



HORIZONS

Conversation starters: Five energy charts to get you talking

December 2025

Malcolm Forbes-Cable
Vice President, Upstream and Carbon Management Consulting



As another extraordinary year for the energy and resources sector draws to a close, it is time for our now almost traditional list of conversation-starting charts.

This year's run-down features a couple of prominent macro themes. The first is the battle of the global superpowers - the US and China - viewed through a lens of energy supply, rare earth elements and power prices. The second is Europe's lack of competitiveness and industrial decline, as illustrated by the chemicals sector's rapid decrease in capacity and the UK's self-inflicted harm on its oil and gas sector.

A great benefit of having access to experts and research from across the energy and resources value chain is being able to understand the [interconnectedness](#) of sectors and the interdependencies of the global energy system. It has been suggested that quantum computing will be vital to managing future energy systems, such is their complexity. Consequently, integrated energy systems are a theme to which we will return time and again.



1. US LNG: the turnaround of all turnarounds

This rather beautiful Sankey chart shows 2030 liquefied natural gas (LNG) volumes by producing country on the left-hand side and destination country on the right. The most remarkable thing about it is that the US will account for 30% of global LNG output by 2030. The next most striking thing is that the US has emerged from nowhere to become the world's biggest LNG exporter in fewer than 10 years. This is even more extraordinary when we consider that its first exports in February 2016 were from the Sabine Pass terminal in Louisiana, which, eight years previously, had been developed as an LNG import facility, such were the projected shortfalls in US domestic gas supply.

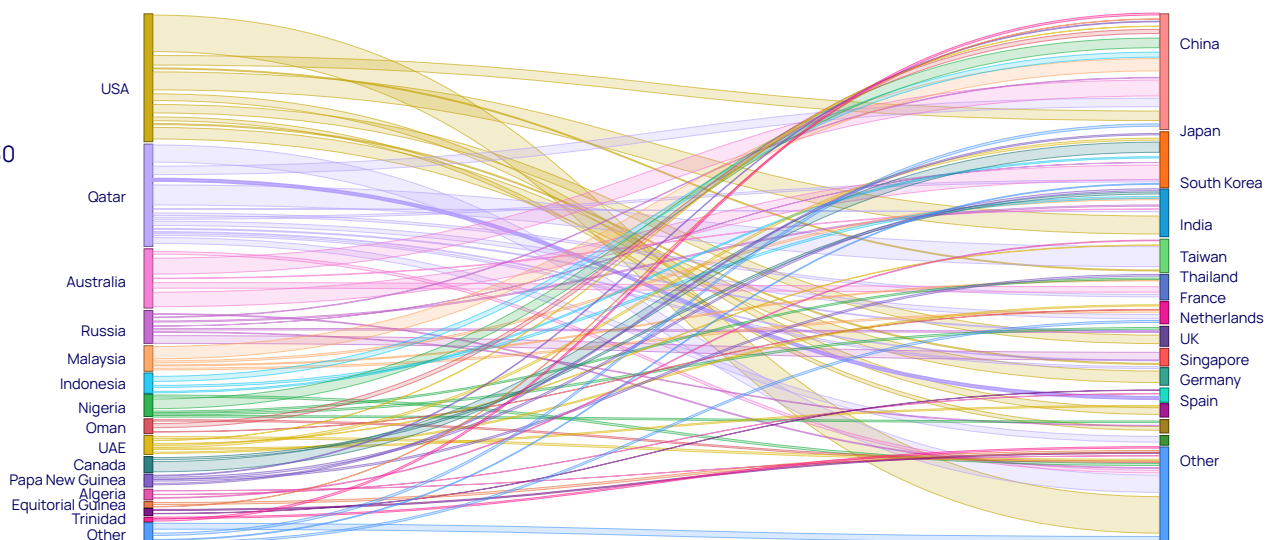
Looking at the oil and gas markets more broadly, the US is inarguably the world's hydrocarbon superpower, propelled by the tight oil and gas revolution. As well as being the No.1 LNG producer, it leads global oil production (including oil, condensate and natural gas liquids), delivering one-fifth of the world's volumes. Its closest competitors,

The US has emerged from nowhere to become the world's biggest LNG exporter in fewer than 10 years

Saudi Arabia and Russia, produce just 65% and 50% of US volumes, respectively. While China has been synonymous with mega-scale rapid growth in multiple industrial sectors in recent years, the resurrection of US LNG is a crucial reminder of what a resource-rich, free-market country like the US can do. The Trump administration is doubling down on this advantage, using its gas exports, coupled with US development funding, as a diplomatic tool.

US hydrocarbon hegemony also bolsters China's strategic imperative to master the renewables technology industry. Energy is fuelling growth today as much as it did in the first industrial revolution, with the world's superpowers following different paths to economic might.

Figure 1:
Global LNG
exports and
imports by
country, 2030



Note: Forecast provides an optimised view of uncontracted global LNG flows. Data shown as a percentage of global volumes

Source: Wood Mackenzie, Global Gas Model

2. Rare earth elements - a high note in global trade

Back in 1959, US mathematician, humourist and musician Tom Lehrer delighted audiences and won critical acclaim for what he termed a 'completely pointless' song, [The Elements](#), in which he listed all the elements of the periodic table (at the time) to a tune from *The Pirates of Penzance*. Lehrer died in early 2025, but he would have been amused, we believe, to see the 15 rare earth elements of the lesser-sung lanthanide series, plus scandium and yttrium, featuring heavily in global trade talks. 'Rare earth elements' is a useful moniker for a hard-to-remember and, in some cases, hard-to-pronounce list of elements.

There is something reassuring about high rhetoric and political posturing being brought down to earth by science and, in this case, chemistry. The extraordinary leverage of rare earth elements in trade negotiations was a profound demonstration of both national industrial strategy and China's hold on high-tech manufacturing.

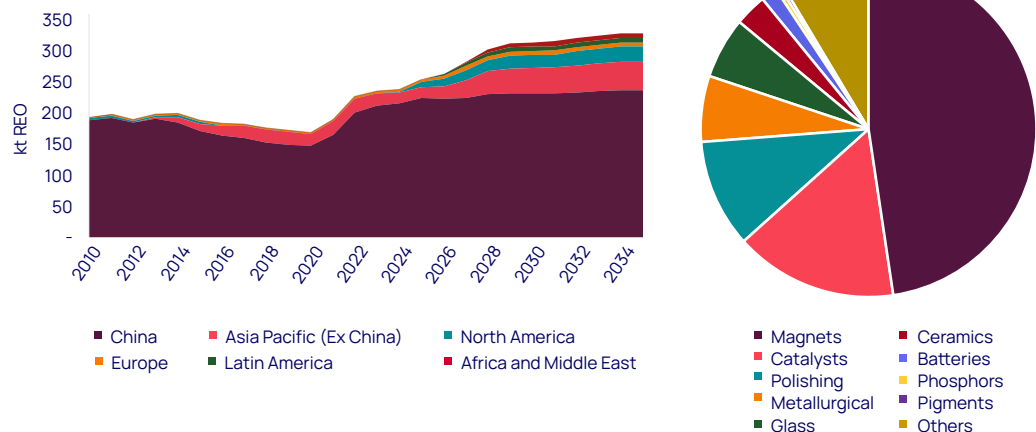
As our second chart highlights, rare earth elements are used in a wide range of niche applications, with magnets

China's capture of almost 90% of the world's refined rare earths supply put it in prime trade-negotiating position

accounting for almost half of all use, followed by catalysts, polishing powders and metallurgical applications. Beneath these lurk critical applications in renewable power generation, weapons systems, space technologies and all manner of electronic and semiconductor systems. A map of the myriad applications charts a path to the very heart of the modern high-tech economy.

China's capture of almost 90% of the world's refined rare earths supply put it in prime trade-negotiating position. To all intents and purposes, the US entered the talks with one arm tied behind its back. In a twist of fate, the US had been the world's leading producer of rare earth elements until the late 20th century.

Figure 2:
Rare earth elements refined supply outlook (left) and rare earth applications (right)



Source: Wood Mackenzie, Rare Earths Market Service

3. National value destruction in the UK North Sea

We showed the third chart in our end-of-year selection to a seasoned oil and gas industry professional, who just sighed, shook their head and said, 'devastating'.

To understand their comment, we must first explain what the chart shows. Among the many metrics that our [corporate team](#) calculates for each oil and gas transaction is the oil price implied by the deal value, based on Wood Mackenzie's field-by-field cash-flow models. Put another way, this is the Brent price at which the deal consideration equals our calculation of the NPV10 (net present value using a 10% forward discount rate) for the assets transacted, what we call the 'implied long-term oil price' (ILTOP).

The chart looks back over the last few years, showing the ILTOP range across Organisation for Economic Co-operation and Development (OECD) countries. The average is roughly US\$70 per barrel. There is, however, an egregious outlier, namely, the UK, which is charting (pun intended) a course around the US\$40 a barrel mark. So, what's the story?

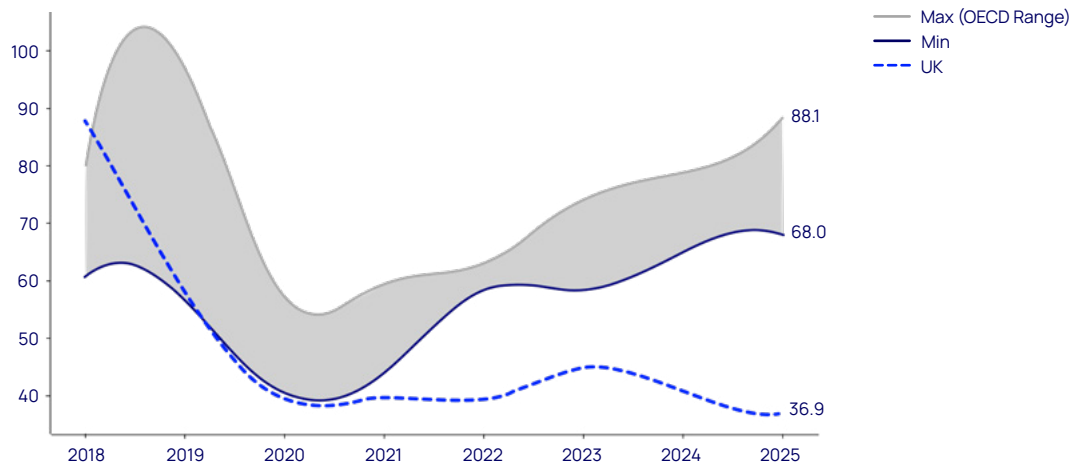
Anyone investing for the long term will tell you that the one thing they prize above

all else is certainty. In oil and gas, fiscal and regulatory certainty are top of that list. Successive UK governments have provided a masterclass in how to entrench uncertainty, sow speculation and create an un-investible environment. If you want to know what five major changes to the fiscal system in two and a half years mixed with regulatory uncertainty look like, just take a look at this chart.

The UK's whopping 40% ILTOP discount reflects the upstream industry's declining interest in the UK oil and gas sector and is an illustration of how value has been destroyed in a short space of time.

Moreover, the real-life consequences of this are being played out in redundancies across the industry. Simply put, if companies do not invest, there is less work. There are those who understandably welcome the demise of the oil and gas industry because it will reduce domestic emissions, however, as the UK is a net oil importer, effectively outsourcing its emissions to other countries, this approach is far from progressive. And for anyone employed in the UK oil and gas business there is just one word for it: devastating.

Figure 3:
Implied long-term oil price (ILTOP) for OECD countries and the UK (US\$/barrel)



Source: Wood Mackenzie, M&A Service

4. Petrochemical clear-out: Europe's declining capacity in a hot growth sector

Europe is cleaning up its environmental act and driving down emissions. This transition is most apparent in the growth of renewable energy, which is displacing hydrocarbon-based power generation. On a less positive note, however, Europe is also reducing its emissions through de-industrialisation.

Of course, de-industrialisation is not an explicit policy, but when emissions reduction is the guiding principle, there will be industrial casualties along the way. This might be palatable if Europe were making a real difference to global emissions, but its industrial activity is simply being transferred to other parts of the world.

Our fourth chart shows global [ethylene](#) manufacturing capacity, with the bars below the x-axis indicating closures and those above the line depicting net capacity additions. Look more closely and you'll notice that capacity is being lost in Europe. Altogether more obvious, meanwhile, is the growth being seen in China.

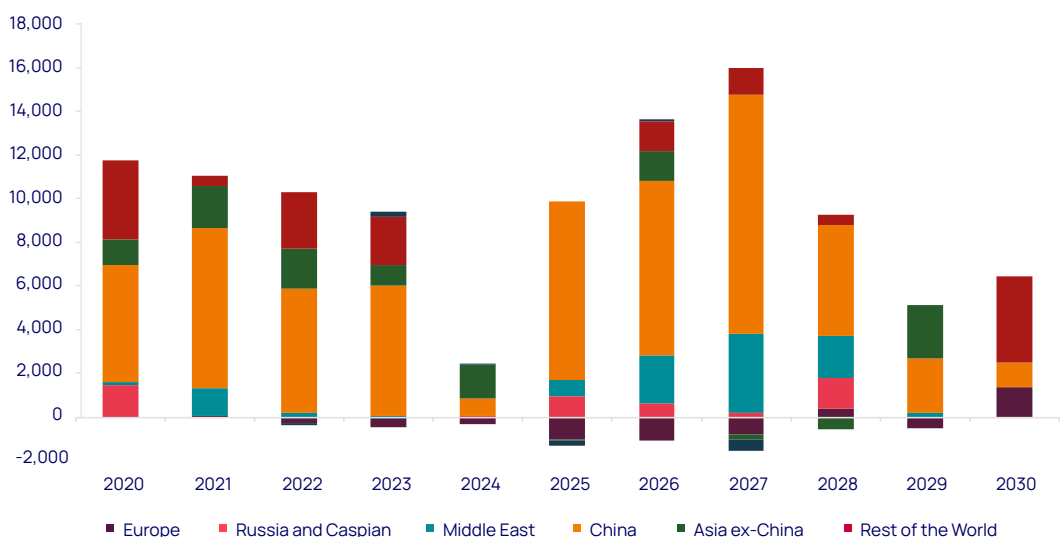
The chart could be seen as a triumph of territorial emissions reduction, but

it is also a signpost of Europe's rapid de-industrialisation. The chemical industry is foundational to any modern economy, providing the building blocks and materials used to manufacture thousands of products that support modern living. Beyond considerations about sustaining domestic supply, it is helpful to try to quantify this in the form of something more relatable than ethylene capacity and industrial supply chains.

If we consider the economic impact of the lost ethylene capacity that the plant closures between 2022 and 2027 represent, then it is an annual loss of about US\$4 billion in gross value added to the European economy. Beyond that, there is the human and opportunity cost – the loss of chemical engineering skills and expertise, coming right when Europe needs to maintain its skills base to unlock future low-carbon fuel production, such as sustainable aviation fuel, biodiesel, green ammonia and e-fuels.

Indeed, around the time of writing, ExxonMobil announced the closure of Europe's fourth-largest plant by capacity, the Fife Ethylene Plant in Scotland, after 40 years of operation. More than 400 people will lose their jobs, with tremors rippling through the UK's industrial estate and supply chains.

Figure 4:
Global ethylene
capacity change
by region (kt)



Source: Wood Mackenzie Chemicals

5. Power up: the engine of AI growth

Our colleagues' fevered brows suggest that Wood Mackenzie's power research and consulting teams have had a busy year, working with a range of clients, including power, technology and investment companies. The megatrend driving the surge of interest in the power markets, and a permanent feature of the news in 2025, is, of course, artificial intelligence (AI).

Projected growth in AI is propelling [power demand](#), especially in the leading growth markets of the US and China. The US power market has been a low-growth zone in recent decades but is picking up momentum and set to grow at a compound rate of 2% for the foreseeable future. A key subsector driving this growth is AI-driven power demand, which is forecast to grow at a massive compound rate of 20% to 2030.

Our fifth and final chart plots national power prices against the wind and solar share of power generation, with the bubbles representing the size of the country's power market in 2024. If ever there were an example of a picture painting a thousand words, this is it.

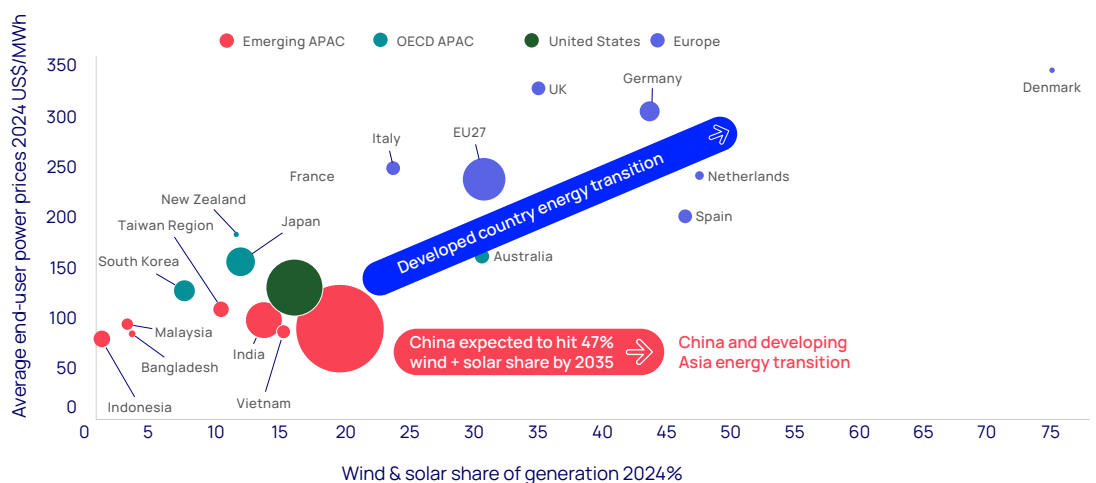
Wood Mackenzie looks at the world through a lens of energy and resources - and so it is with

AI. Those multicore processors in servers in [data centres](#) are churning away, answering all the important questions, like 'What follows lanthanum and osmium in Tom Lehrer's *The Elements*?' The billions of computations required to come up with 'astatine' need power.

Anyone who has experienced the proliferation of AI across schools, offices, industry and society will have a visceral sense of why this is turning the power market on its head. Indeed, typically about half of a data centre's operating costs are power. Looking at it from this perspective, one wonders how those countries in the top quartile of the chart will fare in the AI race. Europe's economic disadvantage as a result of high power prices is all too apparent.

The other thing this chart eloquently frames is the competition between the US and China. China's mastery of renewable technology manufacturing has driven down renewables' costs globally, but none more so than in China itself. With China forecast to have 47% of its power generation from wind and solar by 2035, power prices are likely to remain suppressed for some time. For the US, the trajectory may be somewhat different, especially given the growing call on gas-fired power, combined with rising gas prices and the rapid inflation of build costs for new power plants.

Figure 5:
End-user power prices vs the wind and solar share of generation, by country



Note: Bubble size represents size of the power market in 2024

Source: Wood Mackenzie, Lens Power

Conclusion

Our global teams will be tracking all of these developments closely as we head into the new year. What is evident is the clear need to understand the connected nature of the energy world to navigate whatever comes next. To find out more about how to thrive in an interconnected world, why not check out Wood Mackenzie's [Intelligence Connected](#), powered by human expertise and [AI-enhanced](#) analytics.

We would like to wish our Horizons readers the very best for the holiday season and 2026.



Wood Mackenzie™, is a trusted intelligence provider, empowering decision-makers with unique insight on the world's natural resources. We are a leading research and consultancy business for the global energy, power and renewables, subsurface, chemicals, and metals and mining industries. For more information visit: **woodmac.com**

WOOD MACKENZIE is a trademark of Wood Mackenzie Limited and is the subject of trademark registrations and/or applications in the European Community, the USA and other countries around the world.

Europe:	+44 131 243 4400
Americas:	+1 713 470 1600
Asia Pacific:	+65 6518 0800
Email:	contactus@woodmac.com
Website:	www.woodmac.com

Disclaimer

These materials, including any updates to them, are published by and remain subject to the copyright of the Wood Mackenzie group ("Wood Mackenzie"), and are made available to clients of Wood Mackenzie under terms agreed between Wood Mackenzie and those clients. The use of these materials is governed by the terms and conditions of the agreement under which they were provided. The content and conclusions contained are confidential and may not be disclosed to any other person without Wood Mackenzie's prior written permission. Wood Mackenzie makes no warranty or representation about the accuracy or completeness of the information and data contained in these materials, which are provided 'as is'. The opinions expressed in these materials are those of Wood Mackenzie, and nothing contained in them constitutes an offer to buy or to sell securities, or investment advice. Wood Mackenzie's products do not provide a comprehensive analysis of the financial position or prospects of any company or entity and nothing in any such product should be taken as comment regarding the value of the securities of any entity. If, notwithstanding the foregoing, you or any other person relies upon these materials in any way, Wood Mackenzie does not accept, and hereby disclaims to the extent permitted by law, all liability for any loss and damage suffered arising in connection with such reliance.