



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**



Net zero by
2050

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

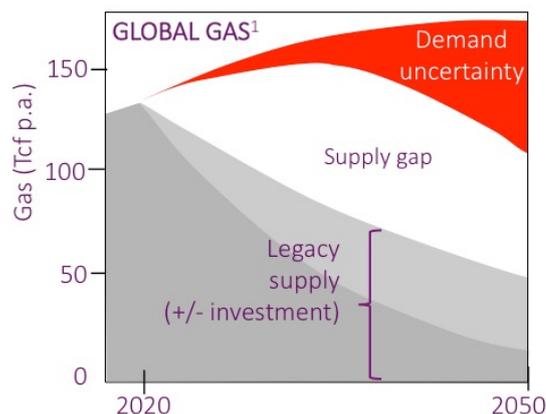
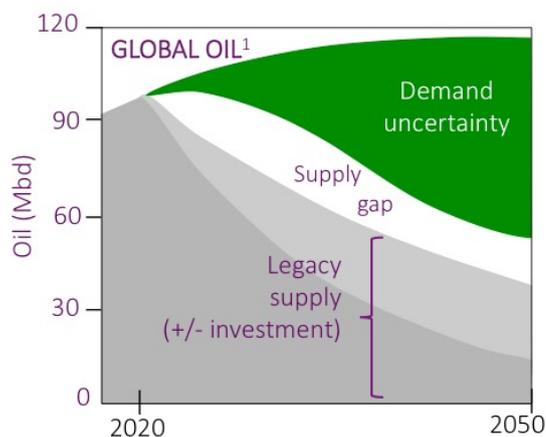
- Affordable energy to a growing population
- UN Sustainable Development Goal 7 – **universal access** to affordable reliable, and modern energy

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.

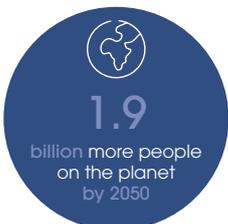
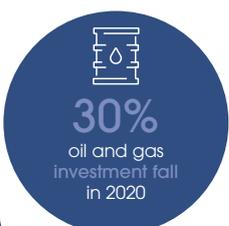
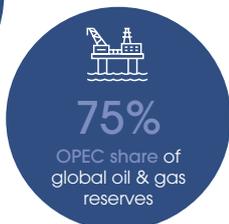
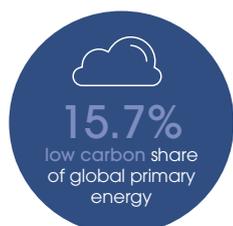
Ongoing demand for oil and gas through the transition¹



Factors influencing demand reduction

Political actions	> 3°C
Investment	
CO ₂ pricing	
Technology	
Geopolitics	
Behaviours	

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 bb) ² IPCC 2018, IEA 2021 ³ Carbon Brief (18 May 2021).



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

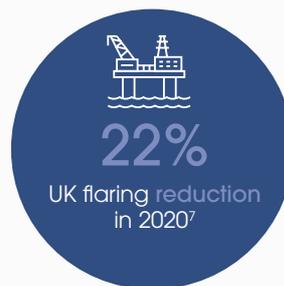
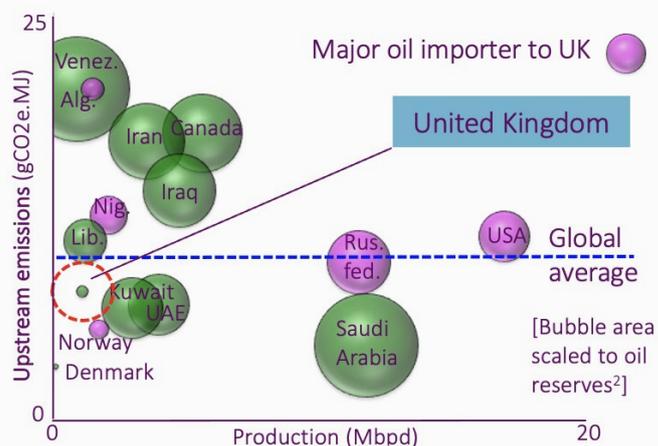
Milestones to net zero 2050

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

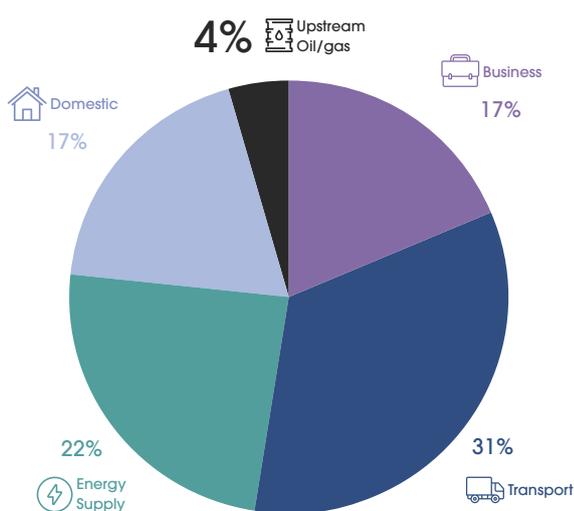
Advancing carbon capture and storage (CCS)

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

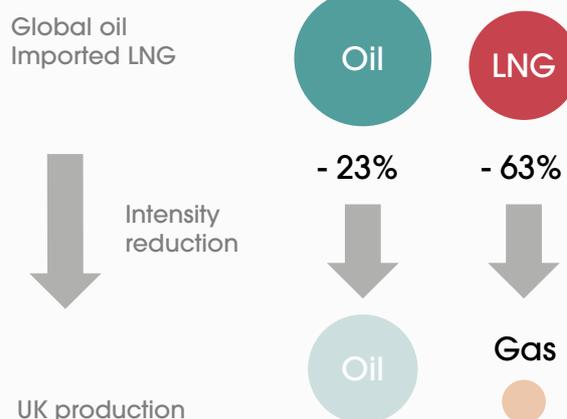
A smaller scale, lower emissions producer¹



Upstream emissions in a UK context⁶



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**

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 Beukel & 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.

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

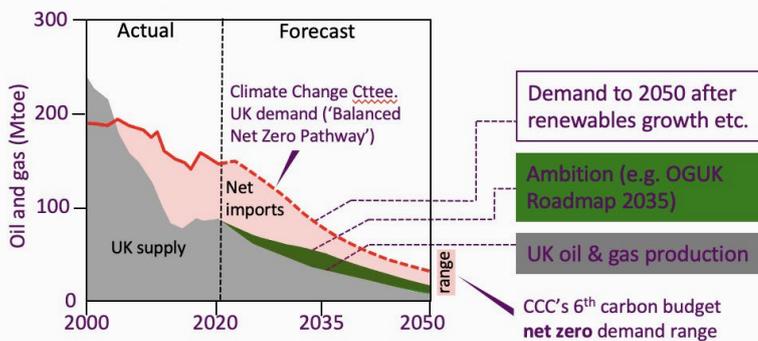
Investment for **positive impact.**

Environmental and financial **transparency.**

UK demand underpins exploration and production

UK's major supply gap in a net zero scenario

UK oil/gas supply and demand to 2050

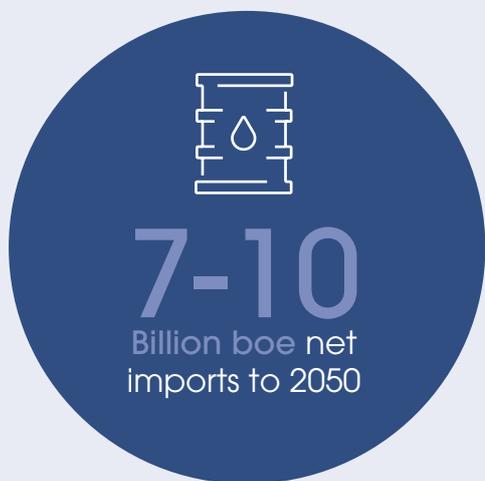


Exploring to sustain low emissions supply

UK total oil/gas volumes to 2050



[As at Jan 2021]



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.

Exploring to limit imports.

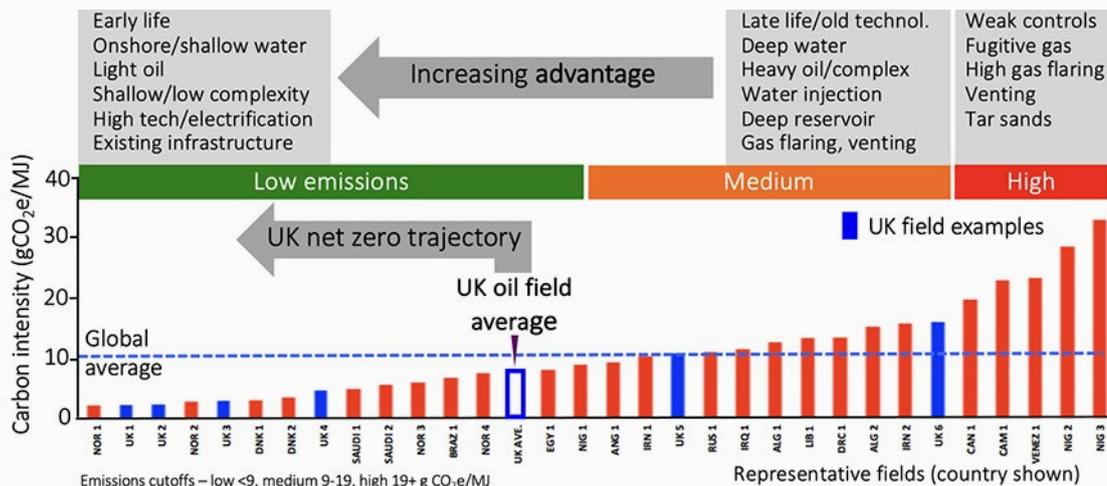
Supplying demand beyond 2050.

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 fields¹



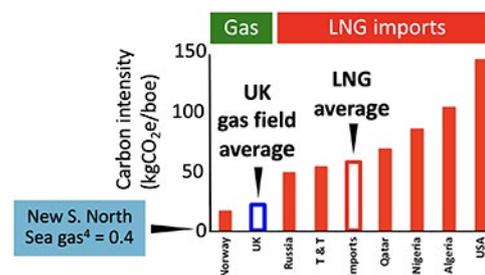
Most UK fields will retain value

- **UK fields** tend to be 'advantaged' but a few late life/hard to abate fields may phase out²
- **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 supply³
- **Reserves now reset** to lower oil price scenarios



LNG imports raise global emissions

Average intensity of main UK gas supply sources⁵



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, 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**

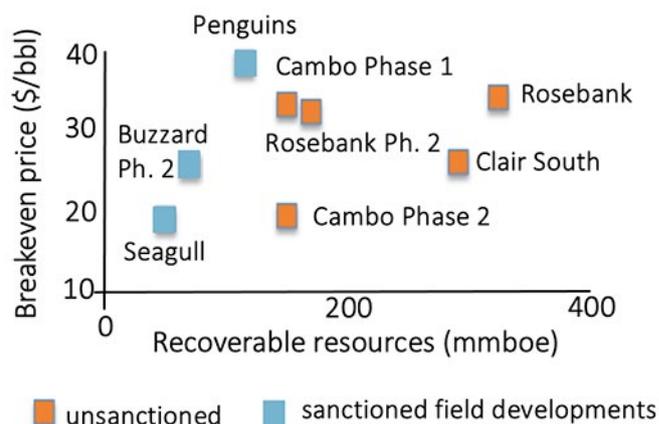
Responsible capital allocation to E&P

- **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.

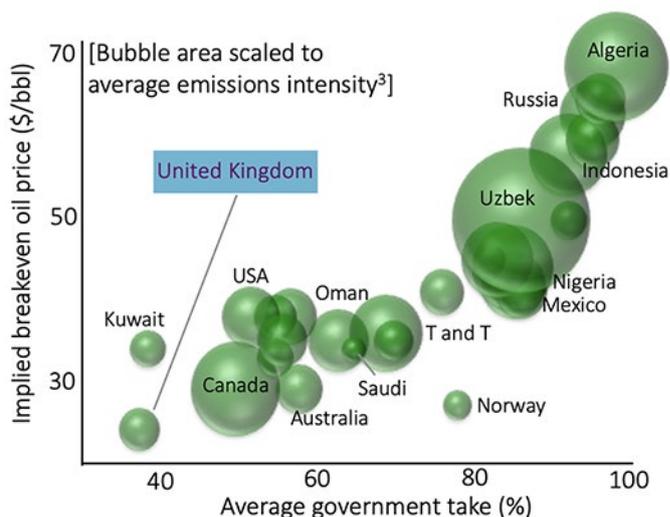
Sources: ¹ Rystad 2021 (in PESGB March 2021) ² Rystad Energy 2021: The UK offers operators best profit conditions to develop big offshore fields ³ OSTI (Masnadi et al 2018) ⁴ OGA 2019 Overview & OGUK Exploration Conference 2021.

Attractive project economics¹



NB Cambo FDP volumes -120 MMBOE

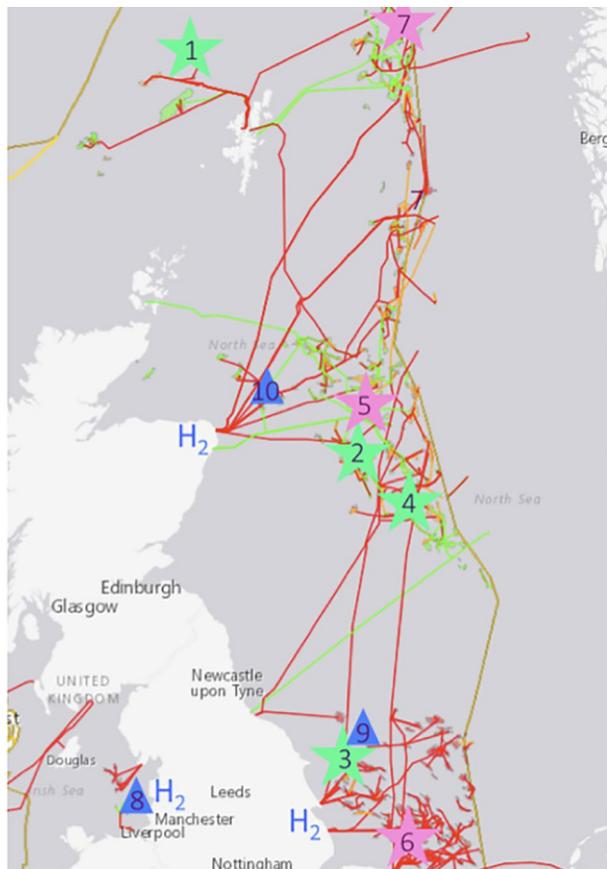
High global ranking²



Ongoing exploration success⁴

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

UK exploration assists CO₂ storage and blue hydrogen



★ Discovery ★ Development ▲ H₂ CCS / Hydrogen project

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) Offshore 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** rather than offshoring emissions via LNG imports
- **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 reduction²
- **Supporting** the case for platform electrification
- **Increasing value** and adding **portfolio upside**

Click [here](#) to learn more

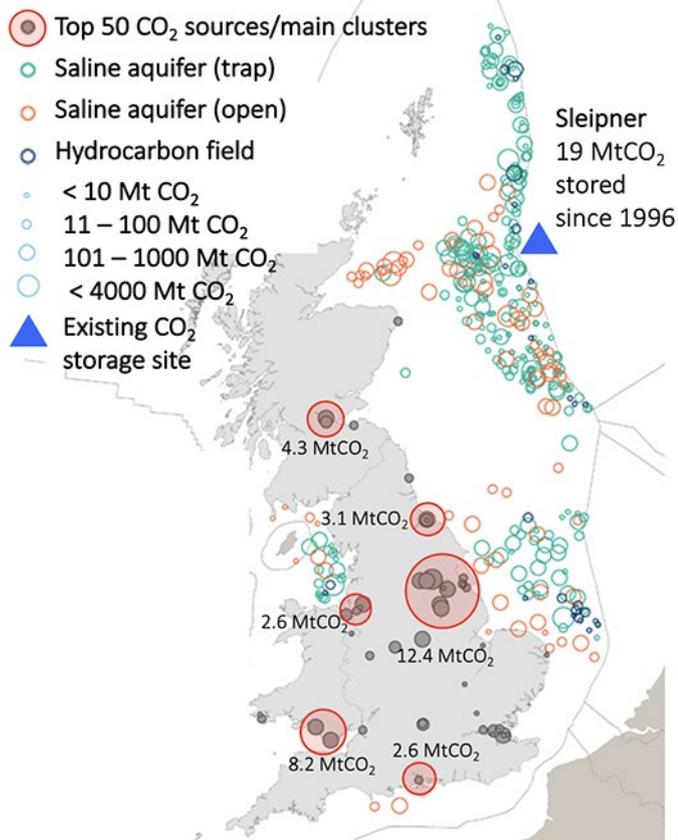


Exploration in a low carbon future.

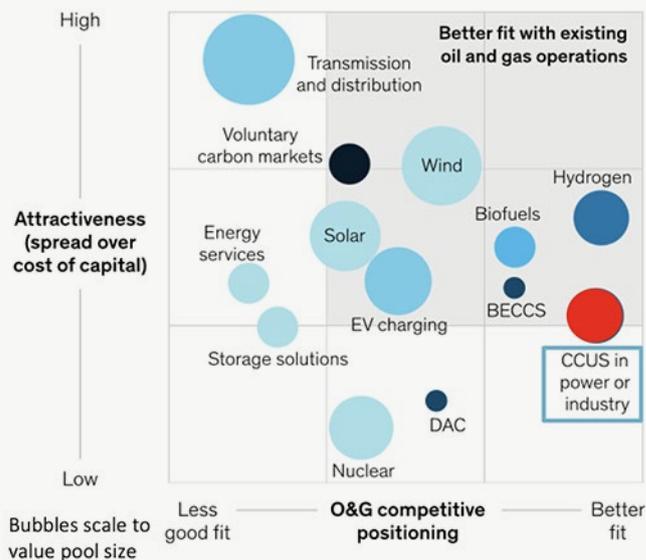
Sources: Rystad in PESGB March 2021, HyNet/Acorn websites, ETI 2016 (CO₂ Stored), IOG, Total, Premier, Neptune Energy statements
¹ Glengorm Central EIA ² OGA Energy Integration Rpt.

CCS – new revenue streams through emissions mitigation

Substantial offshore storage capacity⁴



Upstream strength underpins CCS²




£12-£30/t
 Transport & storage⁵

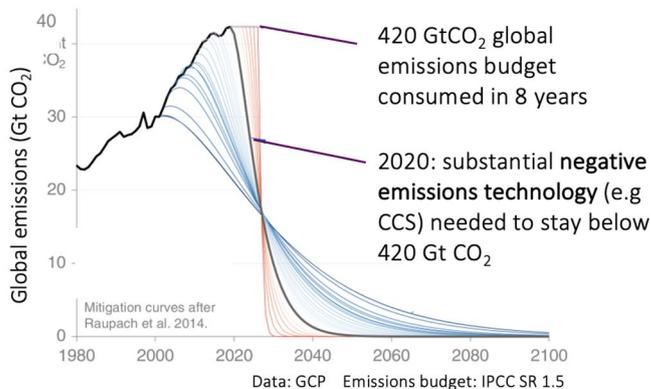
A world scale subsurface opportunity

- **Synergies** via infrastructure, data and expertise
- **Abundant capacity:** UKCS storage capacity of c.78 GtCO₂ could meet 100s of years of demand
- **High demand:** 2050 mid case 130 MtCO₂/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 CCS³

Upstream skills are key to assuring CO₂ storage.

De-carbonisation demands rapid CCS¹

1.5°C warming scenario: CO₂ 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 2030²
- **Blue hydrogen** from **gas and CCS**, building a market to help commercialise green H₂



Delivering carbon storage

- 2035 total economic impact: **£6 billion**
- Initial 10 Mt CO₂ 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 spend²), **integrated energy hubs**

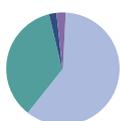


Integrating renewables

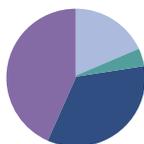
- 2035 total economic impact: **£18 billion**
- Low carbon electricity with **green hydrogen to mitigate transmission loss and intermittency**
- Offshore wind power, wave power, shared transmission and **integrated energy hubs**

UKCS annual projections³

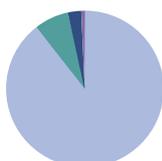
2020 Capex
£8 billion



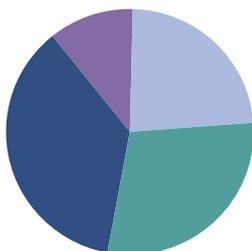
2050 Capex
£11 billion



2020 Revenue
£17 billion



2050 Revenue
£38 billion



■ Oil & Gas ■ Hydrogen ■ Renewables ■ CCUS

UKCS could meet **60%** of required UK net zero abatement needs¹.

Up to **£16 billion** spend on new energy technologies by 2030².

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.

