Exploration Task Force

OGUK

Responsible investment for a low carbon future

Making the case for upstream investment in the UK

Framing the responsible investment proposition

Responding to global energy challenges

- This information pack highlights **continuing global oil & gas demand** driving a need for oil & gas investment even in net zero scenarios
- **Emissions avoidance, reduction** and **mitigation** are essential whilst also balancing security of supply and energy affordability/access

Accelerating a more sustainable future

- The UK now has industry, regulator and government alignment towards **rapid de-carbonisation**
- The North Sea Transition Deal drives **UK re-invention** as an **integrated energy supply** and **carbon storage** industry
- **Investment will play a positive role** in allowing the UKCS to meet **up to 60% of UK net zero abatement needs**

Local supply limiting UK reliance on imports

- UK oil and gas is produced **responsibly and transparently** with below average emissions and strong ESG credentials
- **The UK upstream net zero trajectory** marries carbon storage (CCS) and low emissions hydrogen production with ongoing exploration & production to **limit higher emissions imports**

Energy integration and collaboration are **key to a low carbon future.**

Watch the **Exploration Task Force Video**

Sources: *OGA Offshore Energy Integration Report 2020, BEIS North Sea Transition Deal 2021.*

Front page image courtesy of IOG plc: Blythe platform and Dudgeon wind farm, UK.

The upstream industry's positive role in the energy transition

Assisting a low carbon transition

- **Meeting demand** with lower emissions oil and gas
- **Accelerating de-carbonisation** technologies
- **Providing backup** to intermittent renewables
- **Enabling reduction** of global coal use

Maintaining security of supply

- **Limiting** damaging price **volatility**
- **Ensuring dependable and diverse supply**

Supporting equitable energy access

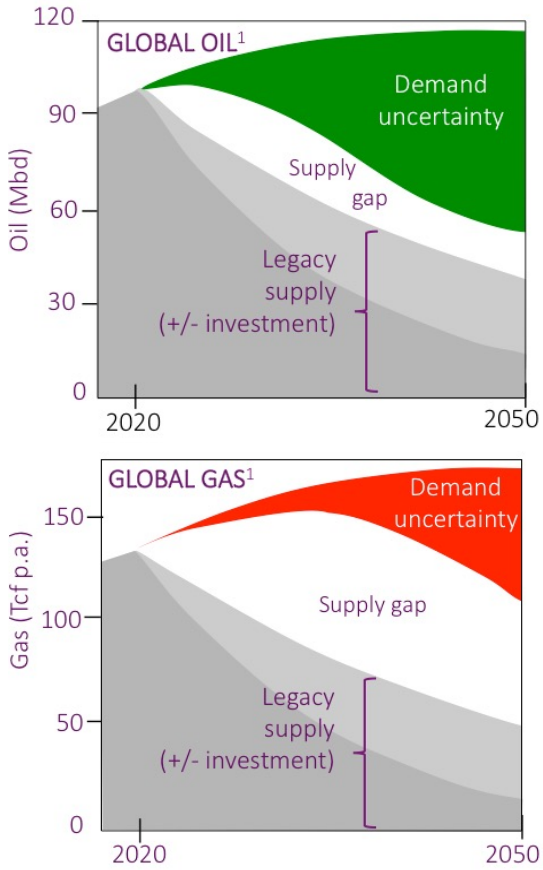
- Affordable energy to a growing population
- UN Sustainable Development Goal 7 – **universal access** to affordable reliable, and modern energy

Modelled global warming scenarios highlight uncertainty

- Modelled **1.5°C scenarios** (IPCC/IEA 2021[2,3]) **vary widely in key parameters** e.g. by a factor of x 8 in 2050 fossil fuel supply
- **Climate resilient investment** (e.g. efficient exploitation and infrastructure-led exploration) **is in line with 1.5°C scenarios**

Responding to **global energy challenges.**

Ongoing demand for oil and gas through the transition[1]



Factors influencing demand reduction

Political actions
Investment
CO_2 pricing
Technology
Geopolitics
Behaviours

> 3°C

< 2°C

Sources: *IEA 2019/2020, BP 2019/2020, BEIS 2019, Our World in Data, UN Emissions Gap Report 2020 [1] Equinor 2019/2020 (min. oil gap 260 Bn bbl) [2] IPCC 2018, IEA 2021 [3] Carbon Brief (18 May 2021).*

15.7% low carbon share of global primary energy

75% OPEC share of global oil & gas reserves

10% of population account for 48% of emissions

770 million people globally without electricity

30% oil and gas investment fall in 2020

1.9 billion more people on the planet by 2050

A lower emissions basin committed to net zero by 2050

Below average emissions

- Lower **emissions** intensity than global oil and imported LNG[1, 3]
- Reducing **absolute** emissions via North Sea Transition Deal targets

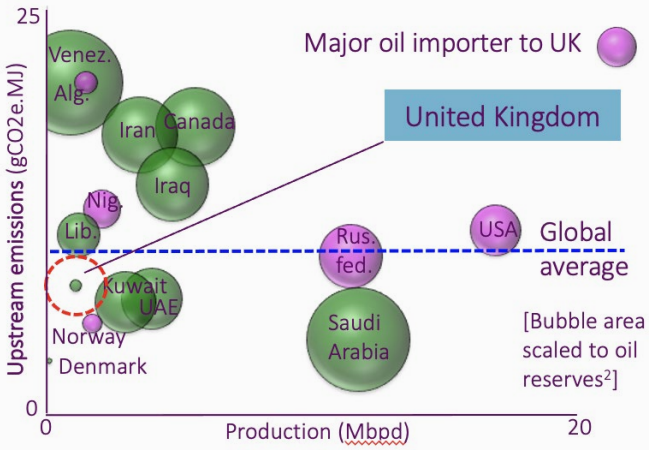
Milestones to net zero 2050

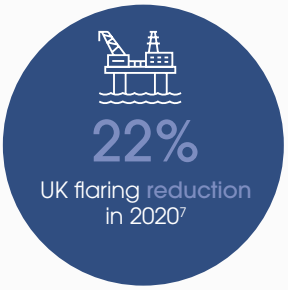
- Zero routine flaring by 2030
- Methane Action Plan
- 50% emissions reduction by 2030

Advancing carbon capture and storage (CCS)

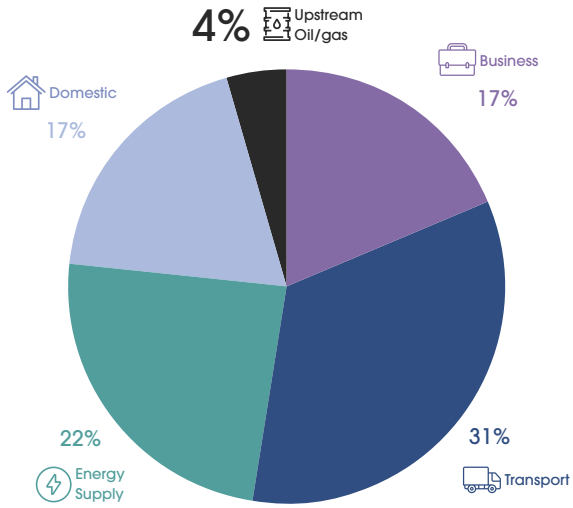
- In line with the Paris Accord
- To safely abate customers' emissions
- Initial government decarbonisation funding to progress 3 CCS hubs[4,5]

A smaller scale, lower emissions producer[1]

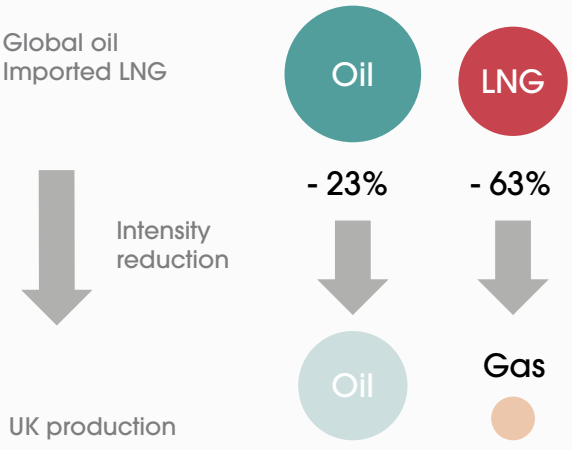




Upstream emissions in a UK context[6]



Lower emissions intensity[1,3]



Sources: *[1] OSTI (Masnadi et al 2018) data from 2015 [2] BP 2020 [3] OGA carbon Footprint analysis 2020 - data from 2019 [4] 2020 Energy White Paper/BEIS North Sea Transition Deal 2021 [5] UKRI 17 March 2021 [6] BEIS 2018 in OGUK 2020 [7] OGA 2021.*

Driving down upstream **emissions.**

UK upstream – growing ESG differentiation

Positive ESG momentum

- Measurable alignment towards net zero
- Expanding scope & clarity of reporting

Stand out UK upstream progress

	UK production	Non EEA imports to UK	UK commentary
Below average emissions, net zero targets Strict regulatory regime, net zero - legal obligation Emissions–centred environmental standards	✓ ✓ ✓	✗ ✗ ✗	Target 50% cut by 2030 New OGA Strategy KPI's, metrics, targets[1]
High safety standards UK employment UK skills development	✓ ✓ ✓	✓ ✗ ✗ ✗	Piper Alpha watershed 200,000 jobs Energy Skills Alliance[2]
Emissions transparency Financial transparency Use of internal carbon prices	✓ ✓ ✗ ✓ ✗	✗ ✓ ✗ ✓ ✗	OGA and industry[1, 3] EITI, mandatory TCFD[4] Growing adoption[5]

*(**OGA** = Oil and Gas Authority (regulator) **EITI** = Extractive Industries Transparency Initiative **TCFD** = Task Force on Climate Related Financial Disclosure)*

Responsible investment in E & P A Netherlands Case Study [6,10]

- **Under-invested,** declining Dutch offshore gas **drives up imports**
- **High emissions imports** negate the emissions benefits of growth in Dutch renewable power
- In 2019 stakeholders including **green NGO's agree** that E & P for **local gas is preferable** to imports
- **Consensus underpins** fiscal measures aiming to drive investment in lower emissions, offshore **small gas fields**

Comparison of key risks favours the UK

	Sector risks (S&P)[7]	UK upstream view
E	Emissions impact Long term demand	Net zero trajectory Displacing imports
S	Safety License to operate	59% UK population view oil & gas as essential[8]
G	Emerging market corruption	UK legislation - UKBA 2010, alignment to UK corp. gov. code[9]

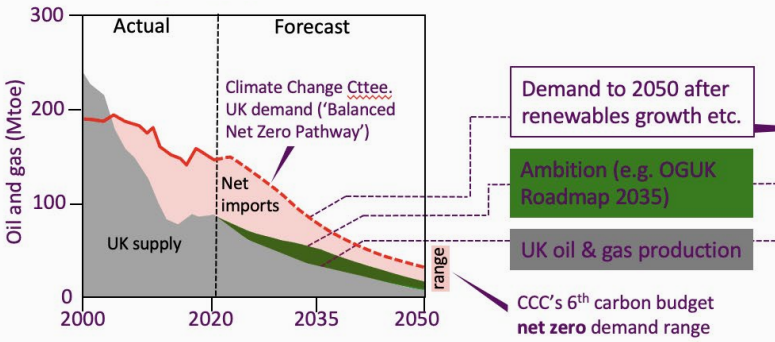
Investment for **positive impact.**

Environmental and financial **transparency.**

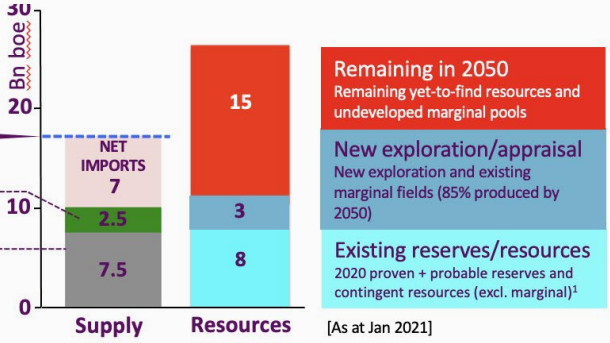
Sources: *[1] OGA Stewardship Expectation 11 [2] BEIS North Sea Transition Deal 2021 [3] Taskforce on ESG reporting [4] BEIS - mandatory alignment to TCFD 2023-25 [5] McKinsey and Co. 2021, Internal Carbon Pricing [6] van den Beuekel & van Geuns 2020 [7] S & P Global, 2020 ESG Industry Report Card: Oil and Gas [8] OGUK data [9] UK Bribery Act 2010 and OGA Strategy/2021 consultation [10] Dutch North Sea Agreement.*

UK demand underpins exploration and production

UK's major supply gap in a net zero scenario
UK oil/gas supply and demand to 2050



Exploring to sustain low emissions supply
UK total oil/gas volumes to 2050



7-10
Billion boe net imports to 2050

Exploring to **limit imports.**

Supplying demand beyond 2050.

Ambition to sustainably meet 60% of UK demand

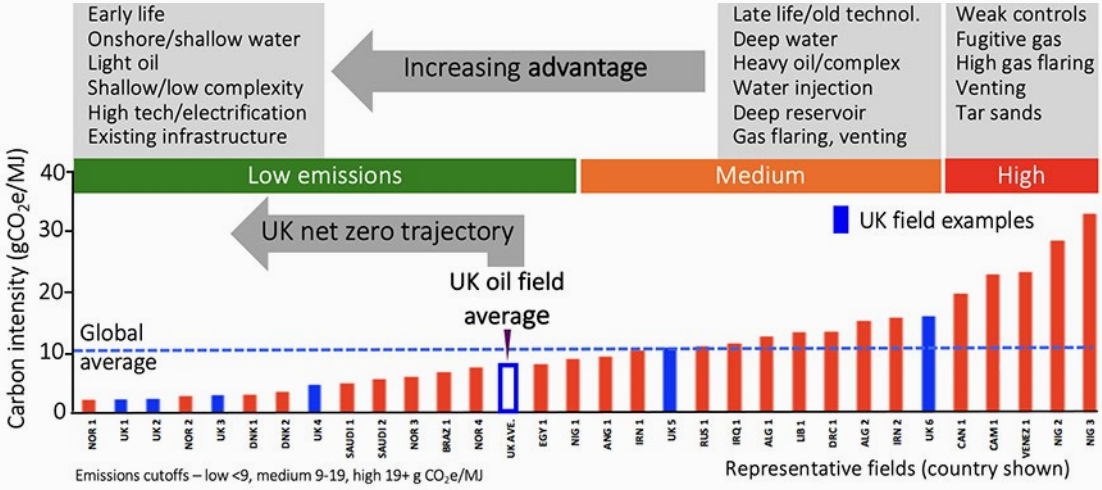
- **Exploring, developing** and **producing** oil and gas to limit UK net hydrocarbon imports up to and beyond net zero 2050
- **Exploring** and **appraising** to find and produce 2.5 billion boe (15%) of UK's remaining resources by 2050*
- **Ensuring** that the UK's 1% share of global oil production is delivered responsibly, transparently and with progressively lower emissions
- New **Climate Compatibility Licensing Checkpoint** – industry welcomes measurement of net zero progress, import status, etc.

Sources: *OGUK Econ. Rpt. 2021, OGA Projections Feb. 2021, Climate Change Cttee. 6th Carbon Budget 2020/letter to K. Kwarteng MP March 2021, OGA UK Reserves and Resources Report 2020 (Sept. 2021) and XTF analysis.*

Low stranding risk of UK resources supports investment

UK oil field emissions are below average

Carbon intensity comparison of UK and overseas oil fields[1]



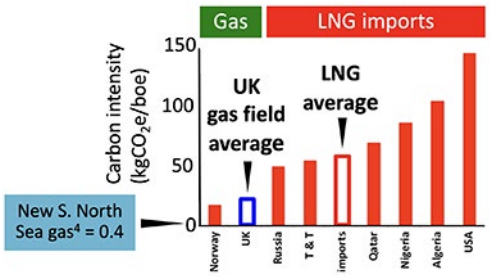
Most UK fields will retain value

- **UK fields** tend to be **'advantaged'** but a few late life/hard to abate fields may phase out[2]
- **Net zero trajectory** and low breakeven oil prices
- **Climate Compatibility Licensing Check** should help avoid over-investment
- **EU methane regulations** and carbon border adjustment (oil and gas from 2025?) will favour advantaged supply[3]
- **Reserves now reset** to lower oil price scenarios

LNG
is 21% of supply
but 44% of emissions[6]

LNG imports raise global emissions

Average intensity of main UK gas supply sources[5]



Low stranding risk of **advantaged indigenous supply.**

Local supply to **limit global emissions.**

Sources: *[1] ICCT 2014, McKinsey 2019 Towards a Net Zero Future, OSTI (Masnadi et al 2018 - data 2015) [2] North Sea Transition Deal 2021 [3] FT 2021: US gas exporters face methane curbs after carbon tax reprieve [4] IOG 2021: SNS Core Project [5] OGA carbon footprint analysis 2020, [6] 2019 volume-weighted upstream emissions, data from source 5.*

UK fiscal regime sustains ongoing exploration and production

Competitive fiscal regime

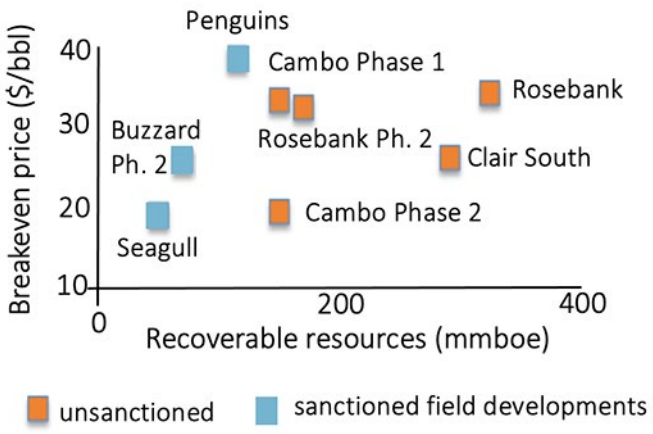
- **Attractive UK fiscal terms** shown by ranking and projects
- **Encouraging E & P** to prolong UK's **advantaged supply** and add shared value
- Global **high tax** regimes tend to **higher emissions**

Responsible capital allocation to E&P

- **Constructive investment** in a basin aiming for net zero to drive sustainability and value
- **Diverse opportunities** for **diverse investors** within an emissions reduction context
- **Low break-even prices** below $40/bbl and stable terms underline **low stranding risk**

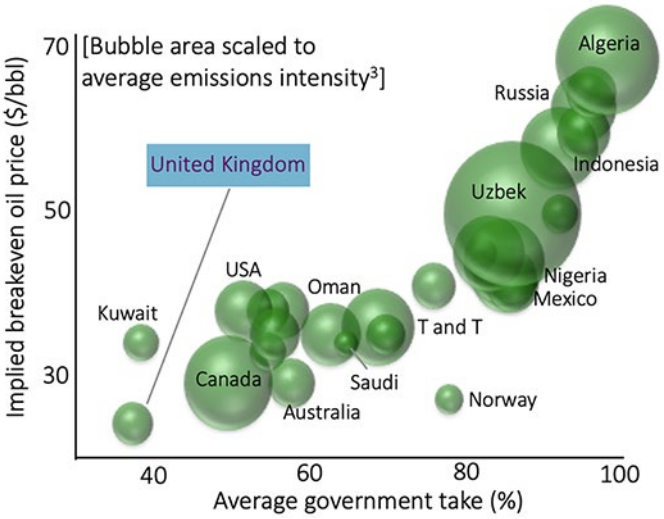
Opportunities to invest **responsibly** in a **sustainable** basin.

Attractive project economics[1]



NB Cambo FDP volumes -120 MMBOE

High global ranking[2]

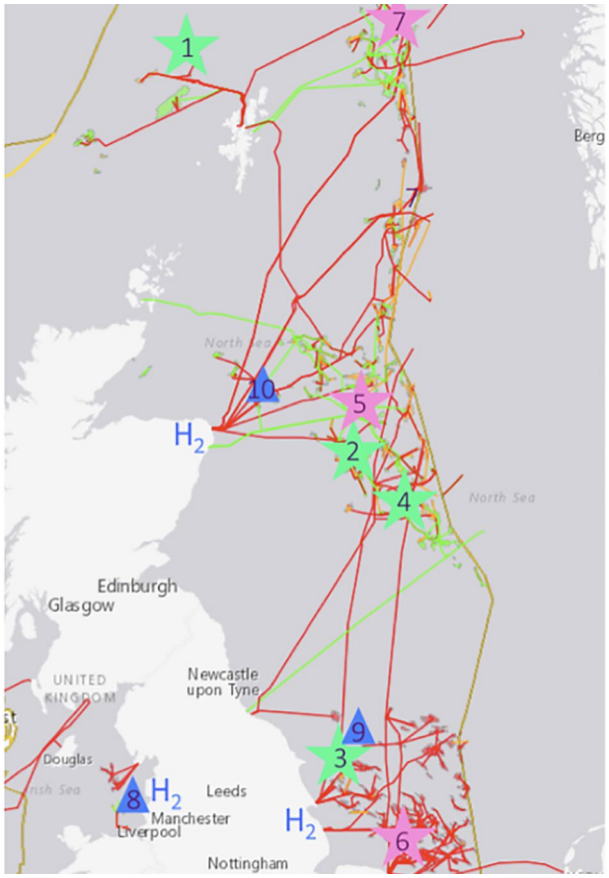


Ongoing exploration success[4]

	Success rate %	Found mmboe	Cost $/bbl
2020	71	212	<2
2019	35	240	<4

Sources: *[1] Rystad 2021 (in PESGB March 2021) [2] Rystad Energy 2021: The UK offers operators best profit conditions to develop big offshore fields [3] OSTI (Masnadi et al 2018) [4] OGA 2019 Overview & OGUK Exploration Conference 2021.*

UK exploration assists CO_2 storage and blue hydrogen



UKCS re-invention is underway

Glendronach discovery 2018 100 mmboe next to Edradour Field	1
Glengorm discovery 2019[1] 60 - 470 mmboe next to Gannet Field	2
Tolmount East discovery 2019 30 - 40 mmboe next to Tolmount field	3
Isabella discovery 2018 120 mmboe next to Judy Field	4
Seagull development (50 mmboe) Tieback to existing facilities / pipelines	5
Blythe Hub Phase 1 dev. (28 mmboe) Re-using existing pipeline to shore	6
Penguins re-development (115 mmboe) Floating production, gas via local pipeline	7
HyNet NW (130+ Mt CO_2) ENI Re-use of Liverpool Bay oil/gas fields	8
Northern Endurance (54+ Mt CO_2) Offhsore storage. BP Equinor Total etc.	9
Acorn (30+ Mt CO_2) Chrysaor Shell etc. Re-use of Goldeneye Field and pipeline	10

Gas Oil CCS

Exploration helps achieve net zero

- **Prolonging local lower emissions supply**
- **Supplying low emissions gas for blue hydrogen**
- **Maintaining knowledge** and **critical skills** for the exploration and development of CCS sites
- **Retaining infrastructure** for CCS re-use, with scope for up to 30% CCS capital cost reduction[2]
- **Supporting** the case for platform electrification
- **Increasing value** and adding **portfolio upside**

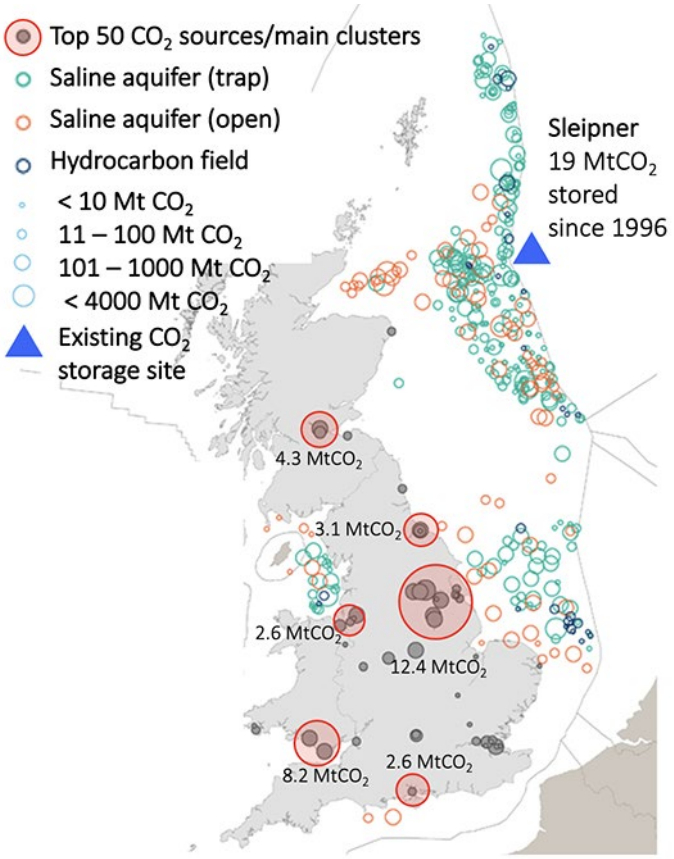
Click here to learn more

Exploration in a **low carbon future.**

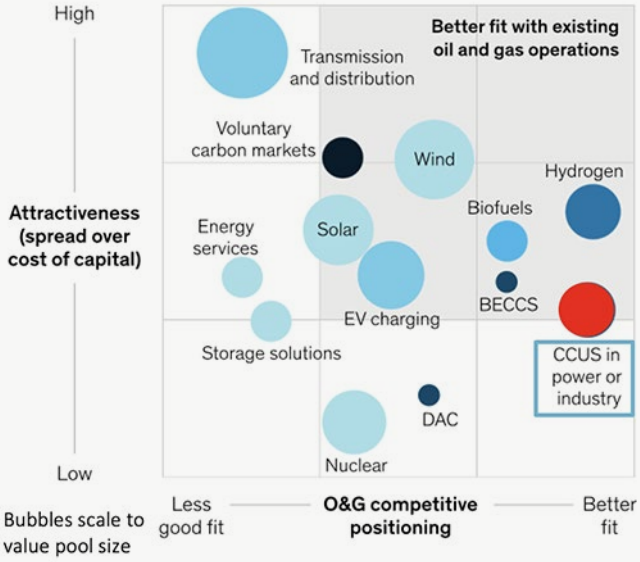
Sources: *Rystad in PESGB March 2021, HyNet/Acorn websites, ETI 2016 (CO2 Stored), IOG, Total, Premier, Neptune Energy statements*
[1] Glengorm Central EIA [2] OGA Energy Integration Rpt.

CCS – new revenue streams through emissions mitigation

Substantial offshore storage capacity[4]



Upstream strength underpins CCS[2]



£12-£30/t
Transport & storage[5]

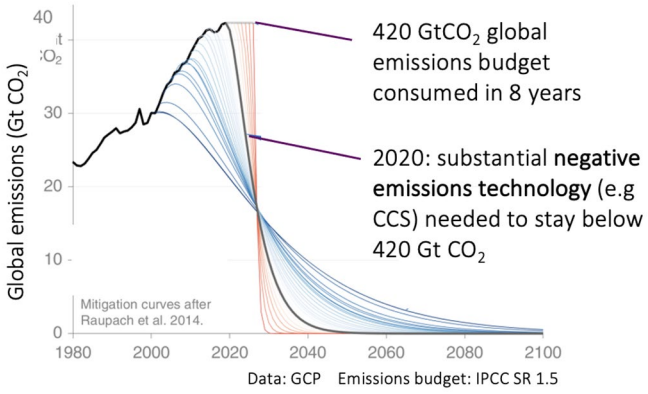
A world scale subsurface opportunity

- **Synergies** via infrastructure, data and expertise
- **Abundant capacity:** UKCS storage capacity of c.78 $GtCO_2$ could meet 100s of years of demand
- **High demand:** 2050 mid case 130 $MtCO_2$/yr at c. 20 sites is around 1/3 of 2019 UK emissions
- **Regulated assets:** large scale, long term returns – commercial framework in place in 2022
- **No major technical hurdles** to advancing CCS[3]

Upstream skills are key to assuring CO_2 storage.

De-carbonisation demands rapid CCS[1]

1.5°C warming scenario: CO_2 mitigation curves



Sources: *[1] Global Carbon Budget 2019, Global Carbon Project/R [2] McKinsey and Co. 2021, The Big Choices for Oil and Gas [3,4] ETI (2016)/ CO2 Stored [5] OGA 2020.*

Re-inventing the UKCS through low carbon integration

Supply chain, upstream technology and skills link these energy transition opportunities:

Unlocking hydrogen

- 2035 total economic impact: **£21 billion**
- **Energy storage** and de-carbonisation of hard to abate sectors, targeting 5GW by 2030[2]
- **Blue hydrogen** from **gas and CCS**, building a market to help commercialise green H_2

Delivering carbon storage

- 2035 total economic impact: **£6 billion**
- Initial 10 Mt CO_2 p.a. (2030) from industrial/power/blue hydrogen, **growing fast** (6th Carbon Budget)
- **Re-using oil & gas fields and infrastructure** to lower the capital cost of CCS

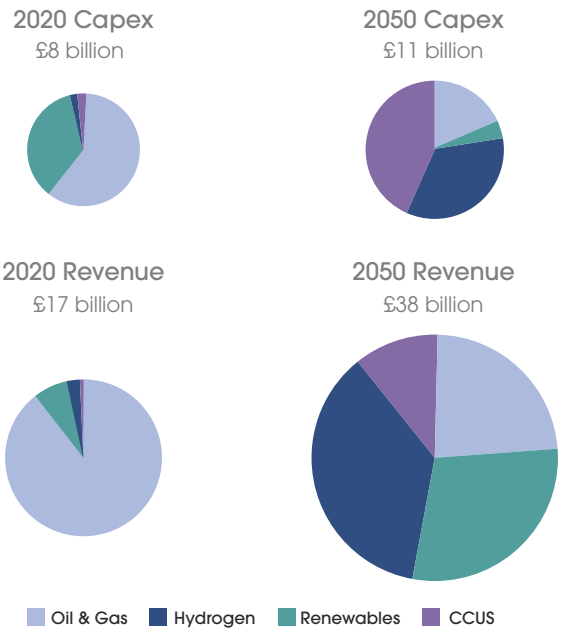
Lower carbon oil & gas supply

- 2035 total economic impact: **£28 billion**
- Limiting import dependence, maintaining **infrastructure for CCS**, retaining key skills
- Efficient E & P, offshore electrification (up to £3 billion spend[2]), **integrated energy hubs**

Integrating renewables

- 2035 total economic impact: **£18 billion**
- Low carbon electricity with **green hydrogen to mitigate transmission loss** and **intermittency**
- Offshore wind power, wave power, shared transmission and **integrated energy hubs**

UKCS annual projections[3]



UKCS could meet **60%** of required UK net zero abatement needs[1].

Up to **£16 billion** spend on new energy technologies by 2030[2].

Sources: *[1] OGA Energy Integration Project Report 2020 [2] BEIS North Sea Transition Deal 2021 [3] OGTC 2020 – Closing the Gap.*

Responsible investment to achieve a low carbon future

Investment for positive impact

- **Responsible investment** in a transparent regime
- **Reducing global emissions** through local supply

Accelerating UK de-carbonisation

- **Developing carbon storage** to abate consumers' emissions
- **De-carbonising hard to abate sectors** via blue hydrogen
- **Delivering on promises** in the North Sea Transition Deal

Increasing sustainability of local supply

- Driving down upstream emissions
- Leading ESG performance
- **Lower emissions** oil & gas **meeting part of UK demand**

Compelling case for investment

- **Lower emissions supply** to large local market
- **Attractive fiscal terms**, low stranding risk
- **Integration with low carbon technologies**
- **E & P** as an integral part of **UK's carbon reduction trajectory**

UK upstream expertise and technology can help achieve a **low carbon future.**