



Mobility & demographics spur world's energy demand; IEF

Population growth and rising global mobility will spur the world's energy demand in the coming decades, putting sustainability targets at risk, the International Energy Forum (IEF) warns. The transport sector alone accounts for 50% of global oil demand today, and 23% of energy-related CO2 emissions, hence the sector's future fuel choices will largely determine progress on the world's sustainable development goals.

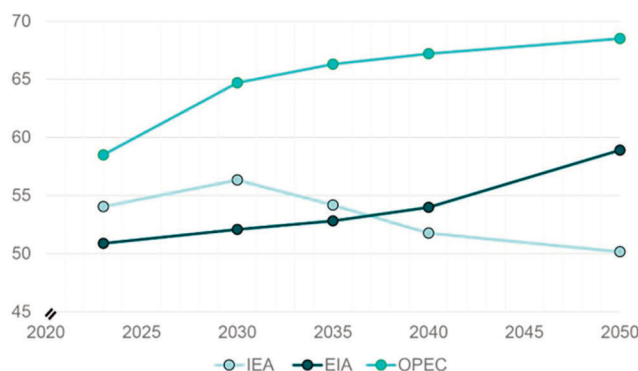
Passenger transportation and jet fuel demand are both forecast to grow by 70% by 2050, according to the report written by Ali Alsamawi, energy analyst at the IEF. Electric vehicle (EV) penetration, meanwhile, is expected to reach 23% of global passenger vehicles in use by 2035.

Shipping, trucking and aviation drag their feet

But long-haul trucking, shipping and aviation still pose severe challenges to sustainability – and emissions cuts in these areas hinge on technology progress in blending petroleum with low carbon fuels, e.g. hydrogen, and scale and scope of carbon credits trading schemes.

Joseph McMonigle, secretary general of the IEF urged govern-

IEA OPEC and US EIA projections of Oil Demand in the Transport Sector



Sources: IEA World Energy Outlook 2024 - Stated Policies Scenario, OPEC World Oil Outlook 2024 - 'Reference' scenario and EIA Annual Energy Outlook 2023 - 'Reference' scenario. Note: EIA data includes biofuels.



ments to encourage the adoption of next-generation biofuels, trading of carbon credits and energy-efficient engine technologies. "Growing demand for transportation and mobility is a key indicator of improved living standards, but it also poses a challenge for achieving sustainability goals, especially in long-haul trucking, shipping and aviation where electrification is not feasible," he said.

Pace of low carbon-fuels uptake still uncertain

Energy demand for transportation and mobility is forecast to rise by 50 to 70 million barrels of oil equivalent per day (boe/d) by 2050.

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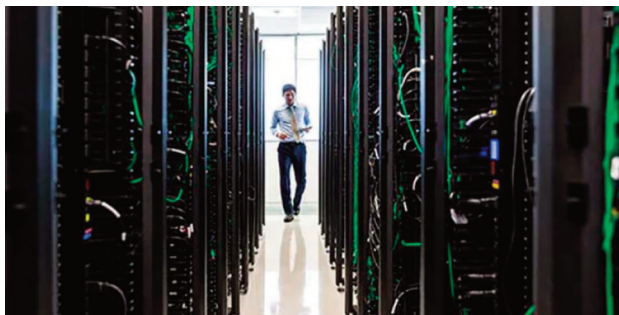
AI Energy Council launched to ensure UK grid can power Big Data

Artificial Intelligence is meant to uplift the UK economy and a dedicated AI Energy Center, co-chaired by the former Labour leader Ed Miliband, will be set up to make sure National Grid can cater to the electricity needs of new data centres. Analysts reckon the AI boom's rampant power demand will spur investment in nuclear small modular reactors.

Presenting a 'blueprint to turbocharge AI' the UK Prime Minister Keir Starmer claimed artificial intelligence will be unleashed across the UK to "deliver a decade of national renewal."

Dedicated AI growth zones will be created, where the PM promised to speed up planning permission as well as grid connections with a view to attract investment from Big Data companies.

Three major tech companies – Vantage Data Centres, Nscale and Kyndryl – have already committed to £14 billion worth of investment in the



UK. The trio wants to deliver 13,250 jobs across the UK. That's on top of the £25 billion in AI investment announced at the International Investment Summit.

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The broad forecasting range reflects analysts' differing views over the pace of EV penetration, and the use of low-carbon fuels replacing or complementing petroleum-based fuels.

The Middle East and North Africa are some of the world's most polluting regions, where mostly car- and truck-based passenger transport is set to surge 90% through 2050, compared to a 50% rise Southeast Asia and a 33% increase in Sub-Saharan Africa from 2019-levels. This trend is caused by economic expansion, trade growth and urbanization, the IEF report reads.

China, US and EU lead the way on electric vehicles roll-out

Electric vehicle-penetration will be concentrated in China, the US, and the EU, analysts noted. In countries with the most significant economic and population growth, EV penetration is anticipated to range from less than 1% in 2020 to less than 8% in 2035, according to IEF finding. Analysts warn, this could impede efforts to mitigate emissions from transportation, which have risen by more than 70% since 1995.

"Trade restrictions on EVs and their es-

sential parts will slow down decarbonization efforts," Mr Alsamawi said, "but favour domestic clean industrial development and manufacturing capabilities." A balanced approach to trade, environmental and clean industrial policy is crucial, in his view, to ensure growing transport sector energy demand remains or becomes sustainable and affordable.

Headquartered in Riyadh, Saudi Arabia, the IEF is the world's largest international organization of energy ministers from 72 countries and includes both producing and consuming nations. ■

Constellation Energy about to close \$30bn deal to buy Calpine

Constellation Energy is reportedly close to finalising a deal to acquire Calpine Corp for approximately \$30 billion, including debt. If negotiations with Calpine's private equity owners, notably Energy Capital Partners, are successful and the transaction proceeds, it would be one of the biggest deals ever in the power generation sector.

In the United States, Constellation Energy currently operates the largest fleet of nuclear power plants which makes the company attractive as a provider of baseload power generation. The potential acquisition of Calpine would significantly expand its energy portfolio at a time of

increasing electricity demand sparked by the AI boom.

Cash-and-stock deal

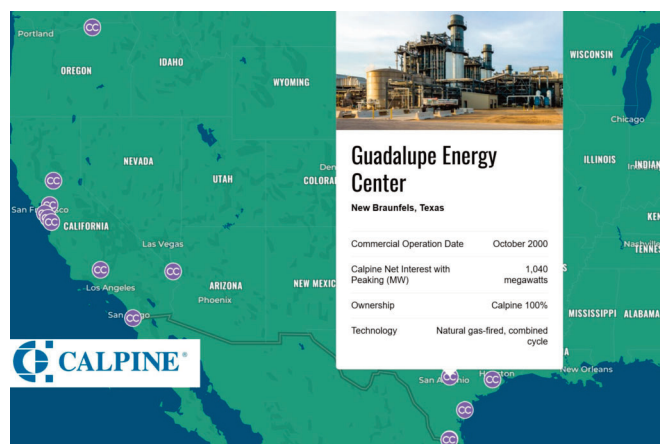
Though negotiations are nearly concluded, the terms of the acquisition are still subject to discussion and change. Intended is a "cash-and-stock deal" which would be highly beneficial to Constellation's earnings-per-share and help diversify the utility's fleet of power plants by fuel type given that Calpine is currently heavily weighted to gas-fired power generation.

Calpine, headquartered in Houston, oversees a diverse energy generation portfolio of 78 facilities. Its

assets include natural gas-fired power plants, geothermal sites, solar installations, and battery storage systems, with a total capacity of approximately 27,000 MW. Notably, it operates "The Geysers," the largest geothermal energy complex in North America, generating 725 MW of clean energy in California's Sonoma County.

Carbon capture technology is another key focus area of Calpine, which is piloting projects at several of its US gas-fired stations. In 2017, Calpine transitioned to private ownership through a \$17 billion acquisition.

According to Bloomberg reporting, Constellation sees the acquisition as a strategic opportunity to strengthen its power generation capabilities amid soaring electricity demand. Rapid growth in sectors such as data centers, industrial development, and electrification has driven a surge in energy consumption following years of stagnation. ■



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- Vantage Data Centres, developer of Europe's largest data centre campuses in Wales, plans to invest over £12 billion in data centres across the UK –creating over 11,500 jobs in the process.
- Kyndryl, the world's largest IT infrastructure services provider, announced plans to create up to 1,000 AI-related jobs in Liverpool over the next three years.
- Nscale – one of the UK's leading AI companies – has announced a \$2.5 billion investment to support the UK's data centre infrastructure over the next three years. They have also signed a contract to build the largest UK sovereign AI data centre in Loughton, Essex by 2026.

The 1st new AI Growth Zone will be cre-

ated in Culham, Oxfordshire. But all over Britain, the PM supports efforts to build up AI infrastructure in order to create new jobs and help people work more efficiently.

The International Monetary Fund (IMF) estimates that – if AI is fully embraced – it can boost productivity by as much as 1.5 percentage points a year. If fully realised, these gains could be worth up to an average £47 billion to the UK each year over a decade.

To educate electric utilities about the new realities of Big Data and AI, a dedicated AI Energy Council will be established. It will directly support the government's mission to become a clean energy superpower by tapping into technologies like small modular reactors. ■

LNG gets 'hard to attract' to Europe

European LNG buyers fail to significantly attract more deliveries although prices were much higher in the first week of 2025 than early last year. "There is a stickiness in LNG trade flows to Asia," Energy Aspects said, referring to structural demand growth and heavy demand for spot cargoes from less price-sensitive markets like Japan and South Korea.

Analysts at the London-based consultancy found that Asian LNG demand has so far only been growing by 6.0 million tons year-on-year in 2025, which is down from 16.1 Mt growth last year. But Europe still stays very reliant on the increments in global LNG supply to meet its minimum storage targets by end-October.

A price-sensitivity analysis on how much Asian gas markets can call on spot and divertible supply at different price levels, found that at \$10–20 per MMBtu, a \$1/MMBtu rise, equal to €3.24/MWh, in TTF prices only weakens non-European demand by 0.89 million tons per annum (mtpa).

"European prices are already near the top of the coal-to-gas fuel-switching range and we already expect Europe to just meet its storage targets, so a market tightening of 5 bcm (for example, from cold weather in Europe and Asia over Q1-25) could propel TTF prices up by around €13.50/MWh,"

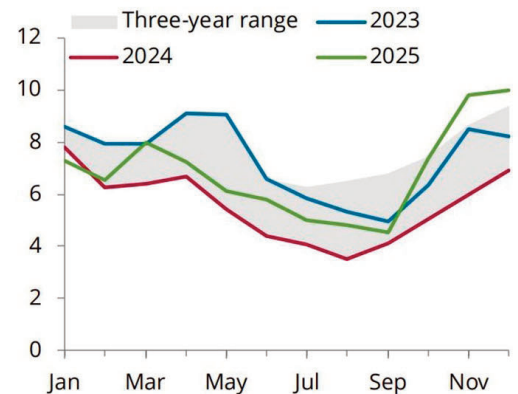
analysts commented.

Quick drawdown on inventories

Europe entered January with gas inventories at just 79.2 bcm, or 73% full – a decrease by 15.3 bcm y/y which makes it difficult to rebuilt stocks before the end of the gas year in October.

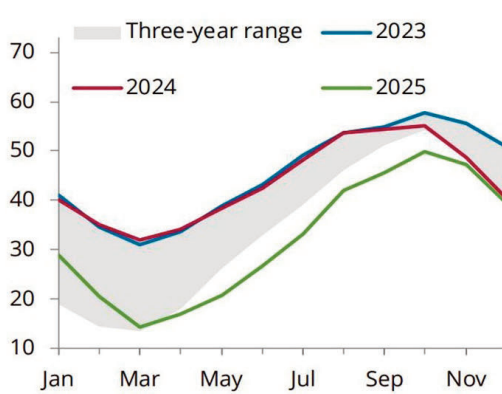
The fast-paced drawdown during the months of November and December 2024 had a substantial impact, considering lower Russian pipeline gas deliveries were not suf-

NW Europe LNG receipts, bcm



Source: System operators, Energy Aspects

NW Europe stocks, bcm



Source: Storage operators, Energy Aspects

ficiently offset by higher LNG deliveries and low demand. The stockdraw amounted to 25 bcm over the past two months, while Russian pipeline gas deliveries were 5.3 bcm, down from the five-year average of 18.2 bcm, while LNG receipts were up marginally to 22.6 bcm.

Analysts project Europe stocks to hit around 40 bcm (37% full) by end-March, anticipating further reductions in Russian pipeline gas supply through the first quarter of 2025 and gradually rising gas demand. ■

Total, QatarEnergy start construction of 'ArtawiGas25' in Iraq

Construction for 'ArtawiGas25' – a first processing unit to recover associated gas from the Ratawi field in southern Iraq – has been kickstarted by TotalEnergies together with Basra Oil Company and QatarEnergies. Built at a cost of US\$250 million, the facility will be expanded to eventually process enough gas to fuel 1.5 GW of power gen capacity.

The project is part of set up to maximise the use of Iraq's hydrocarbon resources by setting an end to the wasteful practice of flaring natural gas that comes as a by-product of extracting crude oil in Iraq's southern Basra region.

Ratawi is a heavy oil field, situated on-shore, which recovered just over 10.43% of its total recoverable reserves as of today. Peak production is expected in 2029. At current production rates, Ratawi currently accounts for approximately 2%

of the Iraq's daily oil output – as well as an unspecified amount of associated gas which will now be gathered and processed for use as fuel for generating electricity.

Gathering gas from three oil fields

The Gas Growth Integrated Project (GGIP), launched in September 2021, is a US\$10 billion project designed to enhance

the development of Iraq's natural resources and improve the country's electricity supply. Phase-1 of the gas processing plant is designed to recover 300 Mcf/d by eventually recovering gas being flared at three oil fields – enough to supply gas to 1.5 GW of power generation capacity.

TotalEnergies is the operator of the field and owns a 45% stake in the ArtawiGas25

processing unit, under construction for a total cost of US\$250 million, while Basra Oil Company has a 30% stake and QatarEnergy owns the remaining 25%. The Qatari oil and LNG major is understood to be interested in replicating gaining know-how about gas processing and may well replicate lessons-learned elsewhere in the Middle East. ■



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Low-carbon hydrogen and ammonia to gain traction in 2025

2025 is poised to be a transformative year for hydrogen, Wood Mackenzie reckons as the U.S. gears up to become the leader in blue hydrogen, while electrolyzers made-in-China will drive global competition and spur investments in ammonia. But addressing the mismatch between FIDs and offtake contracts will be crucial to scaling hydrogen for power generation.

The United States will solidify its position as a global leader in blue hydrogen production for power generation. In 2025, over 1.5 million tonnes per annum (mtpa) of blue hydrogen capacity is expected to reach financial investment decision (FID), vastly outpacing green hydrogen, Wood Mackenzie forecasts.

U.S. hydrogen market bolstered by 45Q tax credit

Growth is driven by supportive policies like the 45Q tax credit, bolstered by strong backing from the oil and gas sector. The U.S. is poised to become the world's largest producer of blue hydrogen, thanks to investments in large-scale blue hydrogen projects, helping meet power generation needs while reducing carbon emissions.

Green hydrogen production and use, meanwhile, has struggled in recent years. 2025 may see at least one giga-scale green hydrogen project reach FID. These projects are vital for scaling hydrogen in electricity generation.

Challenges remain, however, in securing offtake agreements, accessing renewable energy, and navigating regulatory landscapes. Despite these hurdles, over 150

green hydrogen projects are proposed globally, and analysts expect more will reach FID in the near future –unlocking significant capacity for power generation.

Chinese electrolyser makers gain ground

Chinese electrolyser manufacturers are expected to capture a third of the global market outside North America and Europe by the end of 2025. These electrolyzers are critical for producing green hydrogen and are expected to lower the cost of green hydrogen production globally, giving China a competitive edge.

Wood Mackenzie anticipates this shift will likely accelerate the deployment of green hydrogen for power generation in regions seeking cost-effective solutions.

A persistent issue in the hydrogen sector is the gap between FIDs and offtake agreements. Over 2.5 mtpa of FID volume is currently uncontracted, particularly in blue hydrogen projects in the U.S. This mismatch creates risks of cancellations.

But Wood Mackenzie anticipates that an acceleration of offtake agreements, especially in Japan, South Korea, and Europe, will help address this gap. Securing these



agreements is critical to ensuring the continued growth of hydrogen for electricity generation.

Investments shift to low-carbon NH3

Low-carbon ammonia (NH₃), which plays a significant role in hydrogen transportation for power generation, is expected to see an \$8 billion investment surge in 2025, doubling from the previous year. This growth is driven by an increasing demand for ammonia in sectors like maritime and aviation, which are looking for hydrogen-based solutions.

Investments will focus on storage terminals and ammonia carriers, and analysts anticipate this will position ammonia as a key component in the hydrogen value chain, essential for meeting the growing global demand for low-carbon power. ■

CIP, Friesen Elektra launch 800 MW hydrogen project

Copenhagen Infrastructure Partners (CIP) and Friesen Elektra have initiated project Anker, a green hydrogen production facility in the northern German town Sande, situated just outside Wilhelmshaven, where Uniper LNG was set up in record time. Project Anker will have 400 MW of electrolysis capacity of 400 MW with plans for expansion to 800 MW at a later stage.

Project Anker is strategically located near Wilhelmshaven, an important energy and industrial hub, and near the future German hydrogen core network. It is projected to produce 80,000 tons of green hydrogen annually which will be sold to German industries seeking to decarbonise, notably steel and chemicals makers,

as well as to the transport sector.

Powered by offshore wind as well as renewable energy from the grid, the electrolyzers at Project Anker will help energy-intensive industries to fossil fuels with green hydrogen. Operators claim the project will help reduce CO₂ emissions by up to 2.4 million tons annually, equivalent to the emissions of approximately 340,000 households.

"At CIP, we continue to see a large potential in green hydrogen despite slower than expected market development and we remain committed to investments in large-scale renewable infrastructure solutions to decarbonize energy-intensive industries," Felix Pahl, Partner at CIP said.

CI ETF-I, managed by Copenhagen Infrastructure Partners, is the largest dedicated greenfield green hydrogen fund worldwide. The Scandinavian investment firm manages 12 funds and has raised approximately €31 billion to date for investments in energy and associated infrastructure. It has built a portfolio of Power-to-X projects, with around 6.5 GW of electrolyser capacity globally.

Christian Gätje, CFO of Friesen Elektra, welcomed CIP as a strategic investor and development partner in our Hydrogen Park Friesland. "This collaboration is a major step towards creating one of Germany's premier hydrogen production sites," he said, noting the collaboration is aimed at accelerating the energy transition and advance decarbonization initiatives in northern Germany and potentially the Netherlands. ■



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Render of project Anker

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Texan coal power plant gets \$1bn grant after switching to gas

South Texan utility San Miguel Electric Cooperative will receive \$1.4 billion in funding from the U.S. Department of Agriculture (USDA) to shut down a coal-fired power station and procure 600 MW of electricity from solar PV and a battery energy storage system. The novel, clean energy system is meant to provide electricity for 47 counties across rural South Texas.

The clean energy investment came forward based on \$4.37 billion from the USDA in loans and grants to support America's clean energy transition as well as rural jobs.

Once the San Miguel coal power plant is shut down and decommissioned, there will be only 14 coal-fired power stations in operation in the Lone-Star-State. Texas has been staging one of the fastest coal-to-gas transitions in the United States, thanks to the state's abundant unconventional oil and gas resources – and this also attract investors in blue hydrogen, produced from natural gas through steam methane reforming. The CEO of San Miguel Electric Cooperative, Craig Courter, told local reporters that federal funding allows the cooperative to "virtually eliminate our greenhouse gas emissions while continuing to provide affordable and reliable power to rural Texans."

Other recipients of USDA funding include:

- CORE Electric Cooperative, which will use a \$225 million investment to procure 550 megawatts of wind and solar energy, and 100 MW of battery energy storage for rural communities in Colorado.
- Georgia Transmission Corp., meanwhile, will use an up to \$325 million investment for several projects, including new transmission lines and upgrades to existing transmission assets in approximately 20 rural communities across Georgia.
- Nebraska Electric G&T will use a \$200 million investment to procure 725 megawatts of wind and solar energy in Butler, Burt and Custer counties and Oglethorpe Power Corp, which will use a \$331.5 million investment to refinance outstanding loans for the retired Hal B. Wansley coal plant. The refinancing will result in average annual



San Miguel Electric Coop's plant on farmland

savings of \$7.7 million in expenses from 2025 to 2044, which will be passed to the 38-member cooperatives it serves.

- In Florida, Seminole Electric Coop will use a more than \$1.3 billion investment to procure 700 MW of energy resources through a combination of utility-scale solar and battery energy storage projects across rural portions of Florida.

China: Guangming power plant (2 GW) enters operation

Shenzhen Energy Group's latest project, the 2 GW Guangming power plant, has entered full commercial operation in Guangming province, one of China's most populous provinces with over 127 million inhabitants. The combined-cycle plant is powered by three GE Vernova 9HA.01 turbines and is in line with China's state policy to achieve a carbon emissions peak by 2030.

Carbon neutrality is envisaged by 2060, and achieving this ambitious target would not only require a switch from coal to cleaner-burning gas and renewables in the power sector, but also a transition to cleaner fuels in the industrial and transport sectors.

Policies by the central government in Beijing are already in place expedite the building of highly efficient combined cycle gas power plants, like the one in Guangming. The local government in the Greater Bay Area also set out incentives focused on the coal-to-gas energy transition.

For the Guangming CCGT, the plant operator Shenzhen Energy will work in close cooperation with GE Vernova and its part-

ner Harbin Electric. For this project, Harbin Electric provided steam turbines and generators, and the gas turbines were provided by the Joint Venture called General Harbin Electric Gas Turbine (Qinhuangdao) Co., Ltd ("Joint Venture"), which was formed in 2019 between GE Vernova and Harbin Electric as a joint effort to focus on heavy duty gas turbine localization, aiming to deliver more efficient and reliable support for China natural gas power plants.

Xu Xin, President of GE Vernova Gas Power China Services underlined that advanced HA technology offers among the lowest carbon emissions per amount of fossil fuel in the industry. This would give power plant operators, like Shenzhen Energy Group, the ability to use fossil fuels more efficiently and with lower carbon emissions compared to older coal power plants.

Looking ahead, operations of the Guangming CCGT could be decarbonised further by running the plant partly on hydrogen. The 9HA.01 gas turbines, installed at the project, can burn up to 50% by volume of hydrogen when blended with natural gas — offering a pathway for even lower carbon emitting operations.

Siemens Energy expands Saudi manufacturing unit

Siemens Energy has announced the expansion of its manufacturing facility in Dammam second Industrial City, situated in Saudi Arabia's eastern province. The expanded plant now spans 20,000 square meters – an increase of 35% – allowing for the production of gas-insulated switchgear (GIS) and HL-class gas turbines in the Saudi kingdom.

HL-class gas turbines are designated for use in the Taiba-2 and Qassim-2 combined-cycle gas turbine (CCGT) projects. A total of 9,000 HL-class turbines will be assembled as part of these initiatives. These turbines will be the first ever to be assembled outside Siemens Energy's primary facilities in Berlin, the German manufacturer stressed.

In June 2024, Siemens Energy secured a \$1.5 billion contract for power plant supplies, linked to the Taiba-2 and Qassim-2 CCGT projects.



Render of Guangming CCGT

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