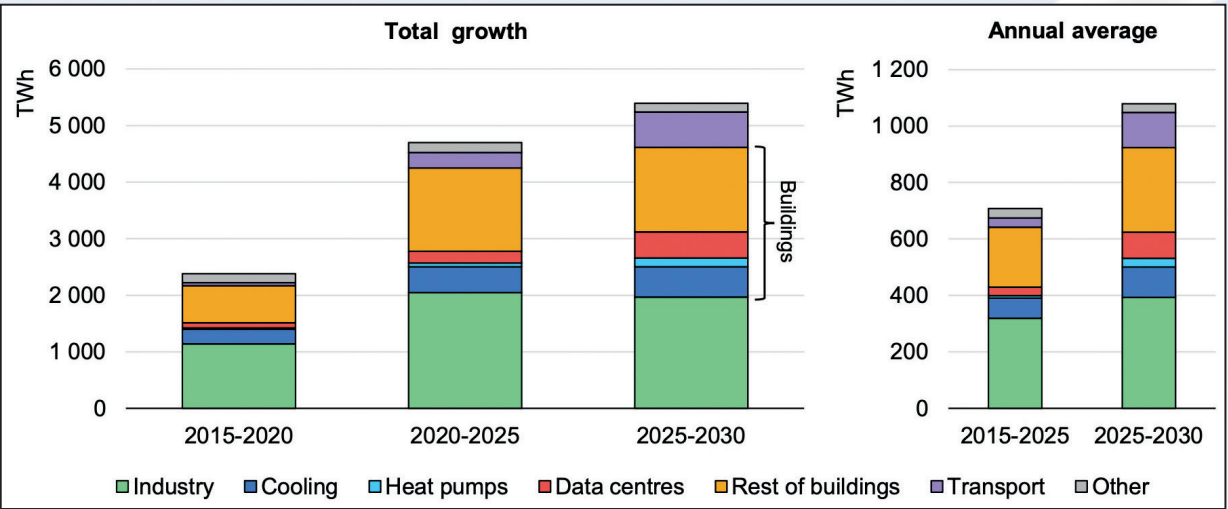
IEA Publications
International Energy Agency
Website: www.iea.org
Contact information: www.iea.org/contact

Global electricity demand growth by region, 2015-2030



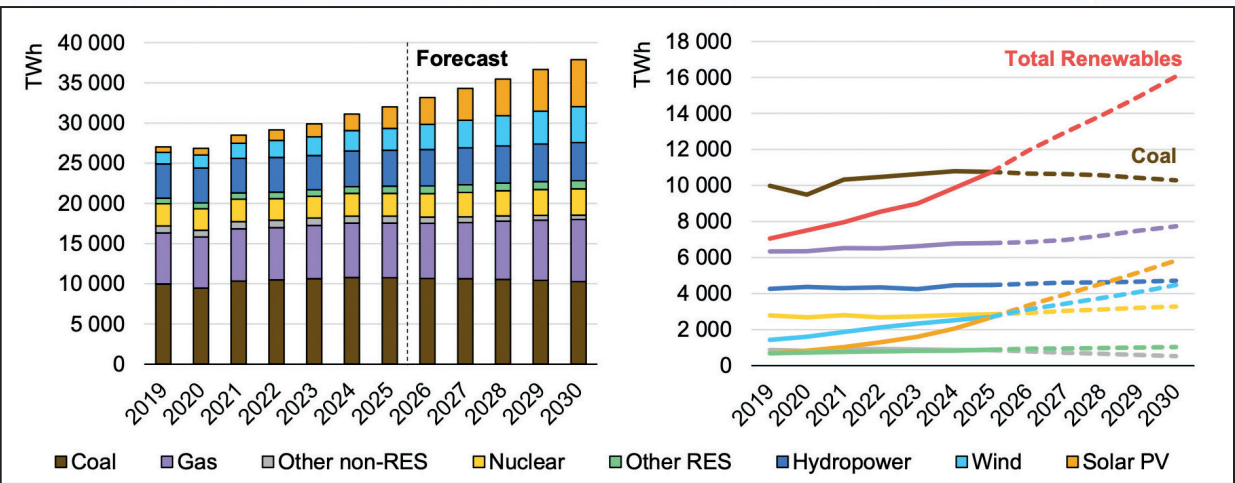
Electricity 2026, page 14

Global electricity demand growth by sector and end-use, 2015-2030



Electricity 2026, page 16

Global electricity generation by source, 2019-2030



Electricity 2023, page 37

Can we achieve energy flexibility through managed EV charging?

photo courtesy of: citaevcharger.

The rapid growth of the electric vehicle (EV) market represents a once-in-a-generation transformation of the automotive and the utility sectors, helping to drive greater co-operation throughout the industry. OpenADR Alliance's **Rolf Bienert**, discusses the need for greater standardisation across the entire system, from the charging plug to the customer interface.

While EV adoption grows across Europe (in some countries more than others) the slower development of charging infrastructure threatens to derail progress. It's vital to keep infrastructure investment on track, but more important is that charging networks remain as flexible and resilient as possible to cope with additional pressure on the grid.

This requires a multi-layered approach, starting with the infrastructure as the industry evolves and governments invest in charging networks to meet net zero goals and consumer demand.

But it's the development and adoption of new technologies that will create an infrastructure that offers both flexibility and resilience as demand for electrification increases. We also need to change the way people charge their vehicles, through off-peak charging programmes and dynamic pricing, automated load balancing, and more.

Access to charging points is crucial for supporting EV adoption, and more public charging networks are essential. According to the International Energy Agency's 'Global EV Outlook 2025', which reports on recent developments in electric mobility around the world, public chargers have doubled globally since 2022, with China leading in fast charging deployments. China now has more than one public charger for every 10 electric cars.

In Europe, the number of charging points grew by over 35 per cent in 2024 compared to 2023, reaching just over a million. But there are significant variations across countries due to differing rates of EV

adoption and charging infrastructure development.

In recent years, despite flat EV sales, the UK government has announced several initiatives to drive development. The most recent was in November, when it unveiled a £10 million funding package to support the development of cutting-edge technologies that will strengthen its charging network. Companies can apply for funding for new technologies that will enable EV charging devices to operate without large grid connections or even off grid.

The aim of this initiative is to overcome grid constraint challenges and enable the rollout of more chargers on the road network. This includes in more rural areas across the country, giving drivers the confidence to make long-distance journeys.

Any projects and initiatives like this that encourage off-grid solutions, smart charging and energy controls to reduce the strain on electricity networks and ease the need for expensive grid upgrades is crucial for any future development.

As an industry alliance, we're fortunate enough to see EV charging innovation happening in real-time – from testing through pilot stage, and on to final adoption. Right now, we are in an exciting phase of development, with a whole raft of innovative companies developing new technologies, including applications for load management and dynamic charging.

Take Wevo Energy, for example, with its load management solution that maximises existing building infrastructure by intelligently allocating power where and when it's needed most, allowing sites to get more EVs charged but without expensive infrastructure upgrades. The really clever stuff is that smart algorithms learn drivers' behaviour and create an optimal charging schedule, charging when rates are lowest, and ensuring that the vehicle is fully charged by the time that it's needed by the driver.

Another interesting example is Evoke Systems, a member company and software-based EV charging network operator enabling grid-integrated flexibility using open standards including OpenADR 3 and IEEE 2030.13.

Its platform dynamically adjusts charging in response to grid conditions and distribution network capacity, allowing EV load to operate within defined operating envelopes and function as a predictable, dispatchable flexibility resource. In Con Edison's New York territory, Evoke

maps approximately 2500 EV chargers to 82 distribution load zones and aggregates telemetry every 15 minutes, enabling precise, location-aware congestion management.

In a groundbreaking collaboration with Argonne National Labs and supported by the US Department of Energy, Evoke has successfully deployed managed charging at Barclays Capital's campus. This has helped to reduce peak demand by 200 kW (40 per cent) including deterministic load reductions of 200 kW in less than two seconds, demonstrating readiness to support real-time grid services.

This project shows how intelligent software can optimise EV charging. But more important, it demonstrates how optimised energy use and reduced peak demand can translate into meaningful operational savings.

The demands from more electrification will put unprecedented pressure on the grid.

So, as adoption grows, the focus will be on optimising charging and making the most efficient use of available capacity. This requires a change in behaviour, to ensure that EV charging is a win-win for everyone – the driver, the site owner and, ultimately, the grid.

Drivers want easy, accessible fast charging at the right price. The site owner wants to deliver this but also to make a profit. The grid meanwhile needs stability and the flexibility to cope with fluctuating supply and demand particularly at peak times.

Electricity suppliers will need to incentivise vehicle owners to charge outside of peak periods using dynamic pricing signals, time of use tariffs, or other load shifting mechanisms. Off-peak charging incentives are a gamechanger, but only if there's a significant difference between peak and off-peak pricing. It's important to make it easy for people to make these decisions.

The basis for effective load control lies in standardised information exchange on pricing signals, energy consumption, and capacity. It's why utilities and DSOs need to communicate information quickly and securely using open standards like OpenADR that are integral to the success of energy flexibility in EV charging.

Standardisation across the entire charging system – from the plug to the customer interface – is key to delivering accessible, customer-friendly and scalable solutions.

This enables seamless integration and collaboration between various

manufacturers and grid operators. It's particularly crucial for supporting applications like vehicle-to-grid (V2G), which allows electric vehicles to become distributed energy resources. EVs can store energy and feed it back to the grid during peak demand.

Combined with other potential energy resources like heating, ventilation and AC appliances and renewable sources like solar and battery storage, EVs can form virtual power plants.

It's worth noting this in light of the power outages across some European countries, including Spain and more recently in Germany, when around 45 000 households in the southwestern suburbs of Berlin were without power for several days in January. While the root causes varied, the result was that customers were left without power for often extended periods. This could have been mitigated if vehicles were able to power homes during these outages, potentially incentivising further investment in this technology.

With reports predicting huge growth in the global market for V2G – from \$6.3 billion in 2025 to \$16.9 billion by the end of 2030 – the rise of this technology is reshaping the way EVs interact with the power grid, supporting grid stability, demand-side management and renewable energy integration. Again, it's a win-win.

V2G requires bi-directional energy flow between the grid and the battery, which means that EVs need to be designed with bi-directional power flow in mind. Standards are once again at the forefront of ensuring the infrastructure is fit for purpose.

A number of pilot schemes are in place, with companies like Ford, Toyota and VW working on V2G programmes with utility suppliers.

In conclusion with more electric vehicles hitting the roads, managing charging demand effectively is critical for stabilising the grid and ensuring reliability, efficiency and control. As the technologies and systems continue to evolve, they will need to be put in place sooner rather than later.

For the industry as a whole – from automotive manufacturers, charge point operators and technology providers, to grid operators and utilities – it has never been more important to collaborate and co-operate to ensure we have systems fit for purpose.

Rolf Bienert is Managing & Technical Director at global industry organisation, OpenADR Alliance

Bienert: As electric vehicles hit the roads, managing charging demand effectively is critical for stabilising the grid and ensuring reliability, efficiency and control



Energiewende 2.0: Powering Germany's net zero future

Large industry actors have been attracted by Germany's energy transition, eyeing a vibrant pipeline that spans renewables, green hydrogen financing, grid co-investments, and end-use plays.

TEI Times analyses the country's net zero pledges, power mix and investment environment.

Renewables reached almost 60 per cent of Germany's electricity mix in 2025. The latest policy adjustments to the Renewable Energy Sources Act (EEG) signal the shift to 'Energiewende 2.0'. Private investment and public funding are driving hydrogen hubs, grid upgrades and new industrial clusters. BP, Google, Partners Group and other investors are deploying billions. The question now is whether Germany can sustain the boom.

Decarbonisation commitments

Germany was an early leader in the global clean energy sector. A domestic industry began emerging in the 1970s, driven by debates on the energy transition and early pilot projects in wind and solar power. Momentum accelerated in the 1990s with feed-in laws, followed by the Renewable Energy Sources Act in 2000. Experts often debate Germany's loss of leadership, citing the 2012 cuts to feed-in tariffs and, particularly in solar manufacturing, China's rapid and aggressive scaling, which sharply reduced production costs. Today, Germany remains a significant player in clean energy policy and deployment, despite losing ground in manufacturing to China.

The nation has not lost its decarbonisation momentum. The next phase is known as Energiewende 2.0. It set binding targets of 65 per cent emissions cuts by 2030, 88 per cent by 2040, and net zero by 2045, based on 1990 levels, in line with the 2021 amendment to Germany's Federal Climate Change Act. Sectoral budgets enforce accountability across sectors like energy, industry, buildings, transport, and agriculture.

Like many nations, Germany continues to navigate complex transitions. Progress has slowed in some areas. Emissions reductions fell to 1.5 per cent in 2025, below prior years. Emissions rose in buildings by 3.2 per cent and in transport by 1.4 per cent in 2025. The 2025 coalition weakened heating laws and delayed coal phase outs. End-use sectors, such as heat pumps and electric vehicles, continue to lag behind gains in the power sector.

Energy mix

The energy mix highlights a clear divide between power generation and primary energy consumption, using

detailed data for 2024. Renewables dominated generation at nearly 53 per cent, with 262 TWh from wind, solar and other sources, while fossil fuels like coal (106 TWh) and gas (78 TWh) still dominated, based on data collated by the Energy Institute's 'Statistical Review of World Energy'. Non-renewable waste, industrial feedstocks and other non-energy uses accounted for 5 per cent.

Primary energy consumption shows a different story. Oil topped the mix at around 37 per cent, gas and coal followed at 25 per cent and 14 per cent respectively. Renewables accounted for 25 per cent of primary energy, including 2 per cent from hydro. Nuclear contributed zero per cent to primary energy in 2024, following the permanent shutdown of the last three plants in April 2023.

This contrast underlines the success of Energiewende in greening the grid, yet the challenge of electrifying transport, heating and industry ahead remains.

Most electricity mix forecasts project renewables accounting for 95-99 per cent of electricity generation by 2050. The International Energy Agency (IEA), Ariadne Project, BMWK: (Federal Ministry for Economic Affairs and Climate Action), and DNV GL all agree on the nation reaching at least 80 per cent renewable electricity by 2035, and net zero emissions by 2045. This will be driven by sector coupling, linking the power sector with transport, heating and industry, as well as rapid wind and solar capacity expansion, including 215 GW for solar and 230 GW wind by 2045.

The BMWK and IEA highlight hydrogen's role for hard-to-abate sectors like steel and chemicals, with BMWK projecting 10-13 GW electrolysis capacity by 2030. The IEA's Net Zero Scenario projects about 300 TWh hydrogen demand by 2050. Ariadne models suggest electricity could account for 50 to 60 per cent of final energy by 2045, up from around 24 per cent in 2024, depending on policy and technology uptake. DNV's 2024 'Energy Transition Outlook' projects a 95 per cent emissions reduction by 2050 under current policy trajectories, noting that permitting delays could slow progress. Germany targets a coal phase-out by 2038, with some gas plants converting to hydrogen-ready.

The BMWK projects energy import dependency falling to 27 per cent by 2045 while the IEA and DNV model 30-40 per cent under current policies. Challenges around grid bottlenecks and industrial prices are likely to persist during this period.

Investment environment

Germany has a strong investment profile for foreign investors. It holds top-tier sovereign credit rating from major agencies including S&P, Moody's, Fitch, and DBRS, AAA (or Aaa) with a generally Stable Outlook.

A key development for investors is ongoing policy adjustments to the EEG (Erneuerbare-Energien-Gesetz, Renewable Energy Sources Act). The planned reform shifts from fixed feed-in tariffs to two-way contracts for difference (CfDs). Generators receive a stable strike price (e.g., €50-70/MWh, \$58.21-81.49/MWh) when markets dip below but repay windfall profits above it. This funds expansion without consumer levies. Pre-reform, heavy subsidies built 215 GW in total capacity but distorted prices and burdened households at about €40 billion (\$46.7 billion)/year peak. The post-2027 CfD mechanism offers bankable 20-year contracts that reduce developer risk and accelerate auctions for all project sizes.

The government is boosting industrial decarbonisation with a €6 billion (\$7 billion) programme offering carbon contracts for difference (CfDs), auctioned from 2026 to support carbon, capture, utilisation and storage (CCUS), and electrification projects. Record renewables investments in 2023 flowed into a robust 2025 pipeline of large-scale battery energy storage systems (BESS), building investor confidence. 2026 targets hydrogen, grid upgrades, and digital infrastructure. Strategic regional clusters amplify opportunities: Schleswig-Holstein leads offshore wind, North Rhine-Westphalia and Saxony-Anhalt host energy-intensive industry, and Bavaria excels across clean tech sectors.

Policies and incentives

Germany is accelerating its clean energy transition through targeted policies and incentives. The coal phase-out targets 2038, while the EEG 2023 mandates 80 per cent renewables in power by 2030 via clear expansion paths. The EEG 2026 planned amendments demand 26.5 per cent final energy reduction and 39.3 per cent primary energy cut by 2030, versus 2008, though progress lags.

Carbon capture gains traction via the 2025 Carbon Storage Act, enabling commercial CCS/CCUS, complemented by an emerging Carbon Management Strategy. Industry benefits from a 2026 power price subsidy, €6.5 billion (\$7.6 billion) EEG network funding, and carbon contracts for difference to switch to low-carbon processes. Electrification and power generation draw further support from the €500 billion (\$582.1 billion) Special Fund for Infrastructure and Climate Neutrality (SVIK), which channels off-balance-sheet financing into grids, hydrogen and storage. This is open to private co-investment alongside European Investment Bank (EIB) loans like the



Jacobelli: Continued success hinges on accelerating end-use electrification

€220 million (\$256.1 million) WEMAG grid deal.

End-use decarbonisation advances with the Buildings Energy Act (GEG), requiring 65 per cent renewables in new heating systems from 2025. Digital solutions benefit from amendment to the Metering Point Operation Act (Messstellenbetriebsgesetz or MsbG), which streamlines grid tariffs and subsidies for smart meters and AI flexibility, plus KfW guarantees (up to 65 per cent for SMEs) and full FDI access.

Investors backdrop

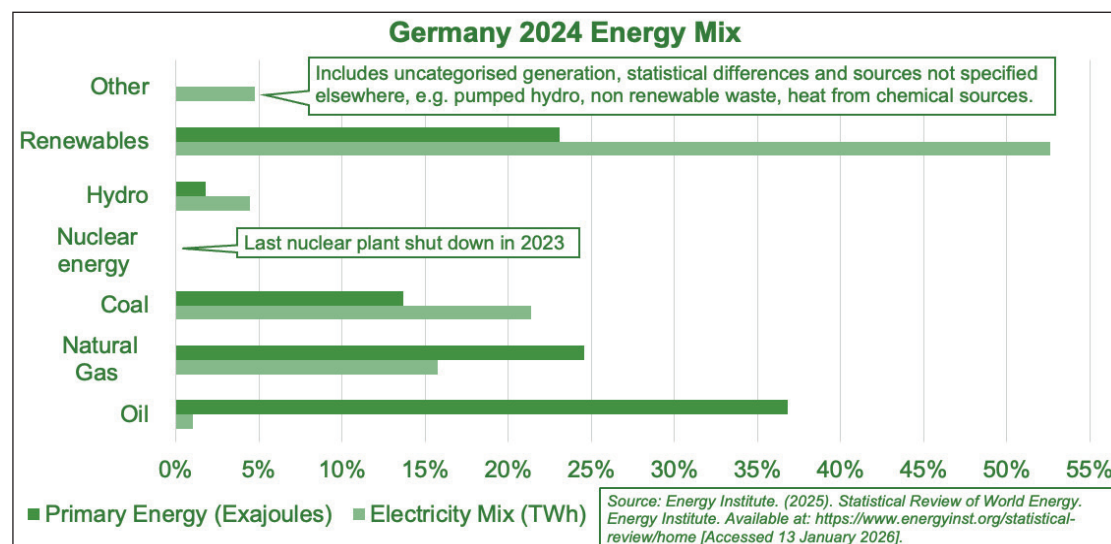
Large industry actors have been attracted by Germany's energy transition. In 2025, 61 companies and investors launched the 'Made for Germany' initiative, pledging €631 billion (\$734.5 billion) in private funds alongside €500 billion (\$582.1 billion) public spending, a portion of which will be invested in energy transition related projects. German firms like EnBW have committed €50 billion (\$58.2 billion) by 2030 for renewables expansion, while Siemens Energy has been pioneering net zero factories under the banner.

Google is investing €5.5 billion (\$6.4 billion) through 2030, matching 24/7 carbon-free power from Engie (onshore wind and solar) and Ørsted's Borkum Riffgrund 3 offshore farm. Switzerland's Partners Group acquired Techem, valuing the company at €6.7 billion (\$7.8 billion) in 2025, bolstering smart metering for over 13 million dwellings across Europe and accelerating building digitalisation.

A vibrant pipeline spans green hydrogen financings, grid co-investments, and end-use plays. EIB and Commerzbank unlocked €1.2 billion (\$1.4 billion) for municipal utilities' renewables and grid projects via risk-sharing. EV infrastructure hit 185 000 chargers (8.5 GW) in late 2024.

Energiewende 2.0 has attracted record investments from global giants like Google and BP, backed by hundreds of billions in public-private funds. Continued success hinges on accelerating end-use electrification as well as navigating grid and political hurdles ahead.

Prepared for The Energy Industry Times by Joseph Jacobelli of actE, a climate business and finance insights platform (asiacleantechenergy.com).



The energy mix shows a clear divide between power generation and primary energy consumption



The 2.5 t/day Bridgend Technology Centre & Feedstock Testing Unit

A process that can convert non-recyclable waste into low carbon energy has reached a major milestone with the signing of an agreement to lease a site in Northern Ireland for what could be the first commercial plant.

Junior Isles speaks to Powerhouse Energy's CEO Paul Emmitt about the technology and what the agreement means for the energy sector.

The environmental problems created by waste, especially waste that currently has to go to landfill, continues to be a significant issue. And while waste-to-energy technologies such as circulating fluidised bed boilers can handle most waste products, waste companies and local councils who do recycling have no options for high calorific value plastic products, other than sending them to landfill.

However, a process patented by PowerHouse Energy (PHE) looks set to help tackle the problem. After several years of development and pilot scale demonstration, the company's DMG (Distributed Modular Gasification) technology has finally reached a significant milestone with the signing of an agreement to lease a site to host what is expected to be the first commercial plant of a significant size.

Commenting on the technology's niche, Paul Emmitt, PHE's CEO, said: "The push is the reduction of waste, generally. Our sell is, we allow you to generate electricity from something that was just going to be buried. There are big energy-from-waste incinerators, but our system is set up to be distributed energy, so the unit is around 40 tonnes/day of waste. That's designed to suit a municipality. So, we aren't competing against the recyclers or the incinerators; what we want is that piece in the middle that's still going into the ground. And surprisingly, there's still a hell of a lot going into the ground."

In February this year, PHE announced that it secured a 25-year lease for a 1.98 acre serviced site at Silverwood Business Park, Ballymena, Northern Ireland and that it has submitted a full planning application to the Mid and East Antrim County Council. The facility is intended to take 40 t/day of waste destined for landfill and convert it into 99.999 per cent pure hydrogen for a variety of uses, including transport. Negotiations are already taking place on feedstock and offtake agreements.

Emmitt said: "This is a major step forward for the company. Ballymena is set to become the hydrogen hub of Northern Ireland, with the organisations including Wrightbus, Translink and the Mid and East Antrim Borough Council all focused on developing the hydrogen economy in Northern Ireland."

According to PHE, its technology is capable of eliminating waste, including plastic waste and used tyres

with high levels of energy recovery, while producing hydrogen and/or electric power.

With the capacity to export around 3.5 MW from 40 t/day of non-recyclable plastic, Emmitt sees it as an excellent solution for local councils.

"We're not talking huge outputs but it's enough for a town," he said. "The ideal scenario is: a new housing estate gets built; the waste from the homes comes to a PHE facility; the heat from the facility is used for district heating; the electricity is used to power the houses. So that estate becomes relatively self-sufficient," he said.

DMG is essentially a pyrolysis/gasification process. Thermal treatment is carried out in a rotating kiln at around 1000°C with the help of an oxidising agent but without introducing any additional oxygen or air into the process.

The operation takes place in a slight vacuum but although there is a little air in the chamber, the feedstock is not being burned. It breaks down the waste, so it becomes vapour. PHE then controls several of the reactions in that vapour to produce syngas.

The temperature, oxidising agent and the residence time of the gases in the chamber are controlled to produce either a hydrogen-rich gas or a methane-rich gas. When looking to produce electricity, the methane content would be increased so it can be burned in a reciprocating gas engine. Knowing the model of what is going on in the process and the target operation points are, according to PHE, its IP (intellectual property).

Emmitt added: "In a commercial unit, the kiln is just under 10 m long with a diameter of just over 2 m. And because we use a rotating kiln, there is a relatively constant composition of syngas, even on a varying feedstock, because the gas has time to mix within the system and a big sell is, plastics don't have to be cleaned. In fact, the biogenic in the waste food [remaining on the plastic] makes the output better. The flexibility of the feedstock is the really big thing for us."

The first small unit to test the technology was built by Engsolve in 2017. PHE later bought 100 per cent of Engsolve. By 2019 there were plans to build a full-scale facility at an energy and recovery hub near Ellesmere Port in Cheshire (see *TEI Times*, April 2019).

Although this facility never materialised, work continued with the

construction of the Bridgend Technology Centre & Feedstock Testing Unit (FTU) in South Wales. The unit, which opened in 2024, served as a centre for the two business (PHE and Engsolve) and provided a home for a 2.5 t/day pilot plant. The FTU was designed, built and commissioned by Engsolve, and is operated by PHE.

In March 2025 PHE opened the FTU to investors and the public, showcasing the DMG technology on a pre-commercial scale. This allows PHE to demonstrate its IP, provide testing for future clients and to further develop its offerings. The PHE research and development team will utilise the system for development, process optimisation and for the development of future IP.

Since opening, the pilot has, according to PHE, performed "really well", running on feedstocks such as chicken manure, tyres and waste plastics. The results have aligned with the models, so the company now has validated models that can show predicted power and heat outputs for any given feedstock and throughput.

The FTU proved to be the turning point. "Once we got the FTU off the ground, enquiries started coming through the door consistently," said Emmitt. "Since March last year, more than 50 enquiries have come in – from virtually nothing."

The first interest came from Australia. Gaining confidence from seeing the Bridgend pilot in action, National Hydrogen (NH2) of Australia signed a five-year agreement to use PHE's technology and engineering expertise for hydrogen projects in Australia, Italy, Switzerland and Hong Kong.

The NH2 project includes a Front-End Engineering Design (FEED) study, undertaken by Engsolve, and a framework agreement that sets out the terms on which PHE would provide support on a project-by-project basis, working closely with NH2 to deliver these projects successfully. This agreement is based upon a licensing and royalty model, where PHE monitors the facility 24/7. The current expectation is that the plant will be up and running by the mid of 2028.

The FTU was also instrumental in securing the Ballymena project. This facility is a validated project that has progressed steadily and is expected to begin operation during a similar timeframe as the NH2 project. When complete, it will produce syngas for

both hydrogen and electricity.

"The main driver is waste," said Emmitt. "There are a number of companies around Ballymena that send waste to landfill sites, which is costing them a fortune, so they were happy to sell us the waste instead. They see themselves as a hydrogen hub for Northern Ireland – they have invested in hydrogen buses and everything is already plastic piped – but there is also the power offtake opportunity."

Being more open to other applications outside of hydrogen has also been key to PHE's recent success in attracting investors.

"We shifted from focusing on just hydrogen production – our outputs are power, heat and hydrogen if you want it," said Emmitt. "But not being tied to hydrogen as we were in the past is really bringing people in."

But while power has always been an application, Emmitt noted that it is market and location specific.

He said: "The Australian project works for power, because power prices are high. They struck a very good strike price for power from waste, which is great. And I think that, maybe, is the methodology to take. They look at power first [to] start to pay for the project. And be hydrogen-ready if that market takes off."

"But from an electricity perspective the adoption of the technology is very much market dependent. In the UK, it might not really work at the moment because prices are not great for the producer."

Looking forward, Emmitt says that the real push going forward is "letting people know the technology is not a one trick pony".

He concluded: "The power play is important. Data centres want to run off-grid; it's a massive market, where the technology could help support the electricity need. The mining sector is also a big market."

"Geographically, there are opportunities in smaller EU states where power prices are high and waste is being shipped abroad. We are also talking to Egypt and have a subsidiary in Thailand. We are also in discussions in South America and North America. The Middle East has cheap gas and power but has a massive waste problem, so we are in talks there. And there are opportunities in Africa where there's a lot of plastic waste; and although power is cheap, it's not always stable."

"We are a small company, but we have global ambitions."

Emmitt: The real push going forward is letting people know the technology is not a one trick pony





Junior Isles

Different destinations, same pathway

If there was any debate about whether climate change is increasingly taking a back seat as a driver in the energy transition, it was largely put to bed at the International Energy Agency's ministerial meeting last month. Speaking as energy ministers gathered in Paris for its biennial meeting, Fatih Birol, the IEA's Executive Director said climate change was "moving down the international policy agenda".

Although there were a number of positive developments during the discussions – such as an agreement by IEA member governments to move ahead on building deeper institutional ties with Brazil, Colombia, India and Vietnam – the gathering was marked by a division over the importance of renewables, with the US castigating net zero ambitions.

As climate change slips down the political agenda, energy security has now taken centre stage. Notably, a summary of the IEA meeting prepared by chair Sophie Hermans, the Dutch Energy Minister, focused largely on energy security. Although it said "a large majority" of ministers stressed the importance of moving towards net zero emissions it also noted the continued importance of oil and gas.

Two other high-level dialogues had featured discussions on safeguarding energy security in the 'Age of Electricity' and on investing in Ukraine's future energy security, with the participation of Ukrainian First Deputy Prime Minister and Minister of Energy Denys Shmyhal.

Indeed, the tone had been set by France's President Emmanuel Macron. Citing the significance of Russia's attacks on Ukraine's energy infrastructure, he said that energy was a major component of his country's "strategic autonomy" and "a central dimension" of France's sovereignty.

Acknowledging that energy security is now top of the agenda, Birol said ministers "agreed in different discussions that energy security is the fundamental of everything".

The IEA noted in its recent 'Electricity 2026' report, that greater efforts are needed to improve the security and resilience of power systems around the world, which face rising risks associated with ageing infrastructure, extreme weather events, cyberthreats and other emerging vulnerabilities.

In some ways, it seems that circumstances have led the IEA back to its roots. The agency was formed over 50 years ago to ensure the security of oil supplies in response to the 1973-1974 oil crisis. And although energy security remains a central part of its mission, the organisation has since evolved. It now has a wider mandate to focus on a full range of energy issues, including climate change and decarbonisation, energy access and efficiency, investment and innovation, and ensuring reliable, affordable and sustainable energy systems.

In pointed rhetoric aimed at shifting global attention away from net zero, while pressuring other countries to align with current US energy policy, US Energy Secretary Chris Wright

said the IEA should go back to its original role. He called the IEA's 2050 net zero modelling "ridiculous", and said it should focus on its role as an international data recording agency, which is focused on energy security.

Wright claimed that many countries have agreed in private with the US stance to move away from net zero goals, and continue to increase production and consumption of fossil fuels.

Threatening to withdraw from the agency, he said: "There has been such a group mentality, 10 years invested in a destructive illusion of net zero by 2050, that the US will use all the pressure we have to get the IEA to eventually, in the next year or so, to move away from this agenda."

No doubt it is better for the IEA to keep the US onside, but at what cost? The US has paid about \$6 million (€5.10 million) per year in IEA dues, out of a total agency budget of \$22 million. It would be a significant hit to the IEA but might be a small price to pay if net zero is to remain a key part of the discussion and therefore an end goal.

Some countries played down the US threats. French Finance Minister Roland Lescure said: "The worst is never certain. I spoke with Chris Wright, I am convinced we have enough common subjects to work on together, including nuclear energy," Lescure said.

Lescure reinforced France's commitment to clean energy, and said the goal was to electrify its industry to rely less on oil and gas.

"France and Europe's strategic and structural answer is electrification. We of course still have gas needs, notably for the industrial sector, and I'm very happy the US can meet that need, but objectively the long-term goal is to exit a dependence on imported fossil energy that is still too great," Lescure said.

This desire to end dependence on fossil fuel imports is indeed driving European countries to re-examine their oil and gas strategies. In a recent interview with the *Financial Times*, Mathios Rigas, Chief Executive of Energean said Greece, Italy and Cyprus had shown signs of changing tack. He said Energean was in talks over new exploration licences, including in an area next to one of its Greek prospects.

"I'm not saying we are there, but we are at least in active discussions about reopening exploration," he told the *FT*. "The Italian government is actively looking at allowing new activities to happen, when a few years ago it wasn't even... on the agenda."

While new modelling issued by the IEA in November predicts oil and gas demand will rise for 25 years under governments' current policies, renewables will continue to replace fossil fuels as the go-to source for new power generation – if not for net zero emissions ambitions, then for energy security as well as economics.

Addressing the ministerial meeting via video link António Guterres, Secretary-General of the United Nations, said: "Renewables are now the cheapest, fastest and safest source of new electricity almost everywhere. Investors know it: last year, \$2 trillion flowed into clean energy – nearly twice as much as into fossil fuels."

And as data centres and AI increasingly drive electricity demand, renewable generation will continue to surge – at least outside of the US – to keep a lid on power prices.

In a recent interview with the *FT*, Zhang Lei, founder and CEO of China's Envision Energy, one of the world's biggest wind turbine manufacturers, said power-hungry AI risks tipping millions into "energy poverty" unless investors pour more money into renewables. He argued that the case for clean energy was now driven by mathematics rather than climate change.

Zhang predicted global electricity demand would rise as much as 10-fold over the next decade, while fossil fuels would become progressively more expensive to extract as supplies are depleted, risking higher energy bills unless more wind and solar farms are developed.

"For this AI revolution, lots of people may end up with energy poverty," he said... "If we think long-term, we need a renewable energy system that is infinite, inexpensive and trained by AI. We have to build this renewable energy system, not just because of the climate crisis," he told the *FT*. "It's because of long-term prosperity. This is just mathematics. It is so simple even my eight-year-old daughter can figure it out."

So, whether the end goal, or main driver at any point in time, is climate change, energy security, or the price of energy, the key tools to get there seem to be centred around clean energy. The destinations may change but the pathway remains the same.

