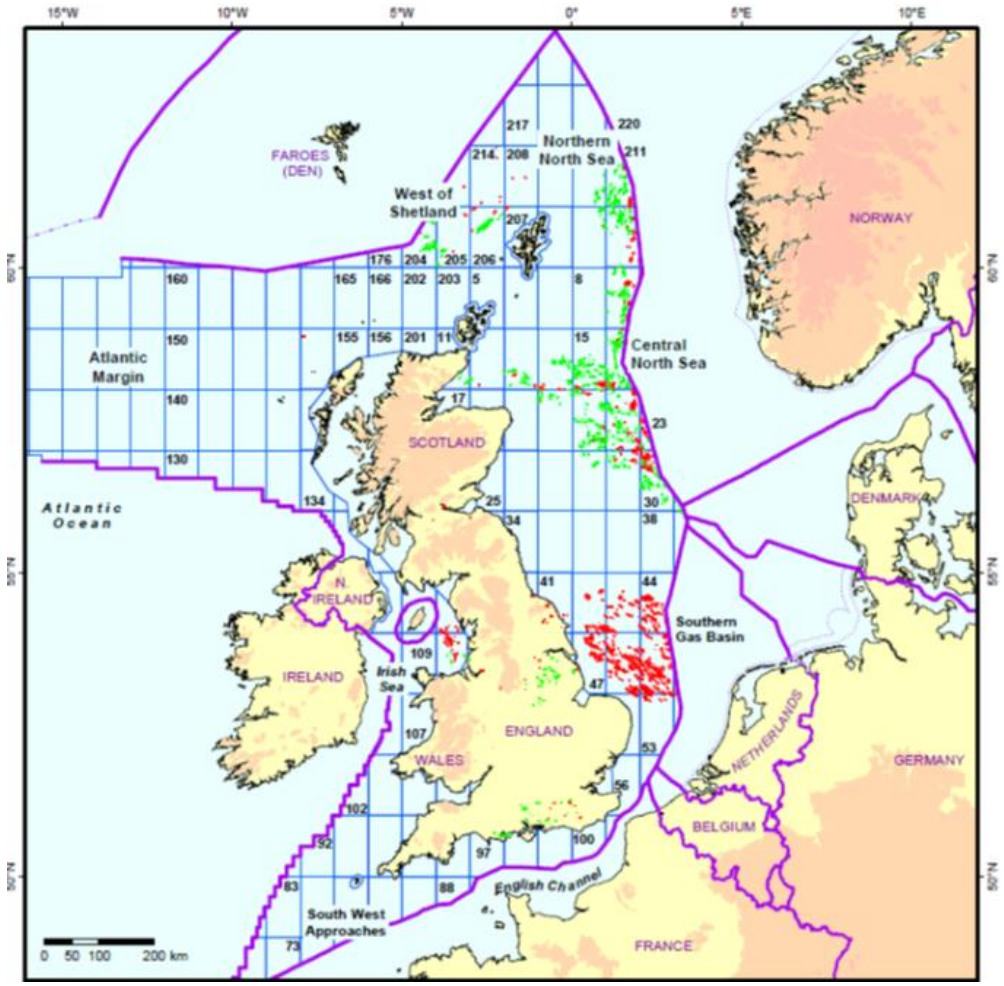
ABIS Energy

UKCS Energy Security Investment and Activity

F J Kiernan
Managing Director

Dr Theo Acheampong
Principal Consultant



ABIS Energy UKCS Review September 2022

“The rumours of my death are greatly exaggerated.”

This much quoted Mark Twain observation has served many politicians and media wags well, not least the great man Sir Winston Churchill.

The UKCS Oil and Gas, has unexpectedly, got a full dance card.

New UK Gov Administration

The election of Prime Minister Truss came with statements about Energy Security/Energy Policy

- “We are also accelerating all sources of domestic energy, including North Sea oil and gas production”.
- “We will be launching a new licensing round, which we expect to lead to over 100 new licences being awarded”.
- “Renewable and nuclear generators will move onto Contracts for Difference to end the situation where electricity prices are set by the marginal price of gas”.
- “We are delivering a stable environment that gives investors the confidence to back gas as part of our transition to net zero”.

A challenging agenda.

Energy shortages and inflation, are recurring topics. Rising food and energy prices cause social instability.

Prime Minister Truss has claimed that she will call a general Election in 2024, ahead of the mandatory 2025.

Politically the western democracies are heading into a crucial election period, US Mid terms November 8th 2022 all 435 seats in the House. Presidential Election 2024 etc.

Economic shocks, such as we are now collectively facing, yields a significant chance of political change. A good question might be, “What does this mean for upcoming energy and ESG policies”.

Politics moving right of centre may well lead to walk back for energy strategies derived from COP 26. Living costs overriding science and environmental policy.

2022

The end of 2021 may well have heralded the start of the end of COVID-19 however, it also began to give us a picture as to where supply and demand was heading as part of the recovery, That along with a remapping emissions.

Energy Developments

- Primary energy demand increased by 5.8% in 2021, exceeding 2019 levels by 1.3%.
- Between 2019 and 2021, renewable energy increased by over 8 EJ. Consumption of fossil fuels was broadly unchanged.
- Fossil fuels accounted for 82% of primary energy use last year, down from 83% in 2019 and 85% five years ago.

Carbon Emissions

- Carbon dioxide emissions from energy use, industrial processes, flaring and methane (in carbon dioxide equivalent) rose 5.7% in 2021 to 39.0 GtCO2e, with carbon dioxide emissions from energy rising 5.9% to 33.9 GtCO2, close to 2019 levels.
- Carbon dioxide emissions from flaring and emissions from methane and industrial processes rose more modestly by 2.9% and 4.6% respectively.

Source BP Statistical Review of World Energy 2022

UK Government Policy

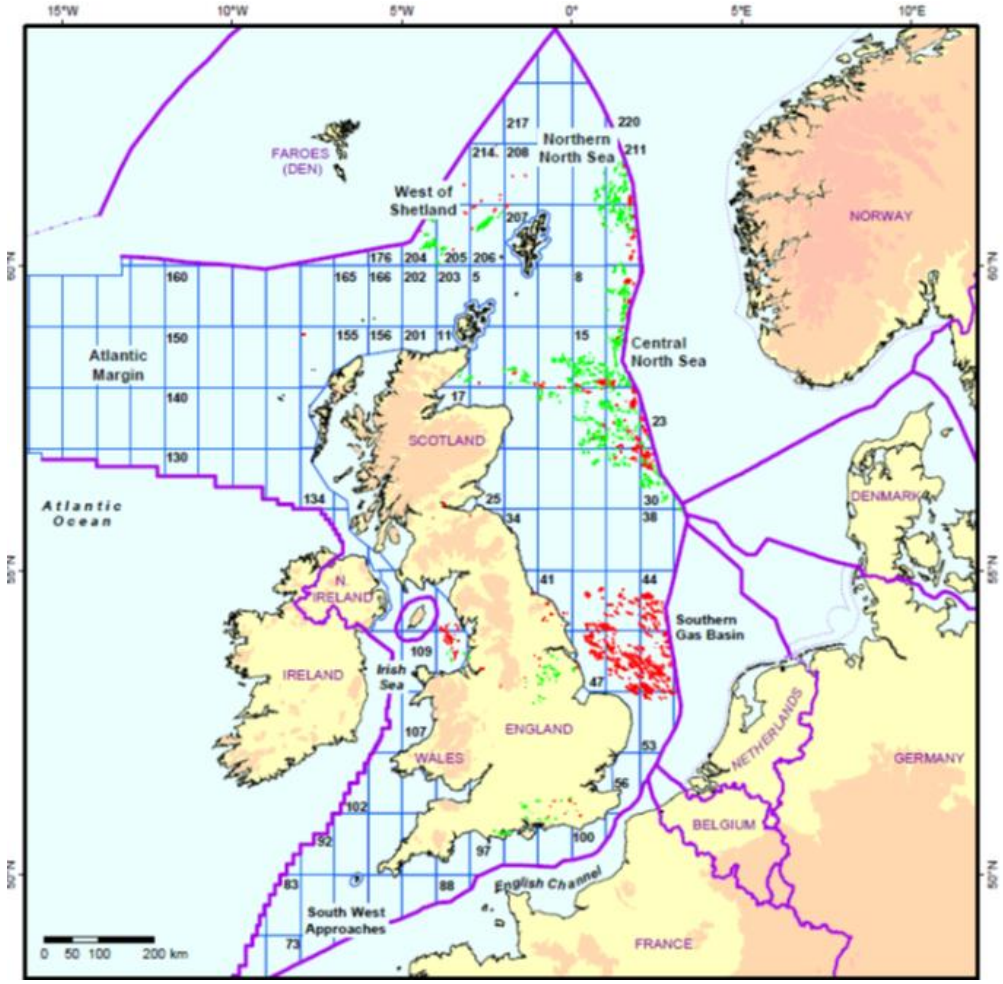
The current UK Government has committed in law to achieve net zero by 2050. It has stated that its target is to decarbonise the power system by 2035. There is 3rd party concern as to how the Government can mobilise the capital needed to ensure the transition is orderly and that energy supply is affordable and reliable.

The energy affordability crisis which started in 2021 exacerbated in February 2022 when Russia invaded Ukraine. This has created global energy supply issues and has highlighted the vulnerabilities of the UK energy supply.

Our report is a factual review of UKCS capacity to meet the needs of Energy Security providing informed projections as to how the near future may play out. The gaps between the Government's ambitions and practical policy are significant.

UKCS Activity Report 2022

Dr Theo Acheampong
Principal Consultant ABIS Energy



Summary: UKCS production levels fall; fresh investment needed over the next 12-18 months to maintain longer term contributions to security of supply

- UKCS is a mature oil and gas region; production levels have steadied in recent times, but overall output has been declining
  - UKCS oil and gas production was 1.35mn boe/d in 2021. This represented a 17% year-on-year decline and is 20% lower than 2019 levels. This was due to several significant planned production outages to key hubs and transportation terminals, but also lower investment
- Current UKCS production still meets 82% of domestic oil consumption and 38% of gas needs.
- However, in the wake of the ongoing Russian-Ukraine war and the need for energy security, **industry groups** are calling for fresh investment in oil and gas over the next 12-18 months to maintain longer term contributions to security of supply
- Domestic oil production could meet 50% of demand by 2030; and for gas it could be less about 25%
- For this to be met, ongoing production and exploration on the UKCS needs to be sustained through a clear focus on maximising economic recovery (MER).
- The government's new energy security strategy has oil and gas contributing to meet the UK's energy security needs as part of net-zero plans. Also complemented by **The North Sea Transition Deal**.

British case study

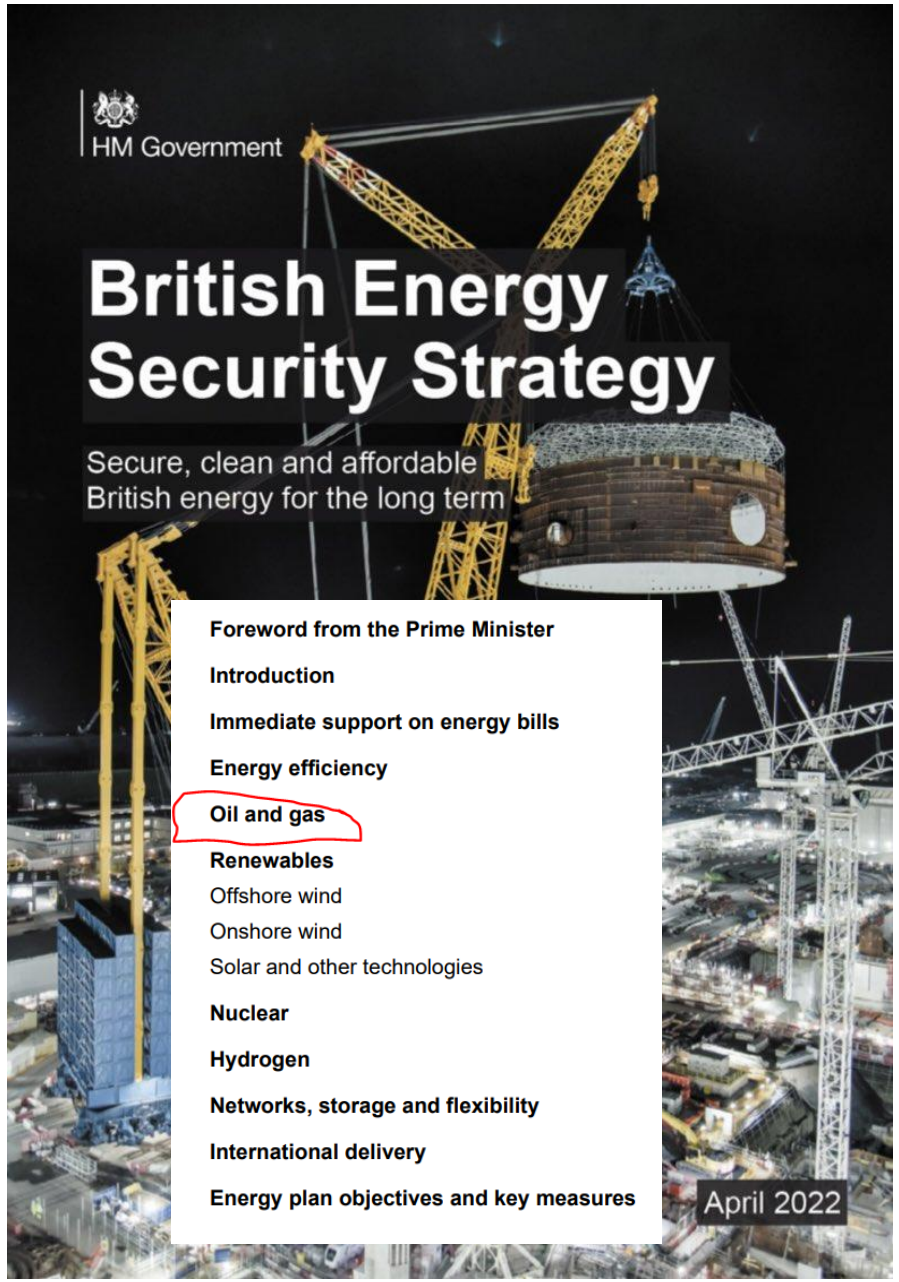
- UK unveiled its ‘new’ energy security strategy to accelerate homegrown power for greater “**energy independence”.**

Britain set to hold oil, gas licensing round this year-regulator

Reuters

REUTERS®

March 21, 2022
5:21 PM GMT
Last Updated 23 days ago



Key reasons for recent production slump and what is being done to fix it

Reasons

- Basin maturity ➔ investment opportunities much smaller
- Business environment ➔ political and public support and calls for higher taxes (including windfall taxes)
- Net-zero drive ➔ unclear role of oil and gas in the UK's energy and industrial policy
- Production efficiency ➔ large maintenance operations/shutdowns

What is being done or proposed to be done

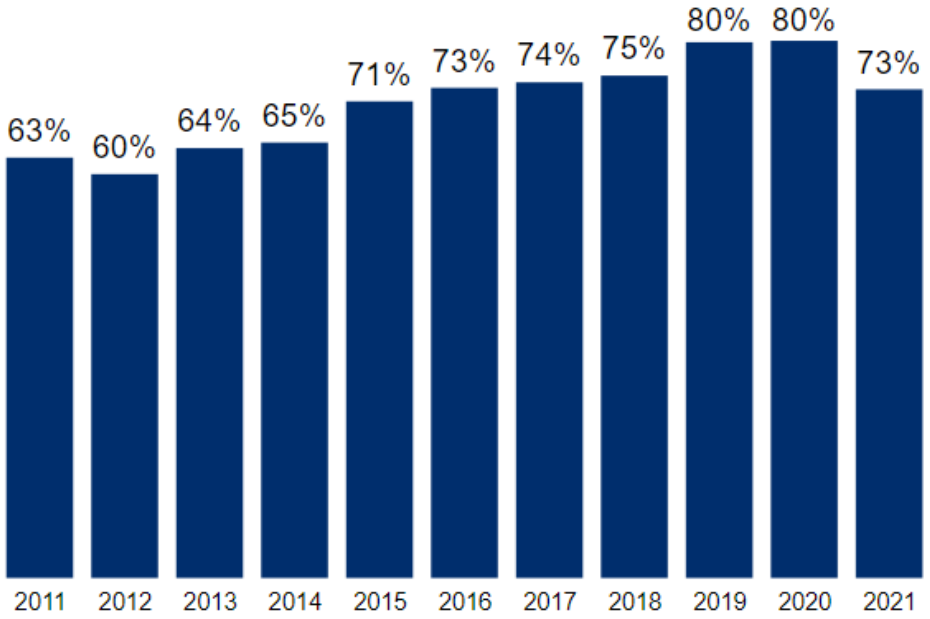
- Attract niche focused players such as PE-backed firms to 'sweat the assets'
- Reforms to the fiscal regime – introduction of a higher investment and cluster area allowances, and Ring Fence Expenditure Supplement (RFES)
- New energy security strategy places oil and gas production right at the heart of UK domestic energy policy
- Asset stewardship initiatives and area plans being championed by NSTA (regulator) and other business associations such as OEUK

More on recent production trends

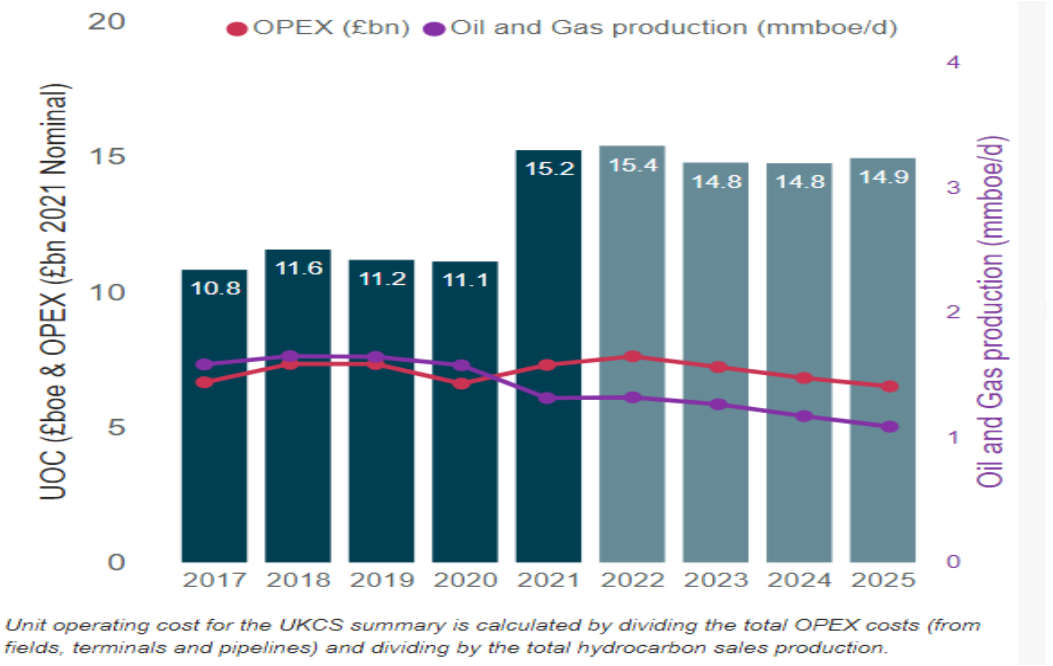
Offshore Field Numbers

OIL	GAS	CONDENSATE
152	87	43

UKCS Production Efficiency



Data source: NSTA

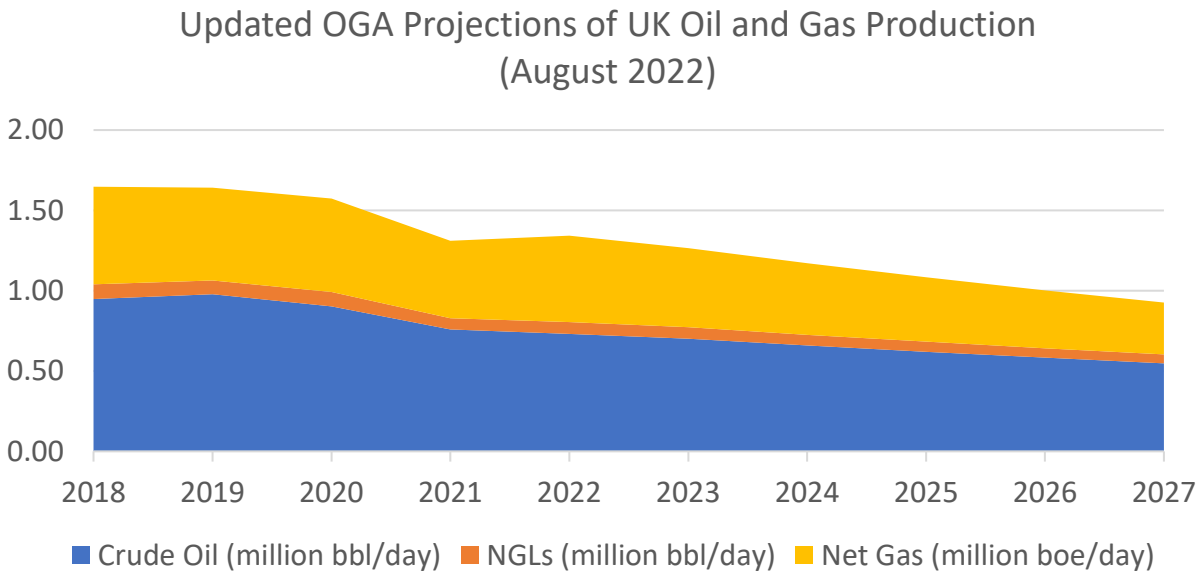


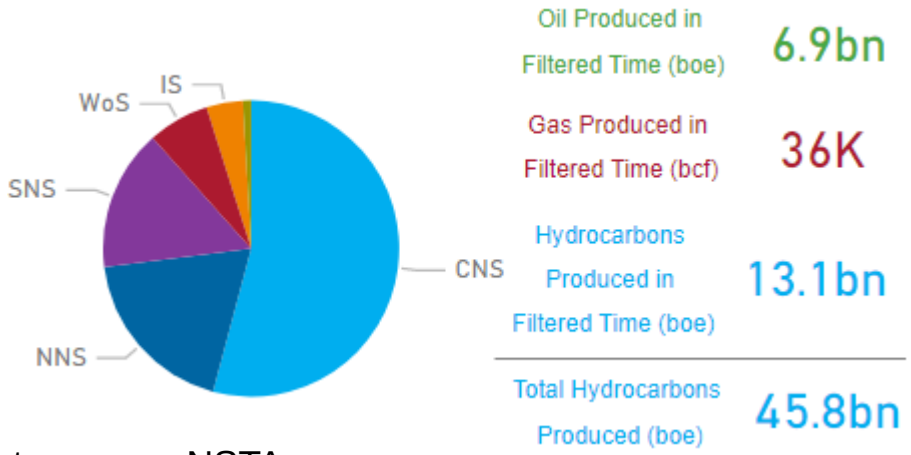
Unit operating cost for the UKCS summary is calculated by dividing the total OPEX costs (from fields, terminals and pipelines) and dividing by the total hydrocarbon sales production.

UK Offshore Fields In Production - Start Up 2022

Field Name	Block Number	Start-Up Date	Operator at time of Start-Up	HC Type
BLYTHE	48/22b and 48/23a	13/03/2022	IOG NORTH SEA LIMITED	GAS
ELGOOD	48/22c	16/03/2022	IOG NORTH SEA LIMITED	GAS
TOLMOUNT	42/28d and 42/28c	26/04/2022	HARBOUR ENERGY PLC	GAS

Reserves and field production projections



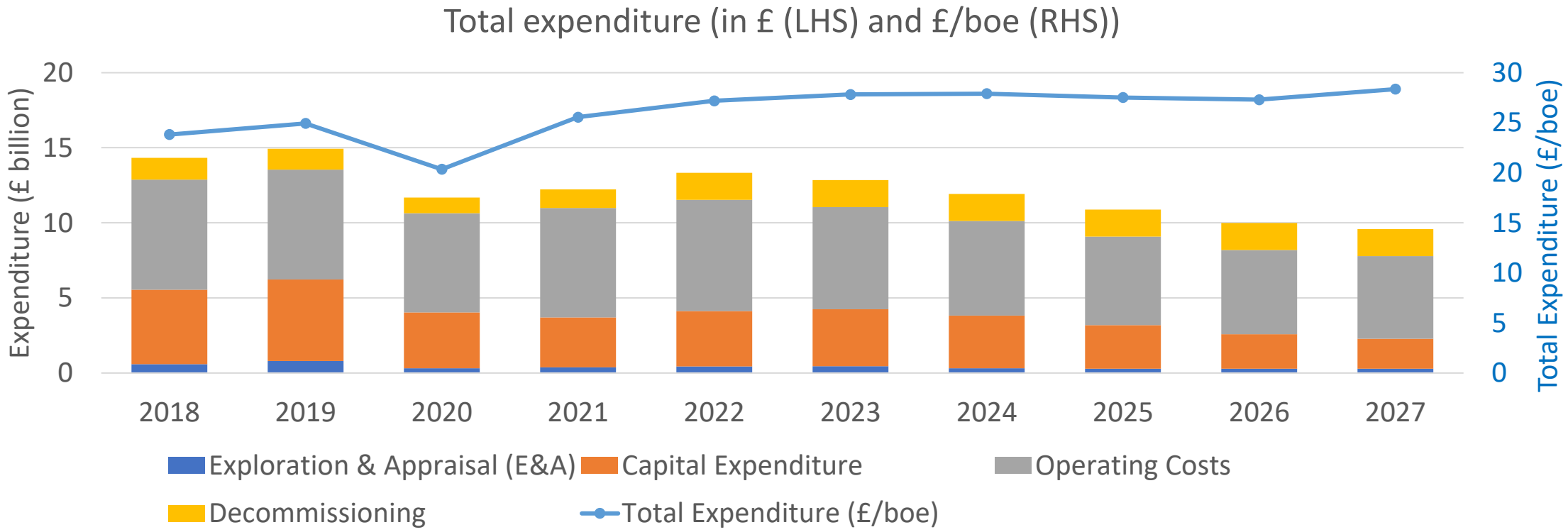


Data source: NSTA

- North Sea Transition Authority (the regulator) forecasts **2022 production at 1.32 mmboe/d** which is about the same as 2021 (1.31 mmboe/d). This then declines 1.26, 1.17 and 1.08 mmboe/d respectively in 2023, 2024 and 2025.
- **Current estimated 4.4 billion boe of reserves** can sustain production from the UKCS to 2030 – reserves to production (R/P) ratio of 10; reserve replacement ratio of -33%.
- **Contingent resources are estimated at 6.8 billion boe** with many of this in mature developed areas such as the CNS and NNS and close to existing infrastructure
- UKCS petroleum reserves and discovered resources are ~70% oil and ~30% gas. Areas with the biggest potential are CNS and NNS. WoS is a frontier area
- **Estimated 3.7 billion boe of mean prospective resources** in mapped leads and prospects

Cost projections

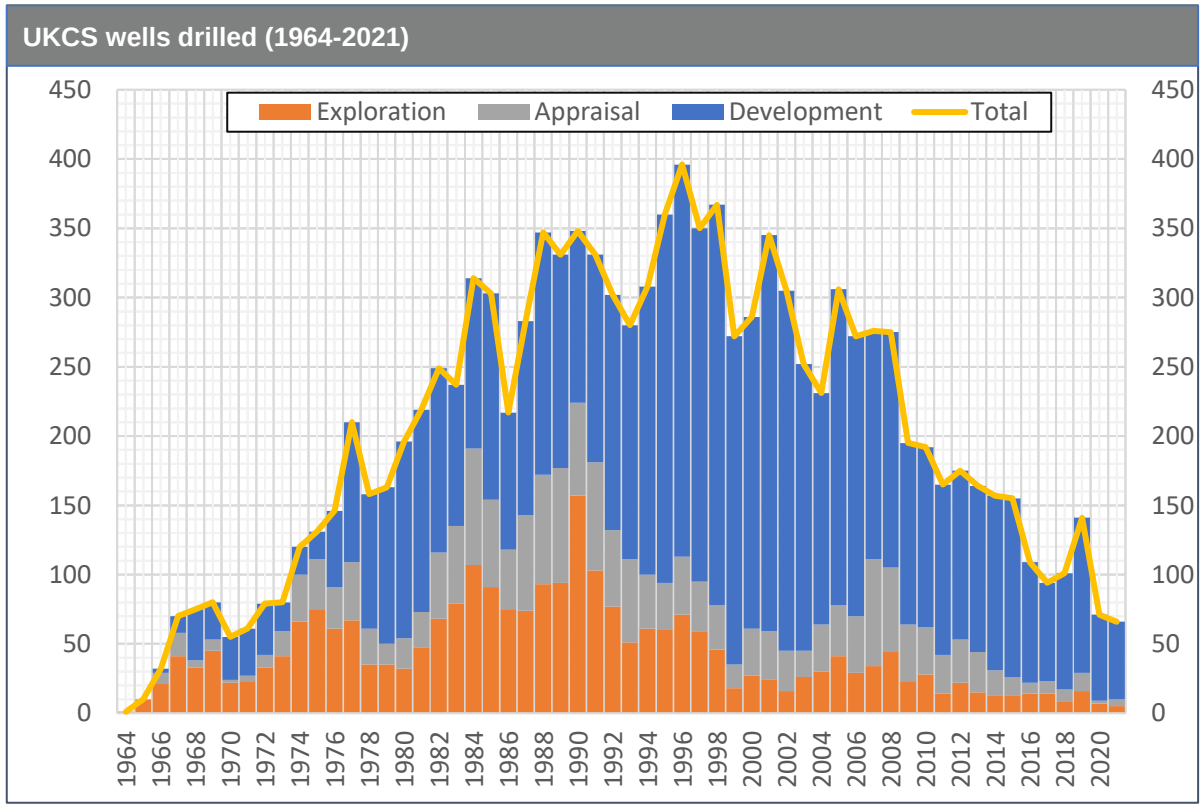
- While production levels are forecast to come down due to basin maturing, expenditure spend is forecast to remain relatively constant in nominal and per bbl terms in the 3 to 5-year outlook. This should translate into new as well as ongoing infill drillings for both capital and operating expenditures.
- Exploration and appraisal activity has remained at record low levels in recent years.



Data source: NSTA

E&A activity has remained at record low levels in recent years but likely to pick up due to higher oil prices and new energy security strategy

- Just five exploration wells were drilled in 2021 (lowest since 1965); similar exploration wells expected in 2022 although this is forecast to increase in the 3 to-5-year outlook on account of higher oil prices and new energy security strategy emphasizing role of oil and gas to UK domestic energy security.
- We forecast that an average of 6 exploration, 9 appraisal and 75 production wells will be drilled each year for the next five years.



Year	Exploration Wells	Appraisal Wells	Development (Production) Wells	∑(All Wells)
Yearly Forecast Well Count	6 (10)	9 (13)	75 (95)	90 (118)
5-Year Wells Forecast	30 (50)	45 (65)	375 (475)	450 (590)

NB: numbers in brackets is our 2020 forecast; blue is the 2022 forecast

Outlook

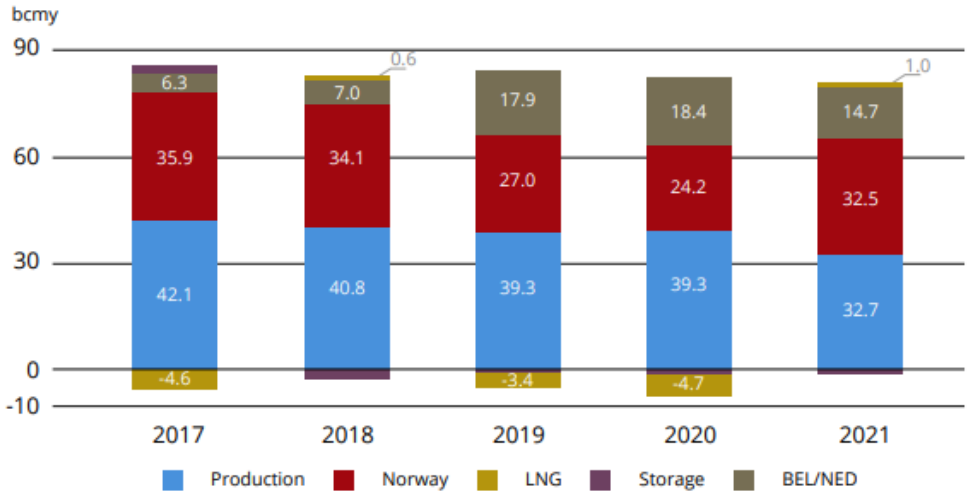
- **West of Shetland and Atlantic Ocean**
  - Future activity is likely to be led by large caps/supermajors such as BP (and to some extent independents) due to their operational and technological advantage in such deep to ultra-deepwater environments and also the potential for significant discoveries (>200 mmboe).
- **Northern North Sea and Central North Sea**
  - The Central North Sea will attract a lot of the mid-caps and private equity/infrastructure companies due to the wide availability of infrastructure (pipeline systems and terminals) to evacuate otherwise small hydrocarbon discoveries (15-40 mmboe) through subsea tiebacks and unmanned production systems to market.
- **Southern Northern Sea**
  - Mostly gas-led production from this region led by smaller independents.

Synopsis

In the short term, the UK will continue to require gas during the transition. Enabling more investment in North Sea production can help address this, although it will not provide a significant reduction in energy prices over the next few winters.

Over the medium term, the use of oil and gas needs to fall, to align with the strategies on climate change. Any extension of oil and gas exploration or investment should focus on projects with short lead times and payback periods to limit the risk of stranded assets. There is uncertainty over how the risk of creating stranded assets will be managed.

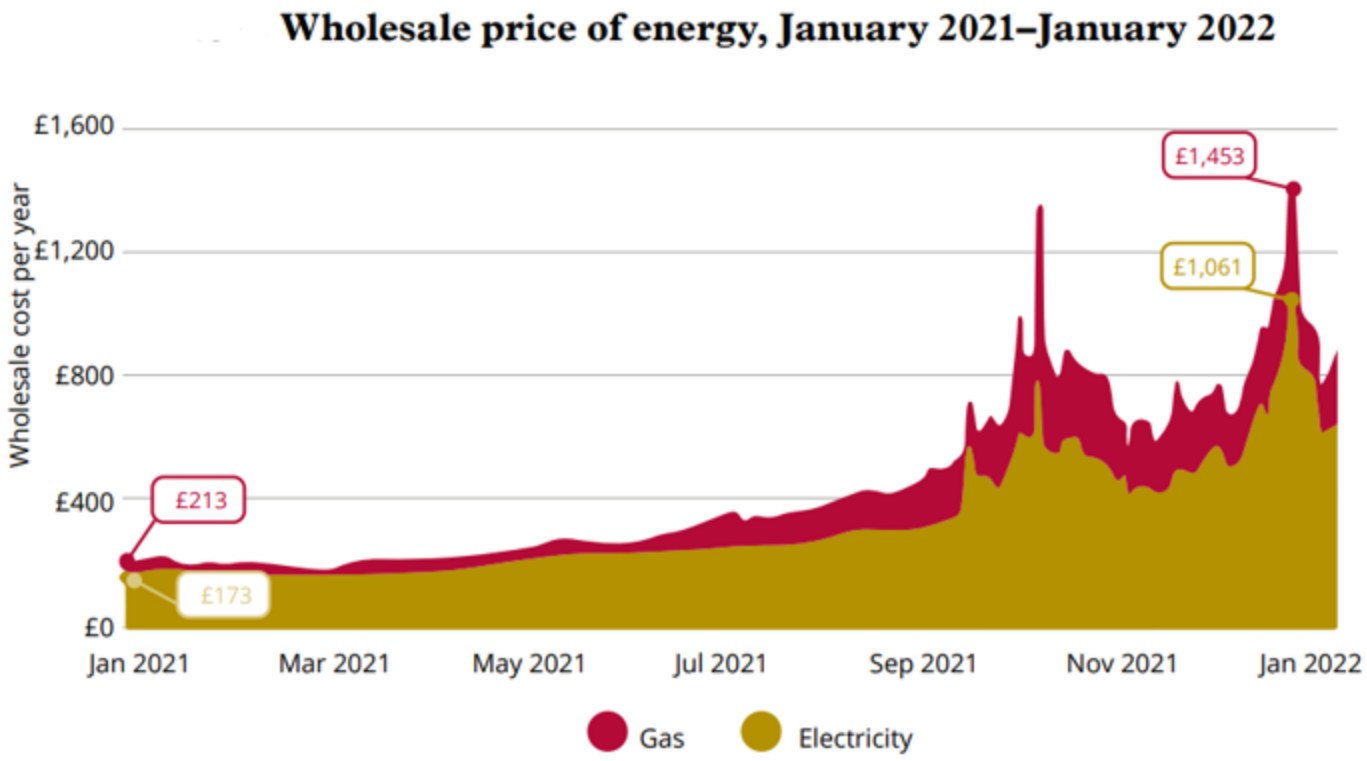
UK natural gas supplies by source (billion cubic metres per year)



Source: Oxford Institute for Energy Studies, The potential impact on the UK of a disruption in Russian gas supplies to Europe (February 2022): https://a9w7k6q9.stackpathcdn.com/wpcms/wp-content/uploads/2022/02/Insight-109-The-Potential-Impact-on-the-UK-of-a-Disruption-in-Russian-Gas-Supplies-to-Europe.pdf. Data from Department for Business, Energy and Industrial Strategy, 'Energy Trends: UK gas' (last updated 30 June 2022]: https://www.gov.uk/government/statistics/gas-section-4-energy-trends [accessed 30 June 2022].

Note that the net storage withdrawals in 2018–21 are associated with the withdrawal of cushion gas from the Rough storage facility, which formally closed in 2017. BEL/NED refers to the iUK Interconnector between the UK and Belgium (BEL) and the Bacton-Balgzand Line (BBL) interconnector between the UK and the Netherlands (NEL).

The figure below shows how gas and electricity prices increased together. Gas is used as a backup to renewables and hence gas prices set the marginal price of electricity which is reflected in wholesale electricity prices. Wholesale prices do not reflect the operating costs of other energy sources such as renewables which can be much lower than the marginal gas price.



Source: British Gas, 'Energy market news' (5 July 2022): https://www.britishgas.co.uk/energy-price-news.html [accessed 29 June 2022]

Energy Strategy going forward

“The Russian invasion of Ukraine has created global energy supply issues and has highlighted the vulnerabilities of the UK energy supply. To help avoid a disorderly transition, the Government should set out a net zero delivery plan which takes account of energy security and foreign policy considerations. It should make clear what decisions will need to be made and by when. Any such plan will need to incorporate the flexibility required in a three-decade, economy-wide transition. Nevertheless, such a plan would help to provide additional confidence to the public, businesses, and investors. The present uncertainty and lack of direction in policy and strategy is hampering consumers, businesses, and investors from responding on the scale and with the urgency required.”

Source; House of Lords Economic Affairs Committee 1st Report of Session 2022–23; Investing in energy: price, security, and the transition to net zero.

https://acrobat.adobe.com/link/review?uri=urn:aaid:scds:US:fc1ffb8a-3198-43ab-ba08-4621148cd47b

The Climate Compatibility Checkpoint should ensure that additional investment in oil and gas is focused on production that reflects the UK’s diminishing but continued demand for gas during the transition and not enable substantial levels of long-term production that conflicts with net zero objectives.

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