BDO

Oil and Gas
Annual Report

October 2024

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Executive summary

Matt Crane
Partner, Head of Natural Resources and Energy

UK oil and gas companies have a pivotal role to play in the strategic direction of future UK energy policy and its impact on both the domestic green energy transition but also on the global stage.

This report highlights the investment activities and technological advancements of UK oil and gas companies, as well as their international operations. It emphasises the importance of global sustainability trends and the political and regulatory environment impacting the industry. Notably, UK-based oil and gas majors are responsible for 5.2GW of renewable capacity in operation and have 98.5GW in the pipeline. Additionally, only a few of the largest UK-based oil and gas companies experienced revenue growth highlighting the turbulence and uncertainty in the market. North Sea producers are focusing on consolidation and geographical diversification due to the UK's windfall tax, with major companies like Shell withdrawing from the ageing basin and selling assets to smaller producers. Independent producers are faced with further uncertainty over government energy policy and the investment proposition of the North Sea.

Throughout the report, we've identified three key growth opportunities for UK-based oil and gas companies:

1. **Decarbonisation and Energy Transition:** Decarbonisation and energy transition options are crucial for the future of UK companies. Despite considerable energy challenges, confidence among oil and gas industry leaders is at a five-year high, with 68% expressing optimism about sector growth in the coming year. Companies need to balance the rising demand for petroleum products with the pressure to shift towards low-carbon energy sources.
2. **Adapting to a Less Carbon-Intensive Energy Mix:** As of 2024, 55% of oil and gas professionals indicated an active adaptation to a less carbon-intensive energy mix, while 51% plan to redirect their strategy towards opportunities beyond the oil and gas sector in the following year.
3. **Enhancing Operational Performance:** Enhancing operational performance, particularly by increasing investments in energy efficiency, remains a top priority for oil and gas companies in 2024. This includes advancing the adoption of technological innovations.

Key findings

Global oil and gas consumption is forecasted to peak by 2030 as road transport's market share shrinks.

Investments in clean energy are nearly double those in fossil fuel globally despite regional disparities.

Despite global upstream oil and gas capex growing, the UK will see decommissioning costs dominate by 2029.

In 2023, only the largest UK-based oil and gas firms increased their revenues.

As of 2024, 55% of oil and gas professionals indicated an active adaptation to a less carbon-intensive energy mix.

UK-based oil and gas majors are accountable for 5.2GW of renewable capacity in operation and 98.5GW in the pipeline.

Furthermore, UK oil and gas decommissioning expenditures are expected to surpass capital expenditures by 2029, driven by the energy transformation in the North Sea. Persistent inflation and economic slowdown in key economies are also expected to slow oil demand growth, with global economic growth projected to continue at a modest pace in 2024. Whilst this poses a capital threat to the producers there is economic upside for the service industries that support the Oil and Gas industry.

In these times of economic turbulence and policy uncertainty, BDO is here to help you navigate the challenging demands on your business. We can assist you in establishing or improving your corporate reporting, particularly in ESG and decarbonisation. Whether you're planning a transaction or seeking funding or investment, our experienced Oil and Gas Transaction Services team has invaluable market knowledge.

Our Tax team offers expert advice on corporate structuring, payroll tax compliance, and R&D tax incentives. Our Commercial Advisory experts can help you enhance your supply chains and manage key contracts effectively. As part of the UK's fifth-largest accounting and business services firm, our Oil and Gas team are ready to help you successfully navigate any opportunities and challenges you face.

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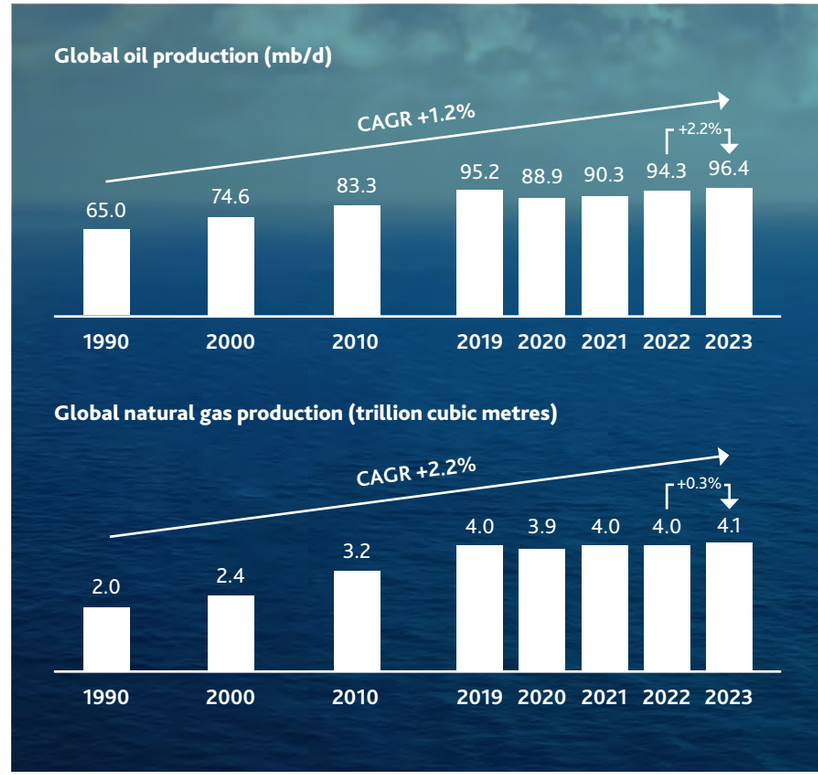
Global oil production reaches pre-pandemic levels amid slower gas production growth

Global oil production reached a record high in 2023. Increased output from the USA, Brazil and Iran outweighed OPEC+ production cuts. Although the Middle East continued to be the leading oil-producing region, its share of the global supply declined by 1.3%, while North America's rose by 1.2%. The minor growth in natural gas production in 2023 was driven by an increase in US production which offset Russia's reduced output. Europe saw the highest decline in natural gas production.



Regional breakdown of oil and natural gas production in 2023

Top 5 countries

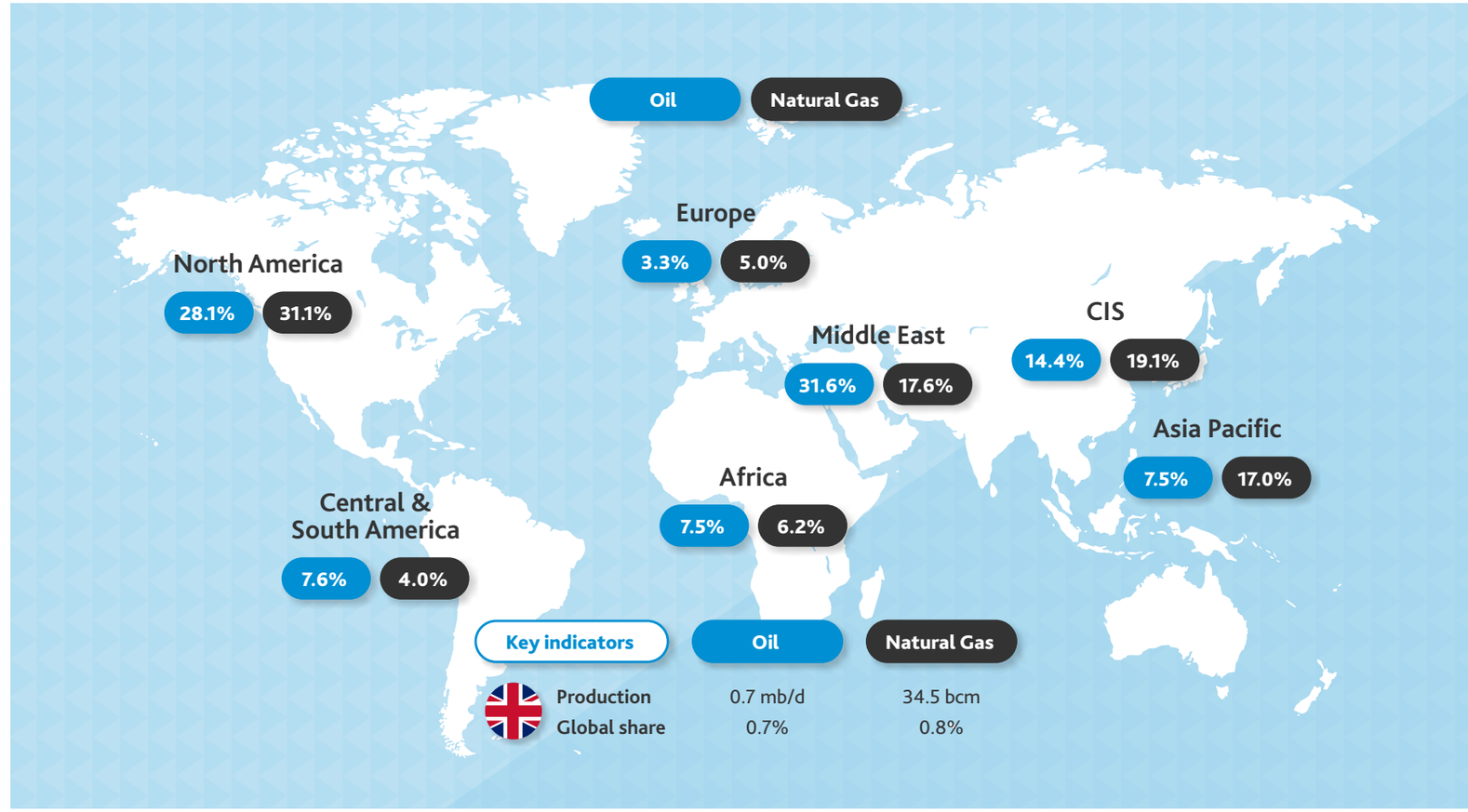
By oil production (mb/d)

USA	19.4	▲
Saudi Arabia	11.4	▼
Russia	11.1	▼
Canada	5.7	▲
Iran	4.7	▲

By natural gas production (bcm)

USA	1,035.3	▲
Russia	586.4	▼
Iran	251.7	▲
China	234.3	▲
Canada	190.3	▲

▲ YoY increase ▼ YoY decrease



Exploration activities experience lower discoveries

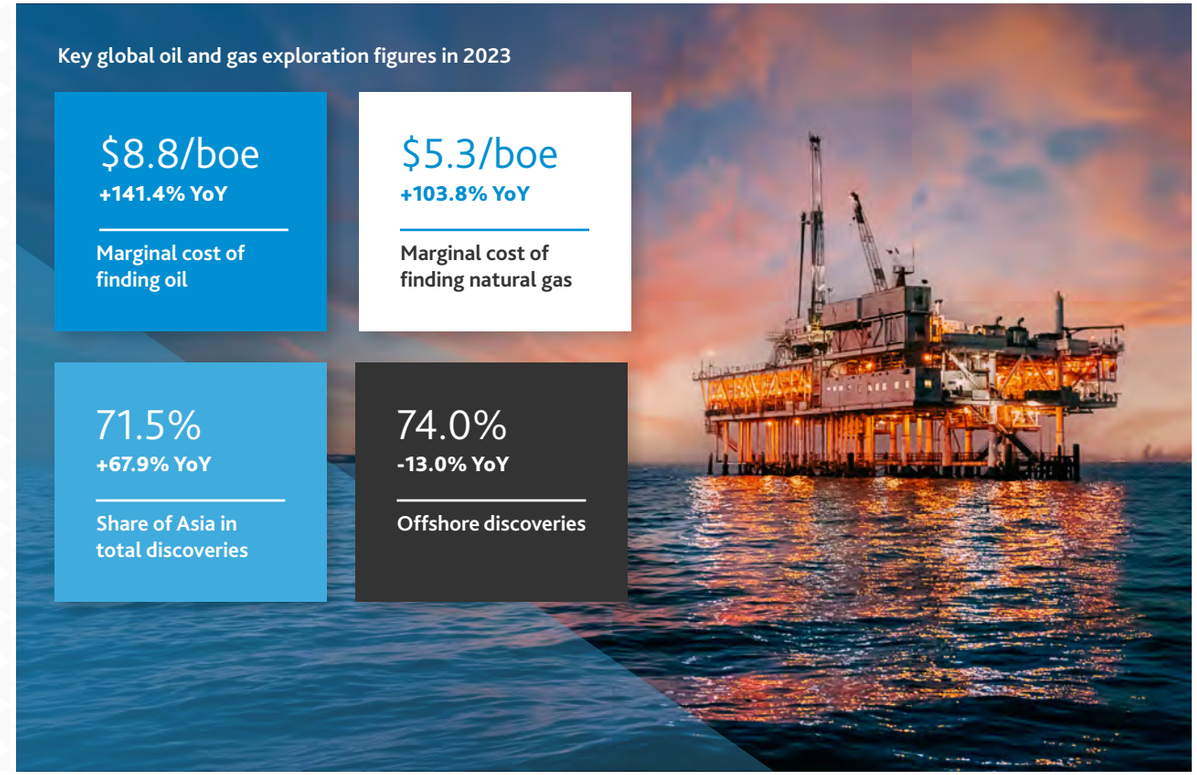
In 2023, 19 new oil and gas field discoveries amounted to 7.7 billion boe. This is 35% down from 2022. The decrease caused a significant rise in the marginal costs of finding oil and gas which was exacerbated by disappointing results in some key offshore wells. Surprisingly, Cyprus, Guyana, Namibia and Zimbabwe, that have produced little or no oil and gas before, accounted for about 37% of the total volumes discovered in 2022-2023. Global exploration spending are expected to average $22bn annually over 2023-2027, with the most significant growth opportunities in deepwater and ultra-deepwater projects.

Reservoir optimisation helps maximise output

The oil and gas industry can and has improved production efficiency by leveraging AI, ML and digital twins to optimise drilling, well placements and production strategies. Data-driven approaches also enable more accurate predictions and early issue detection.

Refineries require diversification

Over 20% of global oil refining capacity will face closure risks due to weak refining margins and increasing carbon costs by the late 2020s. Europe has the sites most at risk. Refinery optimisation through resource-saving strategies, integration of advanced technologies and conversion into biofuels and renewable diesel could prove crucial for future operations. The global refining industry is forecast to spend $148bn on decarbonisation by 2050 with 48% allocated to carbon capture.



Source: Enerdata website; IEA website; Reuters website; Wood Mackenzie website; S&P website; Energy Institute, Statistical Review of World Energy (2024); IEA, World Energy Outlook (2023); IEA, Oil Market Report (2023); Global Energy Monitor, Global Oil And Gas Extraction Tracker (2024); GECF, Annual Gas Market Report (2024); Wood Mackenzie, Global refinery closure threat update (2024); Media overview.

In H1, natural gas prices stabilised while certain geopolitical factors affected oil prices

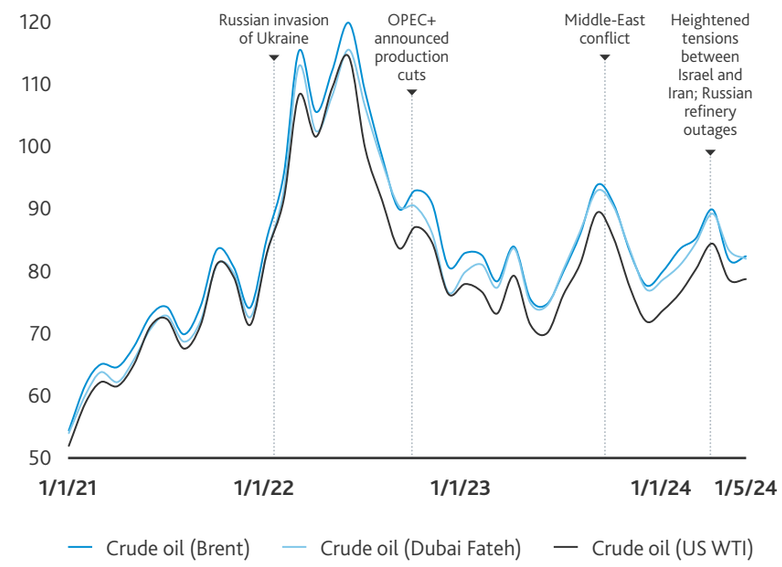
The Middle East dominated the export of oil with Saudi Arabia remaining the largest exporter in 2023.

The shift of oil and natural gas trade patterns after the Russian invasion of Ukraine continued in 2023; China and India again increased their import of oil from Russia while Europe reduced its intake. China has maintained its position as the leading oil importer in 2023, increasing its imports by 11.0% YoY. Its main sources are Russia, Iran, Brazil, and the USA. The USA emerged as the leading exporter of LNG worldwide in 2023 overtaking both Australia and Qatar. This is largely due to the return to service of Freeport LNG[1] and strong demand for LNG from Europe amid elevated international natural gas prices. China overtook Japan and became the largest importer of LNG in 2023.

Global natural gas trade volume amounted to **936.9 bcm in 2023**, **down 2.6% YoY**.

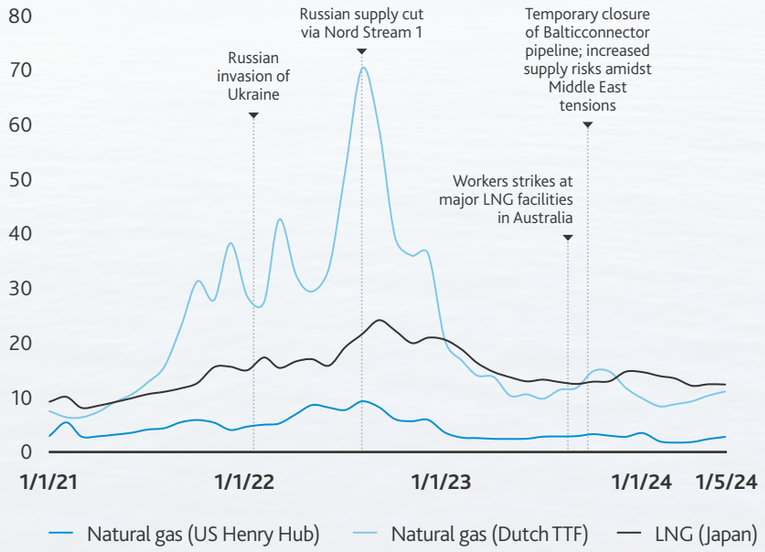
Global crude oil trade stood at **68.1 mb/d in 2023**, marking a slight **YoY decrease of 0.4%**.

Crude oil price ($ per barrel)



In 2023, the Brent crude oil price averaged around $83 per barrel, $17.2 down from 2022, but remained volatile. Oil prices fell to weak global economic activity, high production in the USA and steady exports from Russia. In mid-2023, OPEC+ extended its oil production cuts and there were additional voluntary production reductions by Saudi Arabia. Coupled with record low levels of US commercial crude oil inventories, this contributed to a rise in crude oil prices. In mid-December 2023, multiple attacks on shipping vessels in the Red Sea and wider geopolitical tensions forced oil prices upwards again. Many ships were rerouted and insurance rates increased. In April 2024, oil prices eased as concerns about a wider Middle East conflict diminished and softer macroeconomic conditions influenced market sentiment.

Gas price, $ per million British thermal units (MMBtu)



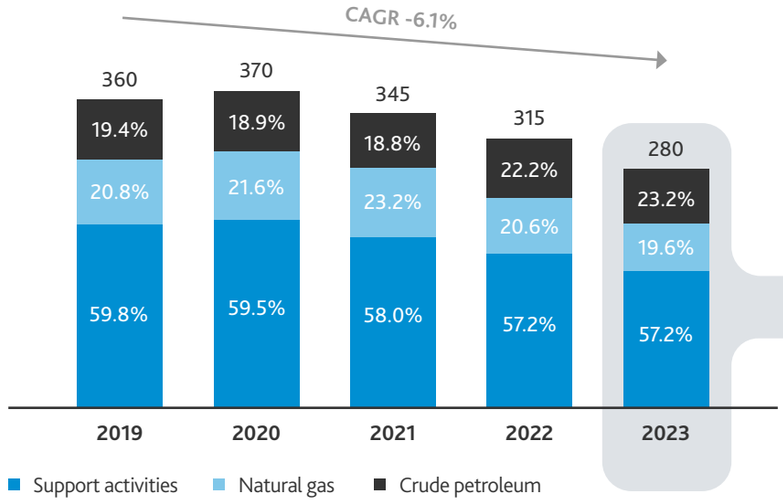
The US Henry Hub price averaged $2.5 per MMBtu in 2023, down 60.1% compared to 2022. This was mainly due to record-high natural gas production in the USA that outpaced growth in consumption, and rising natural gas inventories. The natural gas price in Europe was higher than in the USA, averaging $13.1 per MMBtu, representing a 67.5% YoY decline. The fall primarily reflected warmer than average temperatures and a drop in both industrial and domestic demand for natural gas. In September-October 2023, the prices began to rise because of reduced supply in Europe and increased demand in Asia, increased geopolitical risks in the Middle East and the shutdown of the Balticconnector gas pipeline.[2] Strikes at major LNG projects in Australia caused volatility in the LNG Japan price in the second half of 2023.

Source: EIA website; Energy Institute, Statistical Review of World Energy (2024); World Bank, Commodities Price Data (The Pink Sheet), (July 2024); Media overview.
Notes: (1) Producer and exporter of LNG located in Texas, USA; (2) Bi-directional natural gas pipeline between Finland and Estonia.

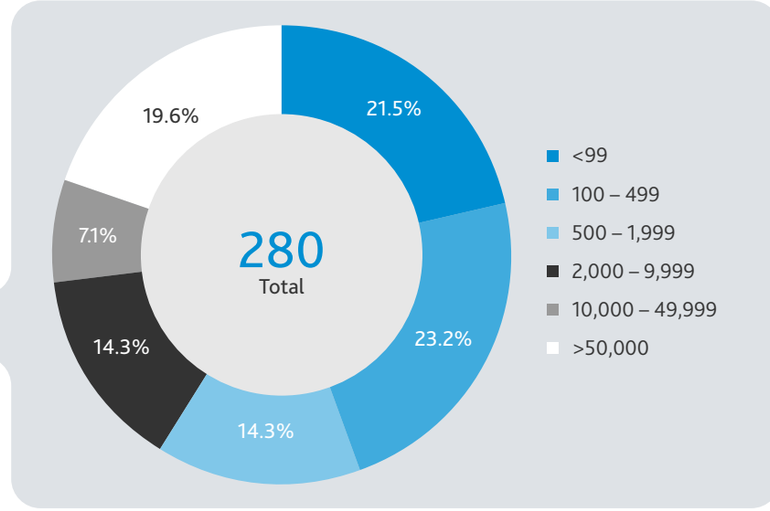
Decline of UK oil and gas extraction businesses and the sector's GVA

The extractive oil and gas industry plays a significant role in the UK economy, contributing approximately $13.2bn[1] to the gross value added (GVA) in 2023, 38.9% down from 2022. Mining support services[2] brought in an additional $2.0bn[1] and the industry was directly responsible for 30,000 jobs in 2023. However, the total number of enterprises dropped over 2019-2023. The most notable decline was among small enterprises with a turnover of less than £499k which saw a fall of 36.8%.

Number of enterprises in petroleum and gas extraction in the UK

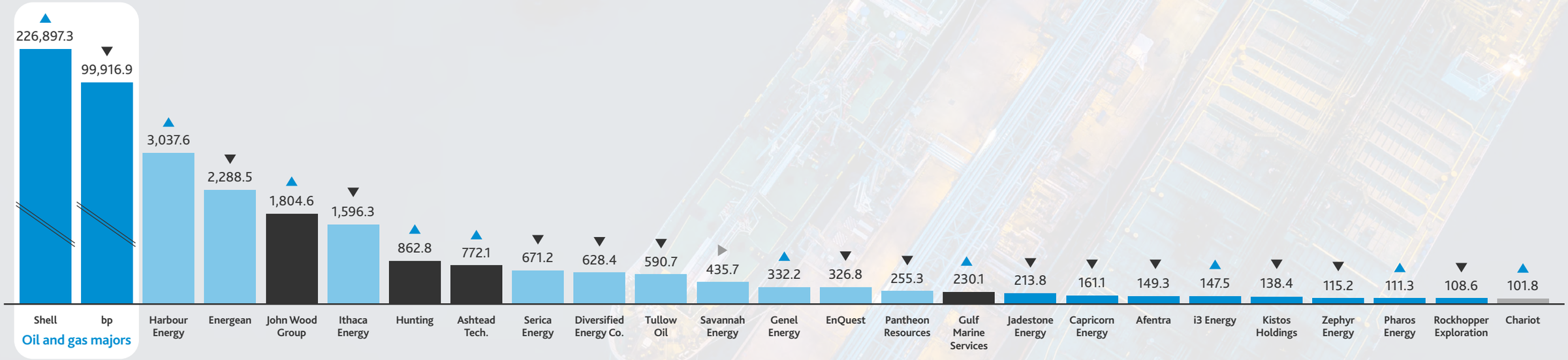


Enterprises in petroleum and gas extraction in the UK by turnover size bands in 2023 (£k)



As of 30 June 2024, there were 28 UK-based energy companies on the London Stock Exchange (LSE) with a market capitalisation exceeding $100m. The total market capitalisation of these 28 largest energy sector players amounted to $342.8bn[1], an increase of 4.2% compared to the 2023 year-end. The market capitalisation of 16 of these companies actually fell. Crude oil producers constituted the largest group in the selection and integrated oil and gas companies Shell and bp are among the Top-10 largest companies in the UK.

Largest oil and gas companies listed on the LSE by market capitalisation as of 30 June 2024 ($m[1,3])



Source: UK EITI website; London Stock Exchange website; Office for National Statistics, UK business: activity, size and location (2023); GOV.UK, Business population estimates (2023); Office for National Statistics, GDP output approach: low-level aggregates (2023); Media overview

Notes: (1) The numbers are converted from GBP to USD due to the average exchange rate by the FRED; (2) Includes support activities for petroleum, natural gas extraction, and for other mining and quarrying due to the absence of the further GVA breakdown; (3) The chart excludes energy companies listed in Alternative Fuels and Renewable Energy Equipment subsectors. For the further analysis, 15 largest companies by market capitalisation from the subsectors Integrated Oil and gas, Oil: Crude Producers, and Offshore Drilling and Other Services with registered offices and / or headquarters in the UK were selected upon the availability of comparable information. Hereinafter, the selection is referred to as the largest UK-based oil and gas companies.

Revenue growth limited for the largest UK-based companies in 2023

In 2023, the majority of the largest UK-based oil and gas companies experienced a fall in revenue. Genel experienced the steepest decline of 78.9% YoY caused by the suspension of Iraq- Türkiye pipeline exports. Energean saw revenue growth of 92.7% YoY as it doubled production. Serica Energy achieved a solid production growth of 53.1% YoY through the acquisition of Tailwind Energy in March 2023. Finally, Savannah Energy's revenue grew by 5.5% YoY due to increased gas prices.

Overview of oil and gas majors' operations in 2023

Shell and bp have an extensive presence globally. Asia dominates gas production for both companies in 2023. South America accounted for the largest share of Shell's oil production, while bp relies on oil production in North America. Lower realised oil and gas prices and volumes affected Shell's revenue. A drop in production due to divestments was partly offset by the growth from new fields. bp's decrease in production was partly associated with the decrease in equity-accounted entities due to the company's exit from its Rosneft shareholding.

	Revenue ($bn)		Production (kboe/d)		Reserves (mboe)	
Shell	316.6	▼(-17.0%)	2,791	▼(-2.5%)	9,787.0	▲ +2.2%
bp	210.1	▼(-13.0%)	2,313	▼ (-5.1%)	6,759.0	▼ (-5.9%

▲ YoY increase ▼ YoY decrease

Top 3 production locations[1]

	Crude oil and NGL (kb/d)			Natural gas (scf/d)		
Shell	BR 375	US 309	OM 227	AU 1,918	TT 548	MY 476
bp	US 423	AE 197	AO 86	US 1,486	EG 1,220	TT 1,191

Overview of large independent oil and gas companies' operations in 2023

Top 5 by revenue in 2023 ($bn)

Harbour Energy	3.7 ▼	(-31.1%)
Ithaca Energy	2.3 ▼	(-10.7%)
Tullow Oil	1.6 ▼	(-8.4%)
EnQuest	1.5 ▼	(-19.8%)
Energean	1.4 ▲	+92.6%

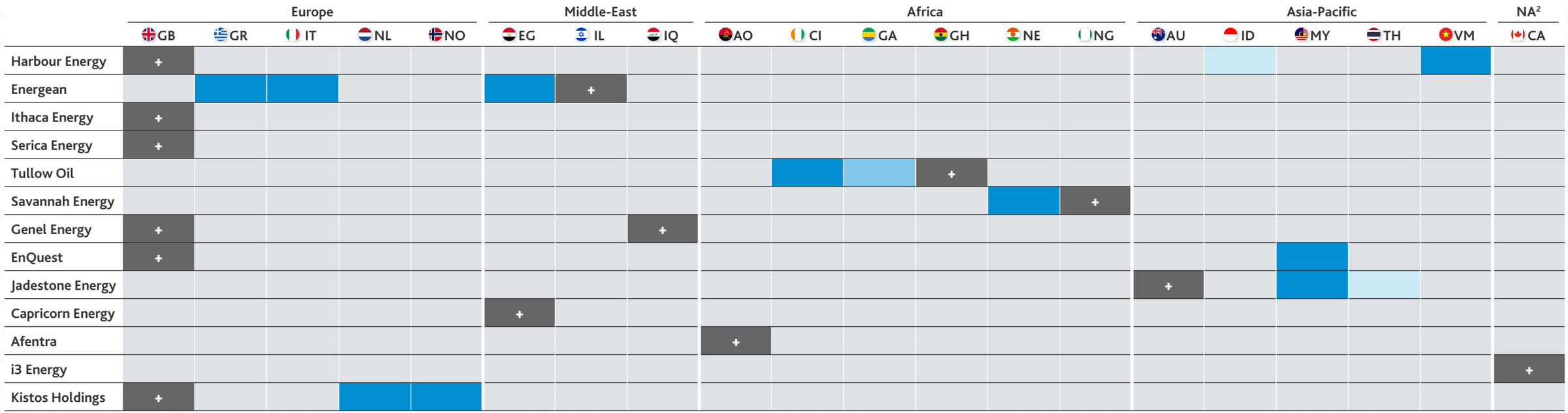
Top 5 by oil and gas production in 2023 (kboe/d)

Harbour Energy	186.0 ▼	(-10.6%)
Energean	123.0 ▲	+200.0%
Ithaca Energy	70.2 ▼	(-1.7%)
Tullow Oil	62.7 ▲	+2.6%
EnQuest	43.8 ▼	(-7.3%)

Top 5 by reserves in 2023 (mmboe)

Energean	1,337.0 ▼	(-3.0%)
Tullow Oil	937.0 ▲	+12.4%
Harbour Energy	880.0 ▲	+1.7%
EnQuest	564.0 ▼	(-3.3%)
Ithaca Energy	544.0 ▲	+6.3%

Production locations of the UK-based large independent oil and gas companies in 2023



Source: Companies' annual reports; Media overview.

Notes: (1) As Shell did not disclose daily production data, the values were calculated by dividing the total of thousand barrels (for oil and NGL) and million standard cubic feet (for natural gas) by the number of calendar days in 2023; (2) North America; (3) Shown in cases if the company does not provide the split of oil and gas production.

Producers in the North Sea are pursuing consolidation and geographical diversification strategies

As the UK's windfall tax puts pressure on profits, major integrated oil and gas companies such as Shell, are gradually withdrawing from the ageing North Sea basin by selling assets to smaller producers. Independent oil and gas companies are consolidating operations and reducing reliance on the UK and diversifying by exploring opportunities in neighbouring North Sea countries and further afield. Recent company announcements highlight hydrocarbon discoveries in global locations such as Indonesia.

M&A Activity

- **Nov 2023** — Ithaca Energy completed the acquisition of the remaining 30.0% stake in Cambo field from Shell.
- **Dec 2023** — Harbour Energy announced the acquisition of Wintershall Dea's upstream assets in various countries.[1]
- **Mar 2024** — Savannah Energy agreed to buy Sinopec's 49.0% stake in the Stubb Creek oilfield in southern Nigeria.
- **Apr 2024** — Ithaca Energy announced a merger with substantially all of Eni S.p.A's UK upstream oil and gas assets.

Divestments & country exits

- **Jan 2024** — Shell agreed to sell its Nigerian subsidiary to Renaissance to exit onshore operations in the Niger Delta.
- **Mar 2024** — Capricorn Energy announced an exit from non-core exploration positions in Mauritania, Mexico, and Suriname.
- **May 2024** — Shell plans to sell the UK North Sea gas fields jointly-controlled with Exxon Mobil to Viaro Energy.
- **Jun 2024** — Energean entered into an agreement to sell its portfolio in Egypt, Italy, and Croatia to investment firm Carlyle.

Discoveries of oil and gas

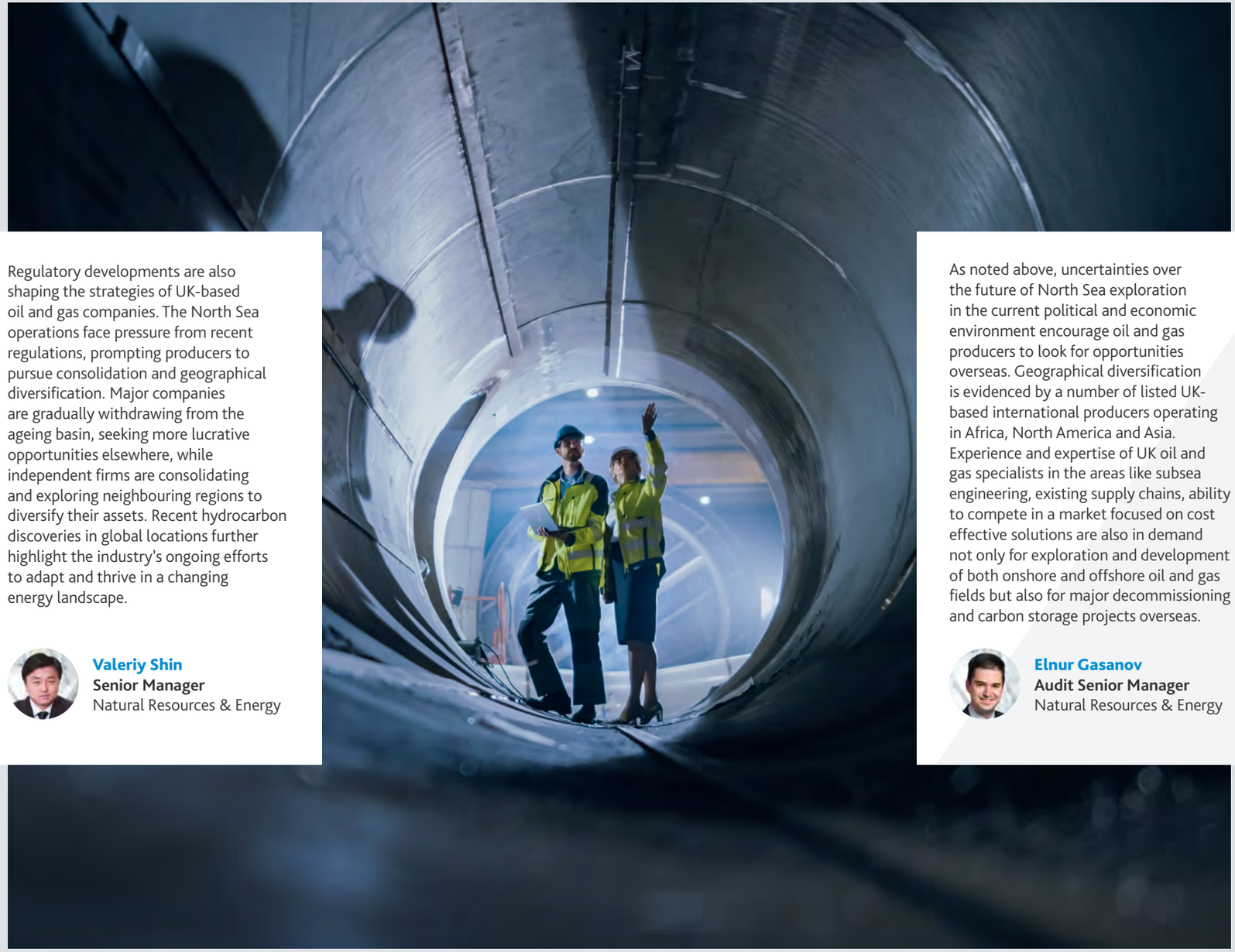
- **Dec 2023** — Harbour Energy informed about the significant gas discovery at Layaran-1 well, Indonesia.
- **Mar 2024** — Harbour Energy made a new gas discovery in the North Sea off the coast of Norway.
- **Apr 2024** — Shell has made a hydrocarbon discovery in Enigma-1X, its sixth exploration well offshore Namibia.
- **May 2024** — Harbour Energy announced a substantial gas discovery from the Tangkulo-1 well, Indonesia.

Approvals & start of production

- **Mar 2024** — Jadestone Energy plans to start the Akatara gas development project onshore Indonesia.
- **Apr 2024** — Energean completed the farm-in deal with Chariot in Morocco, planning to drill the appraisal well in Q3 2024.
- **Apr 2024** — EnQuest plans to start drilling two sites in the largest oil field found in the North Sea in two decades.
- **May 2024** — Serica Energy received approval from NSTA to develop Belinda field in the central North Sea.

Source: Reuters website; Companies' websites; Companies' annual reports; Media overview.

Notes: (1) Norway, Germany, Denmark, Argentina, Mexico, Egypt, Libya, and Algeria, as well as Wintershall Dea's CO_2 Capture and Storage licences in Europe.



UK-based oil and gas companies are at a key stage, balancing the need for traditional energy production with the urgent call for decarbonisation. Despite the challenges, most industry leaders remain optimistic about future growth. A significant portion of professionals in the sector are actively adapting to a less carbon-intensive energy mix and exploring opportunities beyond oil and gas. Enhancing operational performance through increased investments in energy efficiency is a top priority for the coming year.

The role of the oil and gas industry in the energy transition is crucial. Natural gas, with its lower carbon emissions compared to other fossil fuels, can support the integration of renewables. UK-based oil and gas majors are already contributing significantly to renewable capacity, with substantial projects in the pipeline. Given the similarity in skills and equipment required, the industry is also focusing on reskilling and upskilling its workforce to align with the evolving energy landscape.

Renewable power generation is becoming a key focus for these companies. Larger players are investing in solar, wind, hydrogen, and biofuels, while also diversifying into low-carbon businesses like battery packs and grid-balancing technologies. Smaller competitors are setting ambitious goals for net-zero emissions and actively working towards reducing their carbon footprint.

Regulatory developments are also shaping the strategies of UK-based oil and gas companies. The North Sea operations face pressure from recent regulations, prompting producers to pursue consolidation and geographical diversification. Major companies are gradually withdrawing from the ageing basin, seeking more lucrative opportunities elsewhere, while independent firms are consolidating and exploring neighbouring regions to diversify their assets. Recent hydrocarbon discoveries in global locations further highlight the industry's ongoing efforts to adapt and thrive in a changing energy landscape.

Valeriy Shin
Senior Manager
Natural Resources & Energy

As noted above, uncertainties over the future of North Sea exploration in the current political and economic environment encourage oil and gas producers to look for opportunities overseas. Geographical diversification is evidenced by a number of listed UK-based international producers operating in Africa, North America and Asia. Experience and expertise of UK oil and gas specialists in the areas like subsea engineering, existing supply chains, ability to compete in a market focused on cost effective solutions are also in demand not only for exploration and development of both onshore and offshore oil and gas fields but also for major decommissioning and carbon storage projects overseas.

Elnur Gasanov
Audit Senior Manager
Natural Resources & Energy

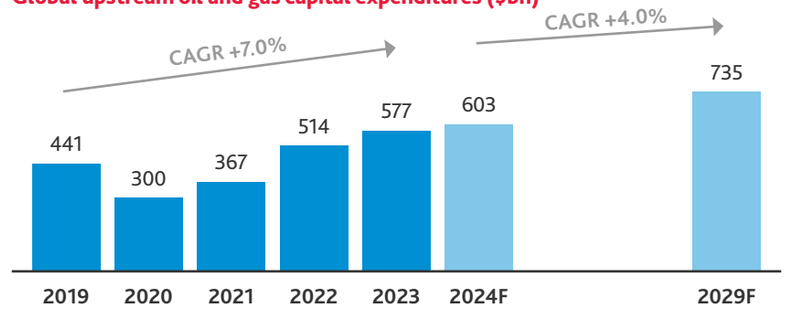
North America expected to drive global oil and gas capex by 2030

In 2024, global upstream oil and gas capex is expected to break $600bn, its highest level since 2014. North America dominates with a 34% share of global capital expenditure. It is expected to add $77bn of investments by 2030, more than all other regions combined. This will take North America's share of global capex to 38%. Latin America is the primary growth factor in 2024, driven mainly by substantial deepwater projects in Brazil and Guyana. North American growth will be driven by robust activity in the US shale especially in the Permian Basin. Europe's capex stands at $33bn in 2024, representing just 5.5% of global capex. It is expected to rise by just $6bn for a 5.3% share of total capex by 2030. UK oil and gas capex is forecast to fall by 2029 as it is replaced by investments in offshore wind and other renewables.

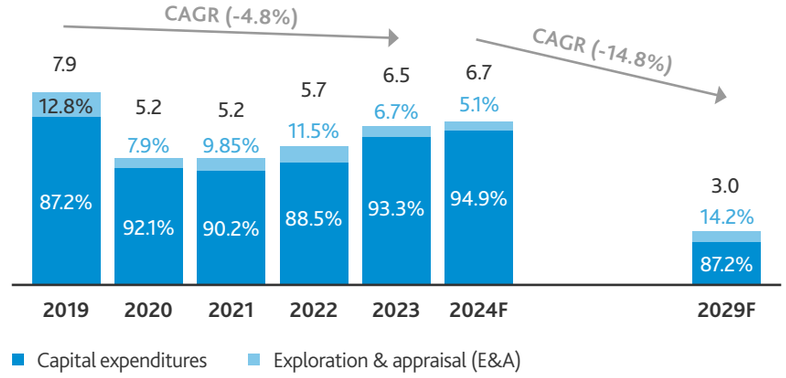
$3.2bn[1]
in 2029

UK oil and gas decommissioning expenditure is expected to overtake capex in 2029 due increasing role of renewables and the massive energy transformation in the North Sea. About 2,150 wells will be decommissioned by 2032.

Global upstream oil and gas capital expenditures ($bn)



UK oil and gas capital expenditures and E&A ($bn)[1]



Capital expenditures of the largest UK-based oil and gas companies in 2023 ($m)

Oil and gas majors

Shell	24,392.0	(-1.8%) ▼
bp	16,253.0	(-0.5%) ▼

Large independent oil and gas companies

Harbour Energy	969.0	+6.7% ▲
Energean	544.0	(-37.5%) ▼
Ithaca Energy	478.8	+25.8% ▲
Tullow Oil	380.0	+7.3% ▲
EnQuest	211.1	+20.8% ▲
Capricorn Energy	140.0	(-13.6%) ▼
Kistos Holdings[2]	128.7	+511.0% ▲
Jadestone Energy	115.9	+39.8% ▲
Serica Energy[1]	97.3	(-20.0%) ▼
Genel Energy	68.0	(-52.5%) ▼
i3 Energy[1]	30.4	(-72.1%) ▼
Savannah Energy	13.0	(-44.9%) ▼
Afentra	3.4	+1,973.5% ▲

▲ YoY increase ▼ YoY decrease

Ongoing focus on conventional investments

Oil and gas companies continue to prioritise investments in traditional fossil fuel activities. For example, Shell is allocating 83% of investments to its oil and gas business during 2023-2025 while bp is allocating 56%.

Growing exploration and development spending

In 2023, oil and gas majors increased their YoY exploration investment more than development costs.[3] Shell increased exploration spending by 29.3% to reach $3bn, while development costs rose by 7.4% to reach $10.1bn. Similarly, bp increased exploration by 38% to reach $1.2bn and increased spending by 5.9% to reach $8.2bn.

Mixed capital expenditures outlook

Shell has adjusted its capital expenditure expectations for 2024-2025 downward by $2bn and is now targeting $22-$25bn. Harbour Energy also anticipates capex to be materially lower in 2025, while bp's forecast remains unchanged at around $16bn.

Flatlining investments in renewables

In 2023, Shell spent 11.7% of its capital expenditures on renewables, compared to 15.3% in 2022. Conversely, bp's spending on low carbon energy rose by 1.4% YoY to 7.7% in 2023, but this was still lower than the 12.1% invested in 2021.

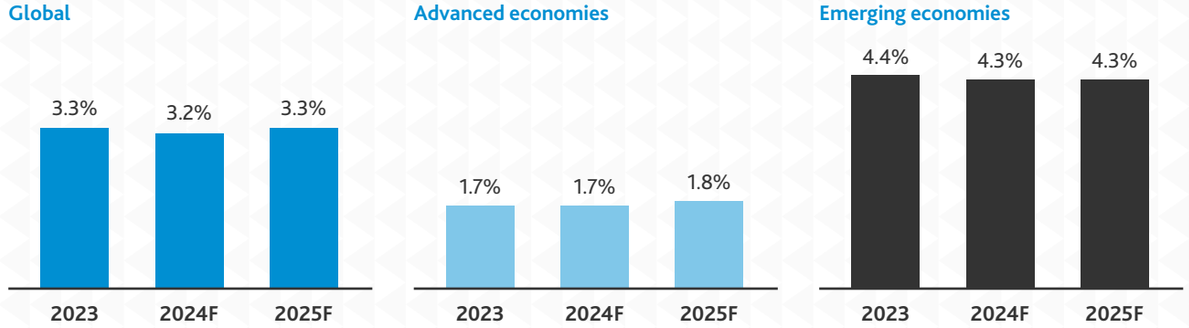
Source: Moody's website; Energy Monitor website; International Energy Forum, Upstream Oil and Gas Investment Outlook (2024); NSTA, Projections of UK Oil and Gas Production and Expenditure, (March 2024); OEUK, Decommissioning Insights (2023); Companies' annual reports; Media overview.

Notes: (1) The numbers are converted from GBP to USD due to the average exchange rate by the FRED; (2) The numbers are converted from Euro to USD due to the average exchange rate by the ECB; (3) Includes costs of Shell's and bp's subsidiaries and excludes joint ventures, associates, and equity-accounted entities.

Persistent inflation and economic slowdown in key economies will slow oil demand growth

Global economic growth is expected to stay sluggish throughout 2024 and certainly be lower than the historical average of 3.8%. This is the result of high borrowing costs, the Russian invasion of Ukraine, weak growth in productivity and geoeconomic fragmentation. Inflation is forecast to gradually fall to 5.9% in 2024 in response to tight monetary policy and fading goods and energy price pressures. Growth in global energy demand is expected to be driven by emerging economies and offset by energy efficiency improvements.

Real GDP growth[1]



Key factors shaping the global oil and gas markets

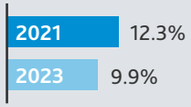
Since the Russian invasion of Ukraine, intensified geopolitical tensions have contributed to oil and gas price volatility and shifted trade relationships. Increased tensions in the Middle East, with its critical role in production, are a significant risk for the sector.

Russian invasion of Ukraine and the oil and gas market

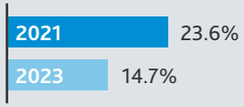
The Russian invasion of Ukraine caused a massive shock in the global energy markets. Fears of energy supply disruption and the impact of strict sanctions on the Russian energy sector pushed prices to record highs. Russian energy exports remained resilient in 2023 despite the EU's embargo on oil and the imposition of a $60 per barrel price cap by the G7. Russian exports have been redirected towards Asian markets that now account for 85% of reported crude oil exports. This has offset the decrease in export to the European countries. Nonetheless, Russia is still the EU's second-largest supplier of LNG in 2023 with France, Spain and Belgium being the biggest importers.

Share of Russia in global export

Oil

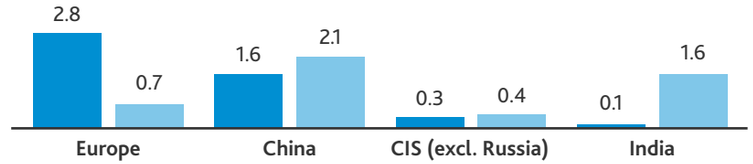


Natural gas

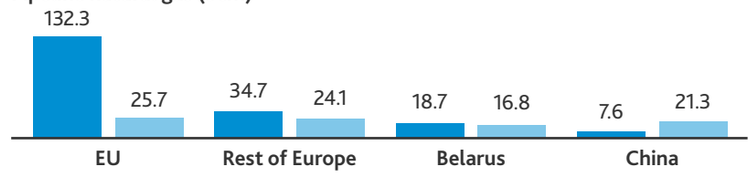


Top destinations of Russian export

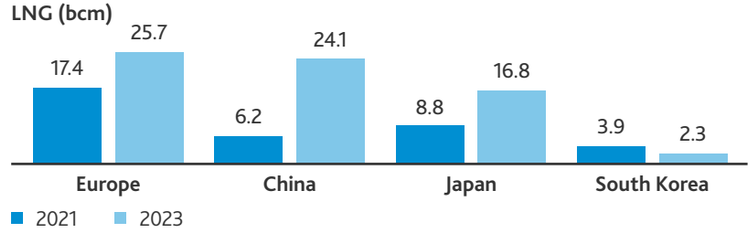
Crude oil (mb/d)

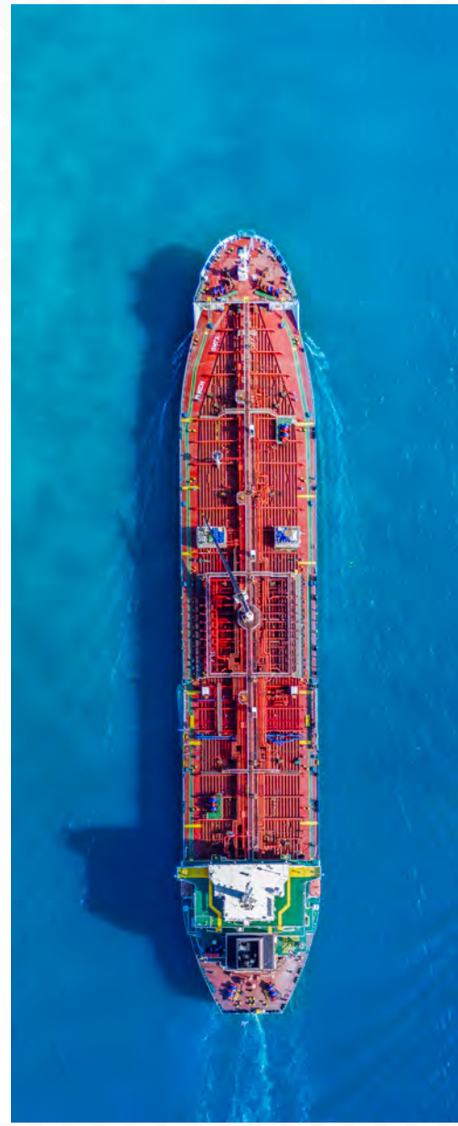


Pipeline natural gas (bcm)



LNG (bcm)





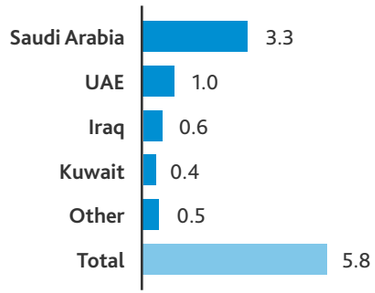
Source: ECB website; EIA website; IMF, World Economic Outlook, (July 2024); Energy Institute, Statistical Review of World Energy, (2022, 2024); Media overview.
Notes: (1) Based on the IMF forecast as of July 2024.

Heightened geopolitical tensions and energy security concerns stimulate renewables growth

The impact of OPEC+ activity on the global oil and gas market

Since 2022, OPEC+ has implemented multiple production reductions aimed at supporting oil prices. There have also been voluntary cuts from major members such as Saudi Arabia and Russia. Since the end of 2022, Brent crude oil has traded within the $75-$90 per barrel range. Prices have been kept low by significant spare capacity, uncertainties around demand and stringent sanctions policies. Despite the OPEC+ production cuts, global oil production has grown driven by the USA, Canada, Guyana, and Brazil. The OPEC+ reductions are expected to decrease global oil inventories through mid-2025. However, the end of voluntary supply cuts at the end of 2024 are expected to trigger gradual inventory builds in 2025.

Spare capacity of OPEC+ as of July 2024 (mb/d)



Conflict in the Middle East continues to have the potential to disrupt oil supply, push prices above $100 per barrel and raise global inflation. In late 2023, many shipping and energy companies stopped using the Red Sea for oil and LNG shipments. US and UK airstrikes on Houthi targets in Yemen, and possible reprisals, heightened existing fears of regional instability. Both Shell and bp have suspended Red Sea shipments.

Unsurprisingly, energy security tops government agendas in 2024. The Russian invasion of Ukraine exposed the EU's heavy reliance on Russian gas, prompting efforts to diversify energy sources and accelerate the energy transition.

Share of gas supply from Russia in selected countries

	LV	AT	BG	FI	SK	GR	HU	SI
2021	92%	86%	79%	75%	68%	64%	61%	60%
2023	0%	98%[1]	24%	0%[2]	76%	43%	82%	7%

2023 was a highly productive year for the oil and gas industry, after global oil production reached a record high, while this creates a level of optimism within the sector, this is countered by a number of key themes noted throughout this report. Geo-politically, the Russian invasion of Ukraine, the conflict in the Middle East and the US election will be key in shaping the sector in the very short term. In spite of this the global oil and gas consumption is expected to peak by 2023 demonstrating the part oil and gas has to play in the energy transition and the evolution of demand for oil and gas.

We are seeing a growing number of companies adjusting their capital priorities, in part this appears due to the geo-political concerns and uncertainties however this is offset by the demand for oil and gas companies to invest in low-carbon projects, optimization and clean energy advancements.

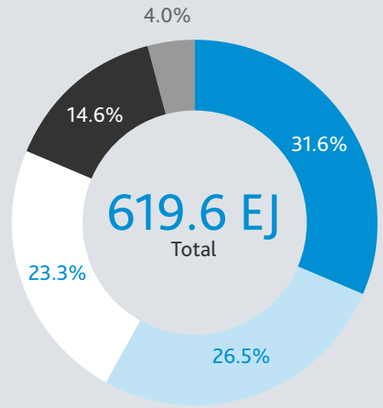
The role artificial intelligence plays is also transforming the global landscape. Our research shows that over 20% of global oil refining capacity will be faced within margin pressure in the short term. This, coupled with the demand on decarbonisation is leading to some significant investment decisions in AI adoption.

Over the short term it will be interesting to see how the market reacts to those companies that focus on reservoir optimization, recovery and increasing the internal rate of returns vs. those that focus on decarbonisation and clean energy projects.

Adam Barallon
Director
Natural Resources & Energy

In 2023, renewable production capacity grew at the fastest rate in two decades, driven by continuous policy support in more than 130 countries. China led this expansion and is expected to add nearly 60% of global new renewable capacity by 2028, almost four times more than the EU and five times more than the USA.

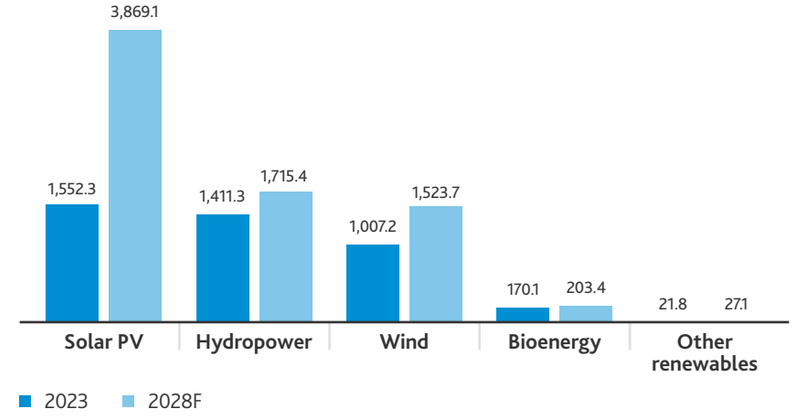
Global primary energy consumption in 2023



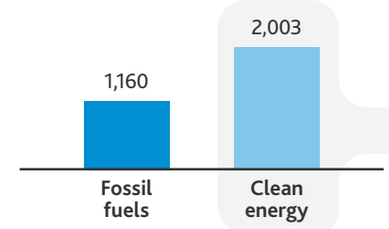
	CAGR (2021-2023)
Oil	+3.3%
Coal	+1.2%
Natural gas	(-0.3%)
Renewables	+6.1%
Nuclear energy	(-1.5%)

In 2024, global investments in clean energy are nearly double those allocated to fossil fuels. However, emerging markets and developing economies beyond China contributed just 15% of global expenditure on clean energy. The investments in solar PV technologies, at $503bn, surpassed all other generation technologies combined.

Cumulative renewable electricity capacity (GW)



Global investment in fossil fuels and clean energy in 2024 ($bn)



Renewable power	38.5%
Energy efficiency & end use	33.4%
Grids & storage	22.6%
Other	5.5%

Source: Statista website; WITS website; Austria's Energy Information Portal website; Statistics Finland website; IEA, Oil Market Reports (January 2024, July 2024); EIA, Short-Term Energy Outlook (July 2024); Energy Institute, Statistical Review of World Energy (2022, 2024); IEA, Renewables (2023); IEA, World Energy Investment (2024); Media overview.
Notes: (1) As of December 2023; (2) According to Statistics Finland website, the value of Russian natural gas import was 0 in 2023,

Recent regulatory developments has put pressure on oil and gas operations in the North Sea

The election of a new Labour government in the UK could prove to be a pivotal moment for long-term outlook for upstream operations in the North Sea. Discussions around net zero targets and energy security could lead to challenging regulatory developments.

Labour party policy regarding oil and gas industry in the UK

- 'Phased and responsible' transition in the North Sea
- Windfall tax increased to 38%
- Not issuing new licenses
- End of investment allowances within the levy.

Investments uncertainty in the sector

The introduction of the Energy Profits Levy in 2022 reduced after-tax profits of oil and gas producers. The Labour Party's plans to raise the Levy by 3% and eliminate investment and capital allowances could further reduce the profitability of producers.

However, Labour Party has recognised that the energy transition can only be achieved with the investment and support of the oil and gas industry. The Labour Party anticipates generating an additional £10.8 bn by implementing additional Energy Profits Levy measures. It plans to spend this additional income on broadening the energy transition into new areas such as carbon capture and storage and offshore wind.

North Sea oil and gas producers profits fall in 2023 vs 2021

EnQuest	(-91.8%)
Harbour Energy	(-68.3%)
Ithaca Energy	(-49.4%)

Change in the share price of the UK oil companies operating in the North Sea after Labour election pledge on 11 June 2024

Harbour Energy	(-3.8%)
Serica Energy	(-8.0%)
EnQuest	(-8.0%)
Ithaca Energy	(-3.3%)

Major regulatory developments in the oil and gas industry in the UK

Mar 2020 – Introduction of the Oil and gas Sector Deal as part of the UK government commitment to a net-zero carbon economy by 2050

Mar 2021 – The North Sea Transition Deal aims to reduce GHG emissions by 50% by 2030 and support the CCUS and hydrogen projects

May 2022 – Government implements a 25% windfall tax on oil and gas producers, as a result of the Russian invasion of Ukraine and high prices

Jan 2023 – The Energy Profit Levy is increased to 35%, and extended until 2029, bringing the total tax burden to 75%

Jul 2024 – The UK's Labour Party won the general elections, pledging new oil and gas policies for the North Sea and aiming to make the UK a "clean energy superpower"

Skills shortage anticipation

Transitioning to sustainable energy presents challenges for policymakers, industry and the workforce. North Sea oil and gas jobs are expected to disappear gradually as production is reduced. However, some experts believe government policies could result in more significant and rapid job losses by 2030. The clean energy sector needs skilled labour so it will be essential to equip current oil and gas workers with the skills in operations, engineering, project, procurement and supply chain management that can support the energy transition.

50% decline
in the number of jobs supported by the UK oil and gas in the past decade despite the government issuing new licences.

>90%
of the UK's oil and gas workforce have skills suitable for the offshore renewable sector.

50% increase
in the UK offshore energy workforce by 2030 is possible using existing skills for the energy transition.

Source: OEUK website; Wood Mackenzie website; Labour, Labour Party Manifesto (2024); OEUK, Economy & people report (2024); Energy Transition Institute, Powering up the Workforce (2023); Media overview.

The tax and regulatory landscape is continually evolving across all the major jurisdictions

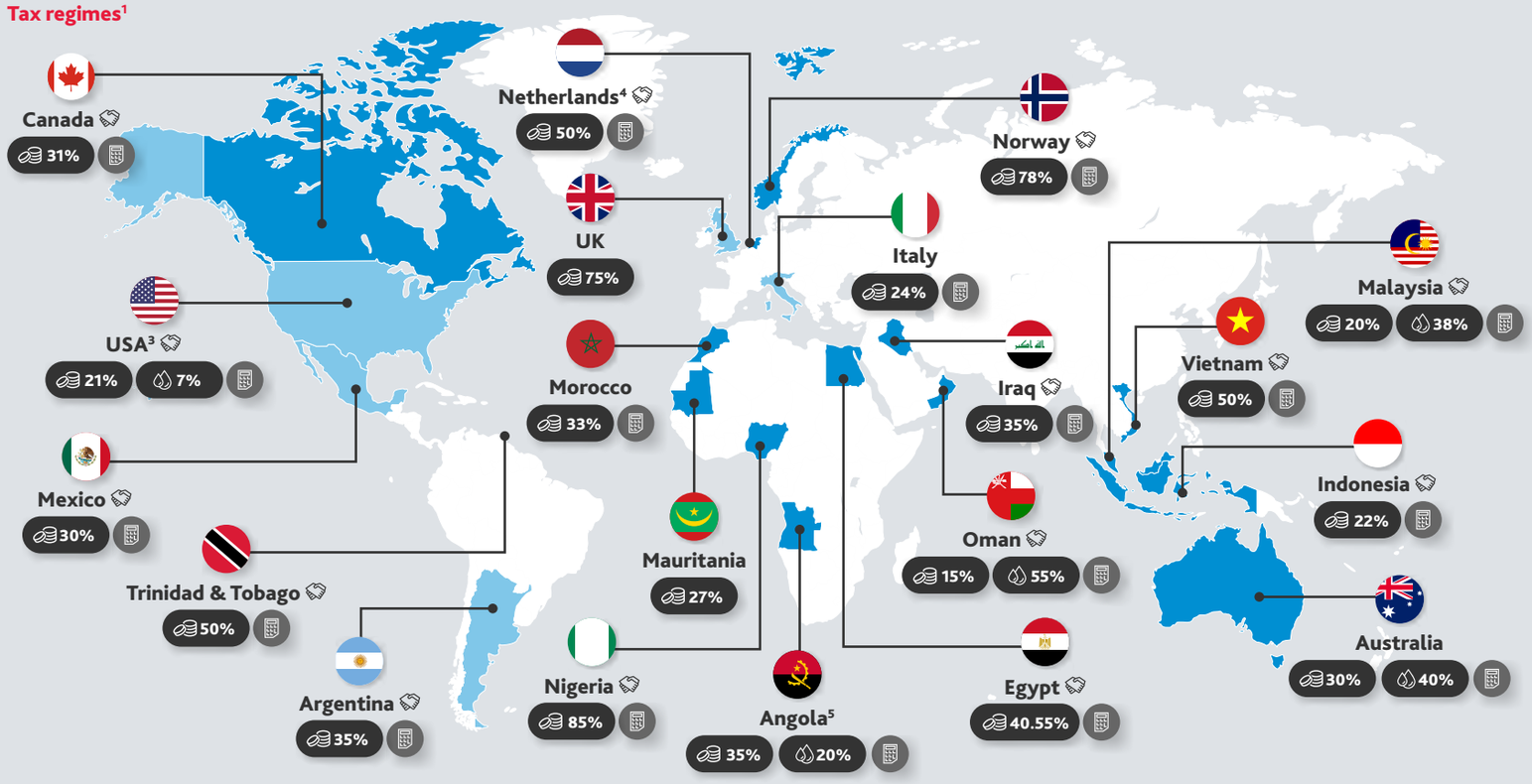
Each jurisdiction presents distinct challenges and opportunities for the UK-based oil and gas companies with the structure of contracts, taxes, royalties and fees varying hugely.

These factors are all crucial in shaping investment decisions. In 2023, the tax landscape reflected concerns over the cost of living, energy security, climate change and the pursuit of fair taxation on a global scale.

Legend

- Jurisdictions with bid rounds that were closed, are ongoing, or have plans for licensing in 2024
- Fiscal incentives by government
- Income tax rate for oil and gas companies (up to)
- Special petroleum rates (up to)
- Royalties and/or other fees imposed

Tax regimes[1]



Recent regulatory developments across selected[2] oil and gas jurisdictions

- **USA sets higher fees on federal lands for oil and gas companies from April 2024**
  Oil and gas companies will pay higher bonding rates, increased lease rents, minimum auction bids and royalty rates
- **Onshore oil and gas drilling limits in the Netherlands from January 2023**
  The Netherlands will stop the search for new onshore oil and gas fields to reach its climate goals and limit seismic risks
- **Ras Qattara Development Area in Egypt from January 2024**
  The Cabinet of Egypt approved a draft law authorising exploration and development in the Ras Qattara Development Area
- **Trinidad and Tobago Corporation Tax Act starting January 2024**
  New tax rates for small shallow marine area producers and increased rates for mature and small marine oil fields
- **Measures to support Angolan oil production in 2024**
  ANPG supports crude oil production through advancing incremental production, enhancing infrastructure and resource sharing
- **Auctions for new units in Oman since 2024**
  In an effort to develop its upstream sector, Oman plans to auction new oil and gas blocks on the Arabian Sea annually.

Taxes on oil and gas produced on the UK continental shelf have risen from 40% to 78% in the last three years. Although this increase has coincided with sustained high oil and gas prices, this significant and prolonged rise in tax rates has hampered investment. The removal of the 29% investment allowance (available against the Energy Profits Levy) will further reduce the appetite for investment in the UK.

Large independents have begun to diversify the geography of their operations, redeploying capital away from the UK – many of the oil majors have already retreated from the UK basins to newer more profitable areas.

Opportunities still exist in the UK – the decarbonisation allowance is still available. Whether the large Independents have the sufficient nexus to benefit from the energy transition remains to be seen.

Joe Thorpe
Director
Corporate International Tax Services

The political impact of elections on E&P policy and risk[6] in selected jurisdictions

2024 has been "the biggest election year in history" including elections in five of 19 jurisdictions of the largest UK-based oil and gas companies and significant implications for energy policy in the UK, the USA and Mexico.

Elections-related risk decline by selected countries

Feb 2024
- Indonesian presidential election

Jun 2024
- Mexican presidential election
- Mauritanian presidential election

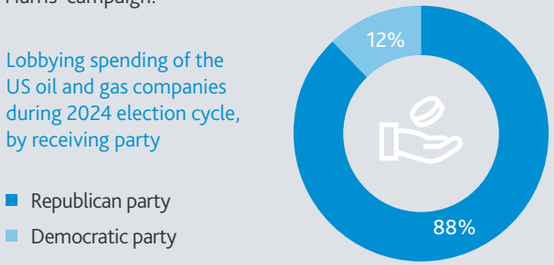
Jul 2024
- UK Parliamentary election

Nov 2024
- USA presidential election

Presidential elections in the USA

The candidates have opposing visions for the development of the sector. Donald Trump's campaign emphasises fossil fuels, extensive regulatory rollbacks and reducing renewable energy policies while climate action is key to Kamala Harris' campaign.

Lobbying spending of the US oil and gas companies during 2024 election cycle, by receiving party



Source: Orbitax website; S&P website; Statista website; Chambers and Partners, Oil, gas, and the transition to renewables (2024); Shell, Tax contribution report (2022); bp, Tax report (2023); Media overview

Notes: (1) The provided tax rates are not exhaustive and may vary depending on additional conditions. Depending on the specific conditions, region of operations and terms of the contract, the rates may be reduced; (2) Jurisdictions where two or more of 15 largest UK-based oil and gas companies operate; (3) Most states in the USA apply a production or severance tax on the gross value of oil and gas production; (4) Effective combined state profit share and CIT rate is 50%. Additionally, there is a temporary 65% windfall profit tax on sales of natural gas for 2023 and 2024; (5) Oil and gas producers in Angola are subject to tax under a special tax regime, including 20% Oil Production Tax; (6) The ranking of countries is based on data from S&P Global E&P Terms and Above-Ground Risk Research 2024.

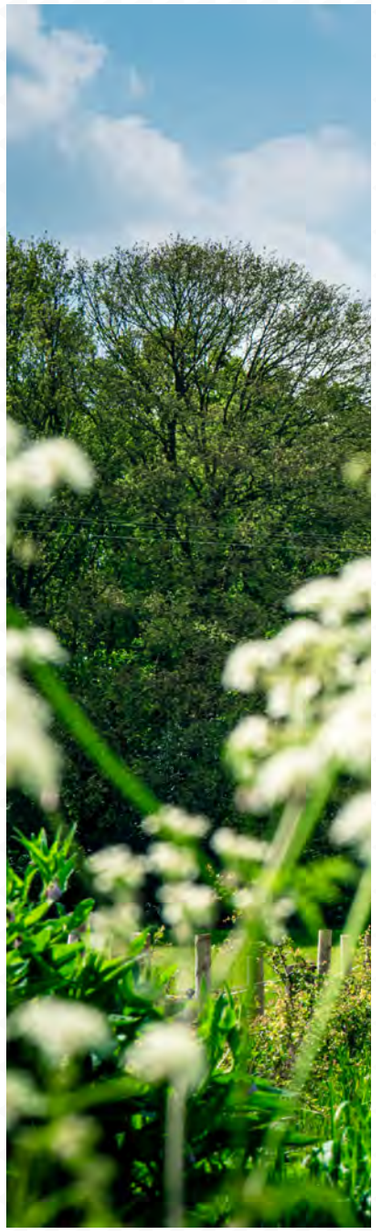
UK oil and gas companies continue to develop their sustainable operations strategies

Global energy-related CO_2 emissions hit a record high of 37.4 billion tonnes in 2023. In addition, the energy sector is also responsible for over a third of all human-induced methane emissions. According to the IEA global renewable energy capacity must triple, primary energy intensity must double and emissions must decrease by 75% by 2030 in order to limit the rise in global temperatures to 1.5°C. Achieving this will require a huge collaborative effort from governments and industry.

Carbon tax/carbon budget	Methane reduction	Carbon capture incentives	Carbon storage licensing	New exploration licenses ban
Imposing a tax on CO_2 emissions or setting a limit on the amount of GHGs that is emitted	Requires companies to reduce methane emissions through technological upgrades	Provides financial or regulatory incentives for companies to invest in CCS technologies	Involves granting licenses to companies to store captured CO_2 in geological formations	Banning the issuance of new licenses for oil and gas exploration to limit future carbon emissions

Net-zero commitments and status in international climate initiatives of the selected oil and gas jurisdictions

Status of national Net-Zero commitment	In law	In policy document	No commitment	In law	In law	No commitment	In law	In strategy document
Net-Zero target year	2050		2050	2050	2060		2050	2060
Global Methane Pledge[1]	✔	✔	✔	✔	✔	✔	✔	✔
Glasgow Statement[2]	✔	✔	✔	✔	✔	✔		
Net-Zero Producers Forum[3]	✔	✔	✔					



Approaches of the largest UK oil and gas companies to energy transition

Energy transition strategies

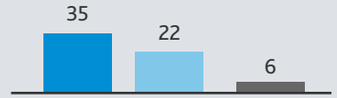
Transformation of operations: producers seek to reduce carbon intensity by transforming existing operations

Transformation of product offering: producers seek to reduce carbon intensity by offering low-carbon energy

Carbon Capture and Storage (CCS)

Shell, bp, and Harbour Energy are at the forefront of developing CCUS in their operations.

Number of CCS-related projects companies are engaged and their total capacity[4]



	Shell	bp	Harbour Energy
Announced capacity ($MT Co_2/yr$)	136.3	96.6	21.1

Renewable power generation

UK-based oil and gas companies are actively navigating the transition to cleaner energy sources, recognising the need for sustainable practices and diversification.

Shell's RES capacity, as of start 2024:

- **2.5GW** in operation
- **4.1GW** under construction
- **40.2GW** in pipeline

bp's RES capacity, as of the end of 2023:

- **2.7GW** installed
- **58.3GW** in pipeline

Drilling electrification

Harbour Energy is electrifying its offshore platforms in the Viking area (the UK), reducing reliance on gas turbines and thereby cutting CO_2 emissions.

Hydrogen and biofuels production

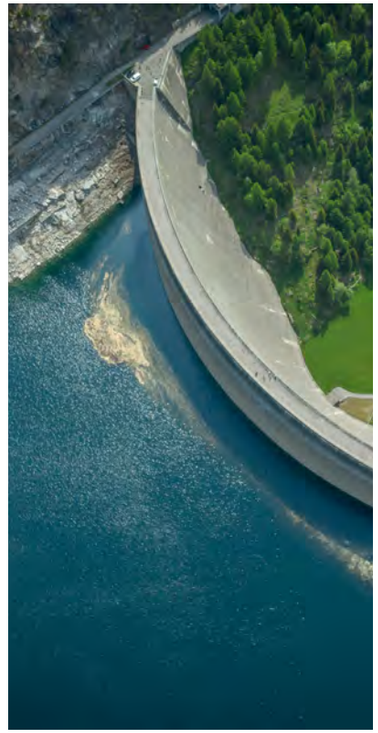
bp has agreed to acquire 50% holding interest in one of Brazil's leading biofuels-producing companies, while Shell will spend up to $1.0bn annually on hydrogen and CCS in 2024 and 2025.

Source: IEA website; UNEP, Production Gap Report (2023); IISD, Transitioning Away From Oil and Gas (2023); IEA, World Energy Outlook (2023); Media overview.

Notes: (1) Aims to catalyse global action and strengthen support for existing international methane emission reduction initiatives; (2) Commits signatories to shift government-backed international finance away from fossil fuels and instead to prioritise renewable energy; (3) Cooperative effort to develop pathways to net-zero emissions for the global oil and gas sector; (4) According to IEA official CCUS projects database. The number includes different phases of projects

Oil and gas majors lead in sustainable practices, but are scaling back their commitments

The oil and gas industry is shifting towards more environmentally conscious practices, driven by regulatory pressures and market demand for greener energy solutions. Larger players are already investing in renewable energy sources (solar, wind, hydrogen, and biofuels) and diversifying into low-carbon businesses (battery packs, grid-balancing technologies), while smaller competitors actively set goals for net-zero and emissions reduction.



Selected largest UK-based oil and gas companies' sustainability commitments and performance in 2023

Company	Sustainalytics risk score[1]	Net zero	Scope 1&2 emissions ($ktCO_2e$), YoY	Carbon capture, utilisation and storage projects	Renewable energy sources investments[2]	UN Sustainable Development Goals contribution[3]
Shell	32.4 High	2050	57,000 ▼ (-1.7%)	✓	✓	17
bp	33.8 High	2050	32,100 ▲ +0.9%	✓	✓	17
Harbour Energy	31.0 High	2035	1,300 ▼ (-7.1%)	✓	✓	6
Energean	31.5 High	2050	255.8 ▲ +73.6%	✓	✓	17
Serica Energy	31.6 High	2050	192.8 ▼ (-17.7%)		✓	10
Tullow Oil	33.2 High	2030	2,342 ▲ +3.7%			8
Savannah Energy	n/a	n/a	0.07 ▼ (-1.1%)		✓	13
EnQuest	45.6 Severe	2040	1.0 ▼ (-0.9%)	✓	✓	1
Genel Energy	40.7 Severe	n/a	61.5 ▼ (-68.1%)			5
Capricorn Energy	26.0 Medium	2040	1.6 ▼ (-80.5%)	✓	✓	16

✓ The company is already active in CCUS/renewables projects ✓ The company planned to deploy CCUS/renewables within operations

Scale back in energy transition of selected largest UK-based oil and gas companies

Several of the largest UK oil and gas companies scaled back their energy transition plans due to economic and market pressures. This shift was largely driven by the desire to maintain profitability amidst fluctuating oil prices and uncertain regulatory environments. Shell and bp adjusted their emissions reduction strategies and limited spending on renewables over the past five years.

Shell

Shell updated its energy transition strategy, scaling back a carbon emissions reduction target for 2030 and scrapping a goal to further reduce its carbon footprint by 2035.

20% reduce carbon intensity **by 2030**

15-20% reduce carbon intensity **by 2030**

$3.5bn invested in RES division in **2022**

$2.7bn invested in RES division in **2023**

bp

After reporting record annual profits for 2022, largely due to soaring energy prices following the Russian invasion of Ukraine, bp scaled back its climate target.

35-40% reduction of emissions **by 2030**

20-30% reduction of emissions **by 2030**

On the surface this can make for stark reading and in isolation can be misconstrued that the world needs to cease in its support of the oil and gas industry as soon as possible if we are to have any chance of meeting our Net Zero commitments. Reading on further though, you can clearly see that it is not as simple as this and that while the world will need Oil and Gas to remain an important part of the energy mix for many years to come, we also need these companies to help us on the journey to Net Zero.

It is the major upstream companies like bp and Shell that are actually leading the way in new energy transition strategies as they realise that in order to continue to exist, they will need to find new purpose and ways to maintain their relevance in the world. This behaviour is to be welcomed as we will see less profitable fields transitioning to the more junior players in the market, who can arguably run these assets more efficiently, while the majors will continue to invest more and more in alternative energy strategies and carbon capture. Ultimately, I would expect to see these practices trickle down more and more to the juniors as they receive more and more pressure from the investor community who will become much more discerning over the coming years as to where they want their funds to be deployed. I can only see this momentum building over the next 5 to 10 years which obviously creates a fantastic opportunity for businesses that have traditionally serviced the oil and gas sector to transition their expertise across to some of these new industries, which will create more opportunities for growth in the UK economy. It remains to be seen as to whether the new Labour Government's Green industrial policy is bold enough to accelerate the private sector investment that it has been so desperately espousing while in opposition.

Gareth Jones
Partner
National Head of Strategic Resourcing Solutions (SRS)
Business Services and Outsourcing

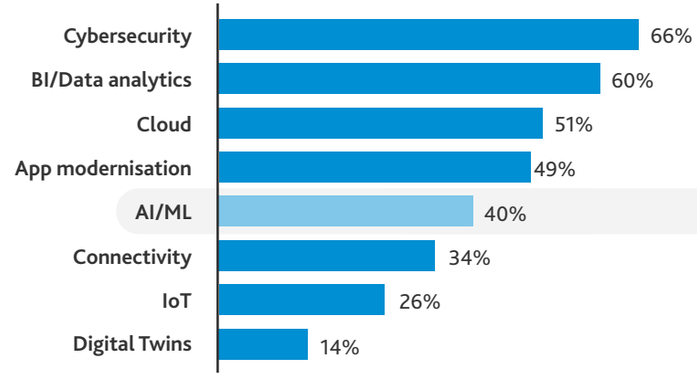
Source: Energy monitor website; Companies sustainability reports; Media overview.

Notes: (1) ESG risk ratings by Morningstar Sustainalytics provide a standardised measure for the magnitude of ESG risk and the effectiveness of risk management strategies by consolidating exposure and management scores across different ESG issues. The following scores refer to five types of risks: 0-10 – negligible; 10-20 – low; 20-30 – medium; 30-40 – high; 40+ - severe; (2) Refers to both renewable energy generation for sales and for electrification of own upstream operations; (3) Based on references to the Sustainable Development Goals in companies' sustainability reports.

Artificial intelligence is actively transforming the operations of leading oil and gas companies

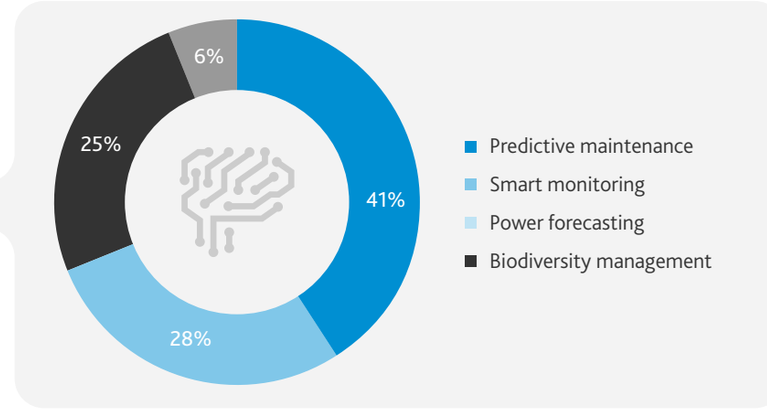
According to the World Economic Forum, scaling digital technologies across industries could achieve up to 20% of the 2050 reduction needed for net-zero goals in the energy, materials, and mobility sectors. Oil and gas companies are boosting energy efficiency and reducing emissions in their operations by using advanced software and AI.

Technologies global oil and gas players increase investments in 2023, % of companies[1]



According to Ericsson, 70% of companies do not have an accurate sense of when their assets are due for maintenance. Predictive maintenance in oil and gas uses AI, ML, and advanced analytics to prevent equipment failures and safety risks. Cases show that oil and gas operators using predictive maintenance can potentially boost production by 25% and lower maintenance costs by 30%.

AI implications importance by oil and gas companies as of 2024, % of companies[2]



Source: World Economic Forum website; Offshore technology website; Ericsson website; McKinsey website; Shell website; bp website; Companies sustainability reports; Gartner, CIO and Technology Executive Agenda: An Oil and Gas Perspective, (2022); Serica Energy, Sustainability report (2023); Media overview

Notes: (1) Based on Gartner Survey conducted in 2022 among CIO and technology executives from different industries, n = 35 for oil and gas; (2) Based on GlobalData poll conducted between November 2023 and January 2024 among oil and gas companies' representatives; (3) Based of to a DNV's annual Energy Industry Insights survey conducted among more than 1,000 senior professionals and a programme of in-depth interviews with leaders and experts

AI perception by the UK oil and gas industry players

While the offshore oil and gas sector stands to benefit from AI, trust in the technology across UK must be established. Key challenges include managing large volumes of high-quality data and heightened cyberattacks, which can lead to operational disruptions, data breaches, and significant economic and environmental impacts.

75%
Would prioritise improving data quality and availability, supporting the evolution of AI and ML.[3]

25%
had no existing or planned AI activity on their corporate agenda.[1]

11%
were using some kind of AI solution in day-to-day operations.[1]

Use of data & AI by the largest UK oil and gas companies

Shell has leveraged over 100 AI applications and developed its own tools using generative AI algorithms from SparkCognition to enhance seismic data analysis. Collaborations with tech giants such as C3 AI, Microsoft, and Baker Hughes are integral to Shell's AI efforts.

Serica Energy was an early adopter of Siemens' Predictive Emissions Monitoring System (PEMS), which provides predictive maintenance indicators and remotely monitors the emissions of the gas turbines including nitrous oxide, carbon monoxide and dioxide.

Harbour Energy has implemented digital twin technology to integrate and manage data across its systems, improving operational efficiency and ensuring data integrity. It has also used advanced tools like laser scanning for asset visualisation.

bp announced in November 2023 that it will be expanding the use of Copilot for Microsoft 365 to enhance its employee experience. It will be one of the first companies globally to act as a launch partner for the 'intelligent AI assistant'.

Selected technologies used to reduce emissions and improve waste management

- **Real Time Process Optimiser by Shell** continually fine-tunes performance to minimize CO_2 emissions. It has reduced boil-off gas flares at one LNG plant by 70% when it is operating at full capacity
- In 2023, **bp implemented Flare.IQ** to monitor flare performance in real time. It uses data from existing metering systems and modelling to accurately measure methane emissions from flaring
- **Serica Energy uses OPEX.AI**, a cloud-based AI system. The tool takes data directly from turbine meters and calculates the emissions for each turbine in real time. This enables the investigation of any fluctuations.

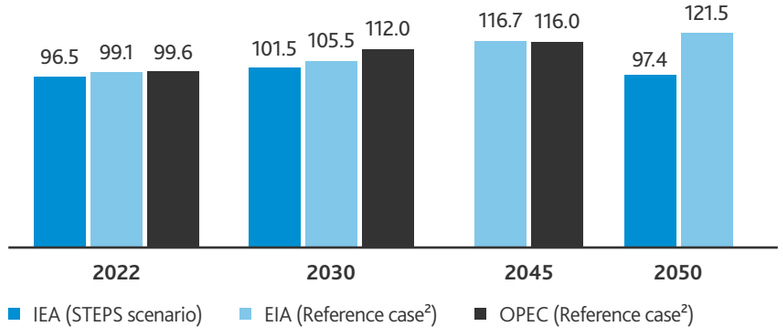
Source: World Economic Forum website; Offshore technology website; Ericsson website; McKinsey website; Shell website; bp website; Companies sustainability reports; Gartner, CIO and Technology Executive Agenda: An Oil and Gas Perspective, (2022); Serica Energy, Sustainability report (2023); Media overview.

Notes: (1) Based on Gartner Survey conducted in 2022 among CIO and technology executives from different industries, n = 35 for oil and gas; (2) Based on GlobalData poll conducted between November 2023 and January 2024 among oil and gas companies' representatives; (3) Based of to a DNV's annual Energy Industry Insights survey conducted among more than 1,000 senior professionals and a programme of in-depth interviews with leaders and experts.

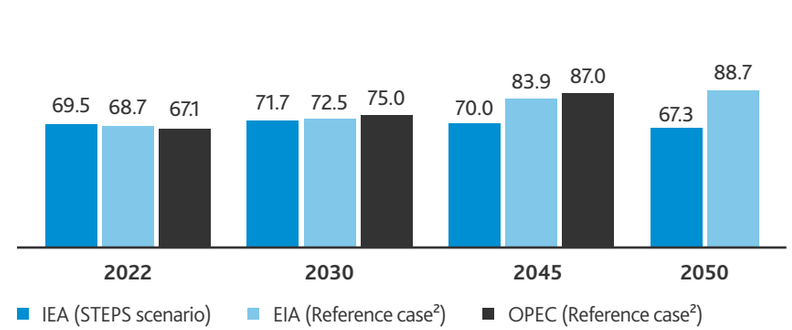
Predictions for future oil and gas consumption differ markedly according to various assessments

The EIA, OPEC and the IEA are forecasting very different levels of oil and gas demand with the IEA predicting a decline in demand. Growth scenarios are driven by the rising global population and growing GDP with both focused in India and Asia-Pacific. Growing disposable income across developing countries will also drive up demand. The IEA's negative expectations are based on the accelerating green energy transition gradually reducing consumption.

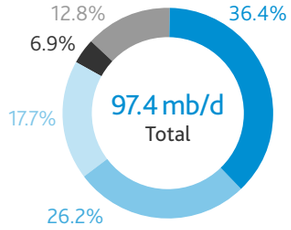
Global oil demand (mb/d)



Global natural gas demand (mmboe/d[1])

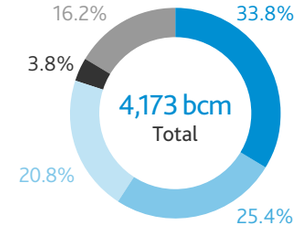


Global oil demand by sector in 2050 (IEA STEPS scenario)



	CAGR (2022-2050)
Road transport	(-0.5%)
Industry	+1.4%
Aviation and shipping	+1.7%
Buildings and power	(-2.2%)
Other sectors	+0.4%

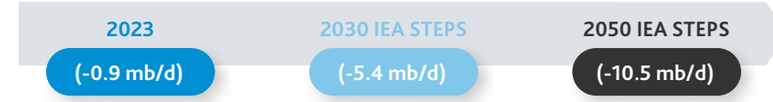
Global natural gas demand by sector in 2050 (IEA STEPS scenario)



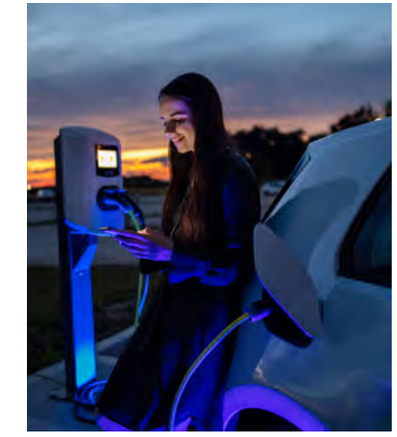
	CAGR (2022-2050)
Power	(-0.5%)
Industry	+0.7%
Buildings	(-0.01%)
Transport	+0.2%
Other[3]	+0.2%

The rise in electrification is set to reduce global oil demand from the transportation sector, the largest oil consumer globally. EV sales, which surged during the last decade and reached around 14 million in 2023, are projected to hit 65 million by 2035, potentially displacing 10.5 mb/d. Light-duty vehicles are expected to be a main contributor to the decline, accounting for 80.0% of this reduction in 2035.

Oil displacement resulting from the use of EVs

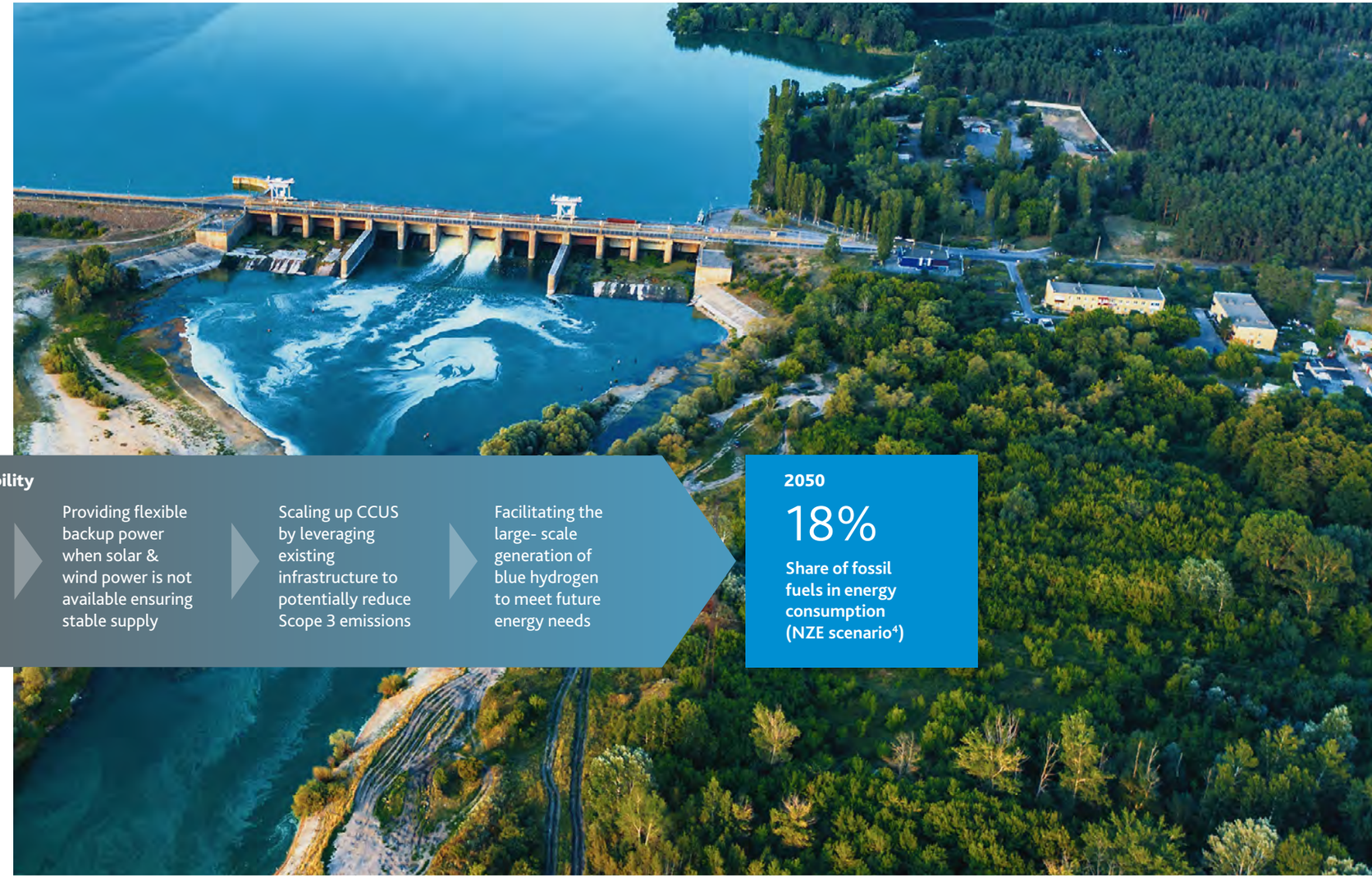


According to IEA, rising EV sales, ongoing improvements in vehicle efficiency, and the replacement of oil with renewables or gas in the power sector are expected to reduce oil consumption in road transport and electricity generation. This trend will be offset by higher jet fuel consumption and growing feedstock needs from the expanding petrochemical industry. Moreover, solid support for clean energy will decrease the usage of natural gas in the power sector by 2030, and its use will continue to decline in buildings and industry thereafter.



Role of oil and gas industry in energy transition

The oil and gas industry could be pivotal in the energy transition by securing affordable and reliable energy for the growing global population while reducing emissions and developing high-potential decarbonisation technologies to contribute to a Net Zero world. Natural gas emits less carbon than most other fossil fuels and can support the energy transition and effectively integrate with renewables due to its flexibility.



2023

81%

Share of fossil fuels in energy consumption

Ways to support decarbonisation and sustainability

- Reduction of Scope 1 and Scope 2 emissions from own operations, eg. methane emissions
- Substitution of coal by natural gas can reduce emissions by over 50% per unit of electricity
- Providing flexible backup power when solar & wind power is not available ensuring stable supply
- Scaling up CCUS by leveraging existing infrastructure to potentially reduce Scope 3 emissions
- Facilitating the large- scale generation of blue hydrogen to meet future energy needs

2050

18%

Share of fossil fuels in energy consumption (NZE scenario[4])

Source: IEA, World Energy Outlook (2023); EIA, International Energy Outlook (2023); OPEC, World Oil Outlook 2045 (2023); International Energy Forum, Outlooks Comparison Report (2024); IEA, Oil displacement by mode, 2023-2035 (2024); IEA, Global EV Outlook (2024); McKinsey, The energy transition is happening: What role can the oil and gas industry play? (2024); S&P, The role of gas in the energy transition (2024); Media overview

Notes: (1) The data from the EIA forecast (for all years) and the IEA forecast (for 2050) were converted from trillion cubic feet and billion cubic meters using the Energy Institute's approximate conversion factors and then divided by the number of calendar days in a year to make the data comparable; (2) Reflects current energy trends and existing laws and regulations; (3) Including low-emissions hydrogen inputs; (4) Share of oil, natural gas, and coal according to the IEA's Net Zero Emissions (NZE) by 2050 scenario.

Decarbonisation and energy transition options are crucial for the future of UK companies

Despite considerable energy challenges, confidence among oil and gas industry leaders[1] is at a five-year high, with 68% expressing optimism about sector growth in the coming year. However, oil and gas companies need to balance between the rising demand for petroleum products and pressure to shift towards low-carbon energy sources.

Opportunity matrix for the UK-based oil and gas companies

Probability \ Impact	Low		High
High	Developing carbon credits from companies' renewable energy projects	Energy and GHG emission reduction initiatives for more efficient production and lower operating costs	M&A growth opportunities to expand and diversify assets
	Investments in CCUS projects and offering reservoirs for CO_2 storage to other sectors	Initiatives to attract young talent and develop relevant skills for future operations	Utilisation of digital technologies, such as AI and digital twins, for efficient resource management
Low	Blue or green hydrogen production to ensure diversified revenue streams	Using existing infrastructure for wind-powered electrification of offshore oil and gas assets	Building solid decommissioning expertise for further potential export to other countries

Risk matrix for the UK-based oil and gas companies

Probability \ Impact	Low		High
High	Unexpected shutdowns & expenditures resulting in revenue loss	Geopolitical tensions and changes in the regulatory environment	Macroeconomic risks, including volatile prices of oil and gas
	Operational accidents resulting in personal injuries or asset damage	Difficulties in attracting, developing, and retaining skilled staff	Challenges in successful delivery of large projects and replacing reserves
Low	Constantly-evolving and intensifying cyber threat landscape	Misalignment with JV partners and third-party reliance across supply chain	Failure to adapt to the energy transition amid evolving market conditions, and expectations

Impact on Portfolio | Operation efficiency | Investments

In 2024, 55% of oil and gas professionals[1] indicated an active adaptation to a less carbon-intensive energy mix. 51% plan to redirect their strategy towards opportunities beyond the oil and gas sector in the coming year. Enhancing operational performance, particularly through energy efficiency, and technological innovations remain the top priorities for oil and gas companies in 2024.

Key priorities of the UK-based oil and gas companies

Increasing shareholder value and distributions

Shell aims to distribute 30-40% of its cash flow from operating activities to shareholders with a target of around 4% annual growth in its dividend per share.

Ensuring safe and responsible operations

In the short term, Energean will focus on shifting production to natural gas, using renewable electricity at all sites and developing a carbon removal roadmap.

Achieving operational excellence

One of the key strategic objectives for EnQuest is optimising and expanding production while maintaining strict cost control and disciplined capital management.

Maximising the potential of existing assets

Capricorn Energy shifts from an exploration-driven model to development, production and exploitation to maximise the value of its producing assets.

Driving organic and non-organic growth

To expand and diversify its portfolio, Ithaca Energy prioritises targeted M&A activity and further development of its greenfield & brownfield opportunities.

Source: Forbes website; OGV Energy website; DNV, The Paradox Of Petroleum. How the oil and gas sector is transforming through uncertainty (2024); Companies' annual reports.

Notes: (1) According to the DNV's survey conducted in February-March 2024 among senior oil and gas professionals, n = 442

Glossary

AI	Artificial intelligence
bcm	Billion cubic metres
boe	Barrel of oil equivalent
CAGR	Compound annual growth rate
CCUS	Carbon capture, utilisation and storage
CIS	Commonwealth of Independent States
E&A	Exploration & Appraisal
EIA	Energy Information Administration
ESG	Environmental, social, and governance
EV	Electric vehicle
GDP	Gross domestic product
GHG	Greenhouse gases
GVA	Gross value added
GW	Gigawatt
IEA	International Energy Agency
JV	Joint venture
kb/d	Thousand barrels per day
kboe/d	Thousand barrels of oil equivalent per day
ktCO$_2$e	Kilo-tonnes of carbon dioxide equivalent

LNG	Liquefied natural gas
LSE	London Stock Exchange
M&A	Mergers and acquisitions
mb/d	Million barrels per day
ML	Machine learning
mmboe	Million of barrels of oil equivalent
mmboe/d	Million of barrels of oil equivalent per day
MMBtu	One million British thermal units
NGL	Natural gas liquids
NSTA	North Sea Transition Authority
NZE	Net Zero Emissions
OPEC	Organisation of the Petroleum Exporting Countries
PV	Photovoltaic
scf	Standard cubic feet
scf/d	Standard cubic feet per day
TTF	Title Transfer Facility
UN	United Nations
WTI	West Texas Intermediate
YoY	Year-over-Year

Countries

AE	United Arab Emirates
AO	Angola
AT	Austria
AU	Australia
BG	Bulgaria
BR	Brazil
CA	Canada
CI	Côte d'Ivoire
EG	Egypt
FI	Finland
GA	Gabon
GB	United Kingdom
GH	Ghana
GR	Greece
HU	Hungary
ID	Indonesia
IL	Israel
IQ	Iraq
IT	Italy
LV	Latvia
MY	Malaysia
NE	Niger
NG	Nigeria
NK	Netherlands
NO	Norway
OM	Oman
SL	Slovenia
SK	Slovakia
TH	Thailand
TT	Trinidad and Tobago
US	United States of America
VM	Vietnam

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