



Oil & Gas
Authority

Investor Overview 2018



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Executive summary

Since 2014 the UKCS has undergone a transformational change. The UKCS, like other basins, was hit hard by the downturn in oil price in 2016. However, the last two years have demonstrated the resilience of this basin and the skill and determination of the companies and people working in it. Instead of decline, the UKCS has seen production and production efficiency increase year-on-year whilst operating costs almost halved.

HM Treasury have played their part, creating a globally competitive fiscal regime, and the capital markets have been active with record levels of M&A activity; including the first sustained move by private equity into the UKCS and the change in midstream ownership away from E&P companies to specialist infrastructure funds.

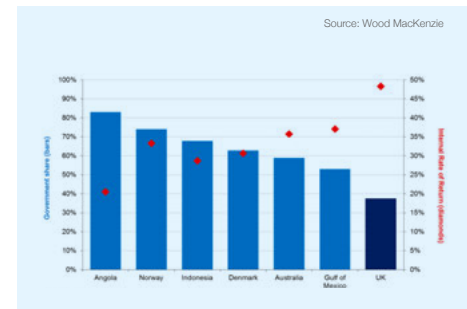
Since its inception in 2015, the OGA has been at the centre of all this activity, working with government, operators, the supply chain and investors to drive and coordinate much needed change and remove barriers to investment.

Two years after the oil price downturn, the UKCS has turned a corner. The OGA has had two successful licensing rounds, demonstrating both the continuing exploration potential in the basin and the value of over 3 billion barrels of oil equivalent (boe) of discovered resources. Vision 2035 aims to deliver an additional £140 billion of gross revenues from the UKCS with an additional 3.7 billion boe already added to 2015 projections.

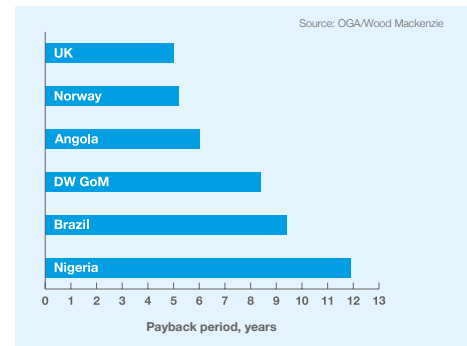
The UKCS has also seen innovation from new and established companies, finding ways to finance developments, and increase production and sustainably reduce costs of operating and decommissioning old fields and infrastructure. New innovative business models and the better use of new and existing technology have played their part in reducing costs.

The OGA stands ready to support companies with plans to maximise the value of the UK's remaining reserves, and encourages all investors to take a second look at the UKCS.

Global fiscal comparison



Payback periods



Source: OGA Data The OGA does not provide endorsements or investment recommendations

The UKCS is an attractive investment proposition

Substantial potential:

UKCS offers significant value for investors

West of Shetland

- Deepwater, subsea development hub, least developed region
- High number of exploration licences awarded in 30th Round with 75% increase in licensed acreage
- Potential to unlock large oil resource volumes by making gas export available.
- Significant gas potential with over 10TCF* of resource base (*Trillion cubic feet)

Northern North Sea

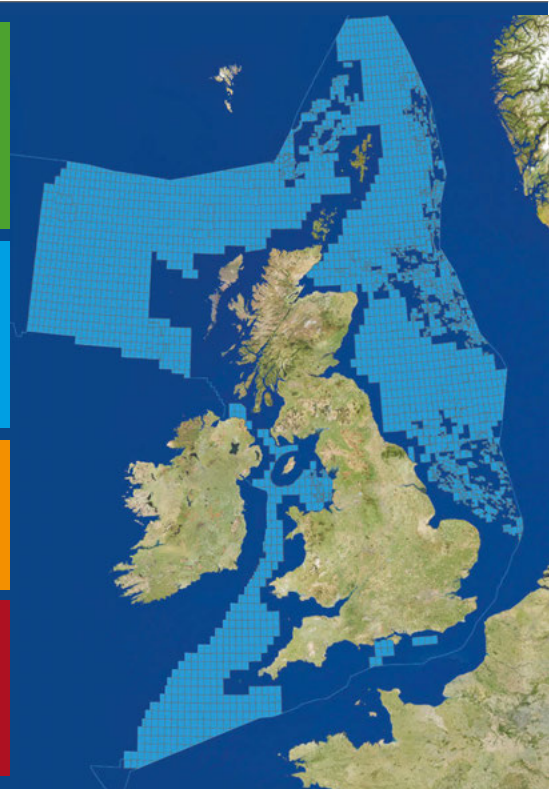
- Mature area with well established fields and infrastructure
- Recent field redevelopments e.g. Penguins (Shell)
- Incremental gas resource opportunities (Quad 9 Gas)
- Opportunities for decommissioning specialists

Central North Sea

- Significant number of marginal discoveries
- Mature, near field infrastructure and export capacity available
- Number of recent exploration successes

Southern North Sea/East Irish Sea

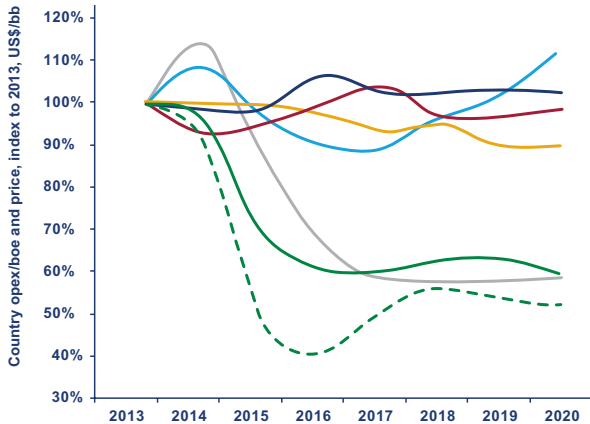
- Opportunity to deliver new developments and leverage existing field developments
- Potential to deploy new technology to unlock tight gas
- Collaborative relationship with renewables sector
- Significant decommissioning projects in near to mid term



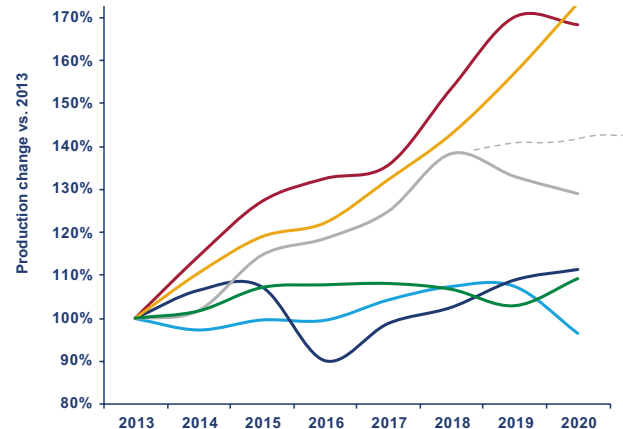
Diverse opportunities for diverse investors

The UK is globally competitive, generating value for investors

UK lifting and development costs have reduced on a per barrel basis since 2012 making the UK globally competitive



Source: OGA/Wood Mackenzie



Source: OGA/Wood Mackenzie

Cumulative UK production from 2016-2050 is now projected to be 3.7 billion boe more than the 2015 projection due to:

Sustained Production Efficiency

Cost efficiencies to extend asset life

Improved asset stewardship, standards and behaviours

Exploration successes

Start up of 33 new fields since 2014

Fiscal measures

Package of measures worth £1.3 billion and £1 billion introduced 2015 and 2016 in line with the UK Government's *Driving Investment* principles



2 x £20 million for new geophysical surveys in 2015 & 2016 and £5m for exploration data in 2017*



Introduction of new basin-wide Investment Allowance



Supplementary Charge reduced from 32% to 10%



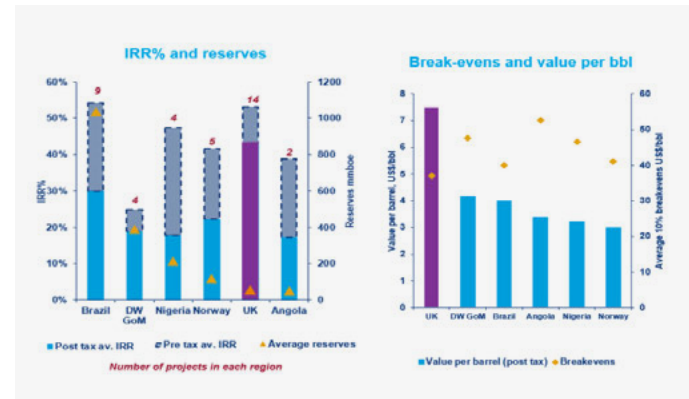
Petroleum Revenue Tax permanently reduced from 50% to 0%



Introduction of transferable tax history from 1 November 2018 to give buyers increased certainty they can get tax relief for their decommissioning costs

* (contracts awarded in 2018)

Recent UK Developments are internationally competitive



Source: OGA/Wood Mackenzie

UK post tax IRR is 13% higher than the next highest basin

Recent investments in UK projects have delivered world-class returns in terms of breakeven and value per barrel

MER UK Forum and Task Forces: the OGA and industry jointly committed to maintaining current cost disciplines

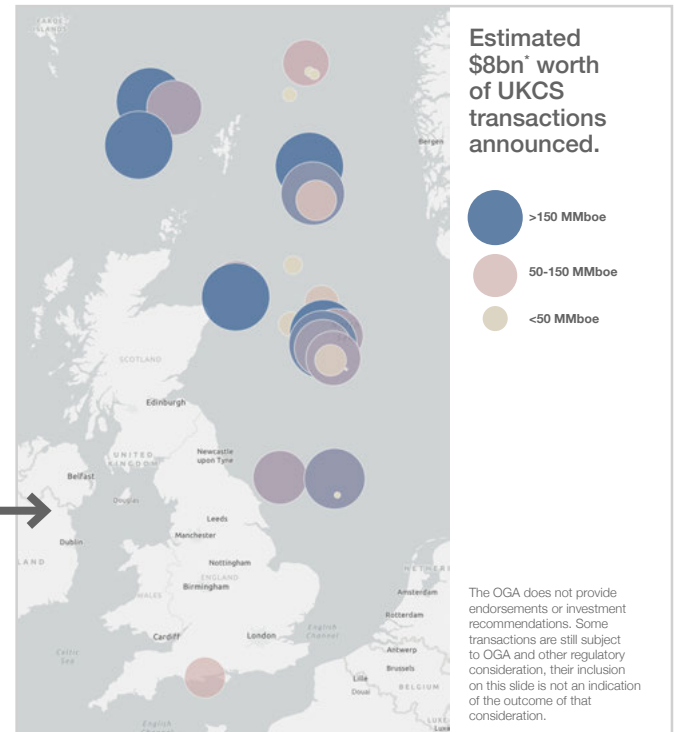
OGA's marginal discoveries initiative illustrates the continuing potential of the UK

Mitigating barriers to investment

The OGA continues work to deliver value for investors

<p>Basin maturity</p> <p>The UKCS has significant undeveloped discovered resource and exploration potential</p>	<p>Oil and gas is competing with renewables for capital</p> <p>OGA considering the opportunities that the energy transition will present for the UKCS</p>	<p>UKCS operating costs</p> <p>Lifting and development costs substantially reduced</p>	<p>Access to infrastructure</p> <p>A voluntary code of practice exists to help negotiations and the OGA has powers to resolve disputes</p>
<p>Decom</p> <p>The OGA is working with industry to develop strategic decommissioning plans to reduce cost</p>	<p>UKCS exploration</p> <p>The OGA provides flexible licensing terms and no-cost data to industry offshore</p>	<p>UKCS operating environment</p> <p>Asset stewardship is driving improvements and highlighting opportunities</p>	<p>Access to capital</p> <p>\$8bn of M&A completed in 2017 with an innovative approach to securing capital</p>

2017 UKCS Deal activity – bubbles represent size of deal



* Source: Wood Mackenzie

UKCS commercial landscape

The OGA supports and encourages innovation in new models to finance UKCS operations

Vendor Finance



Chrysaor and Baker Hughes commercial partnership

Baker Hughes to fund a portion of CAPEX, for a potential higher return

Risk and reward sharing drilling programme

Operator and service provider working together to realise value

Private Equity



Siccar Point acquisition of OMV UK

\$1 billion transaction backed by Blackstone and Blue Water Energy

Siccar Point becomes a full lifecycle oil and gas company

Example of an asset portfolio which is now a company priority

Late life specialists



BP/EnQuest SVT and Magnus transactions

No cash upfront from EnQuest; transaction funded by deferred consideration

Operator incentivised to bring down costs and extend life

BP has stated this transaction highlights right assets right hands

Innovative development models



Tolmount development

Antin Infrastructure Partners to part own platform and pipeline and pay for terminal upgrade

Development expected to produce 500bcf of gas with peak production of 300 mmscf/d

First gas target Q4 2020 as per licence commitment

Decommissioning



BP and Serica Erskine transaction

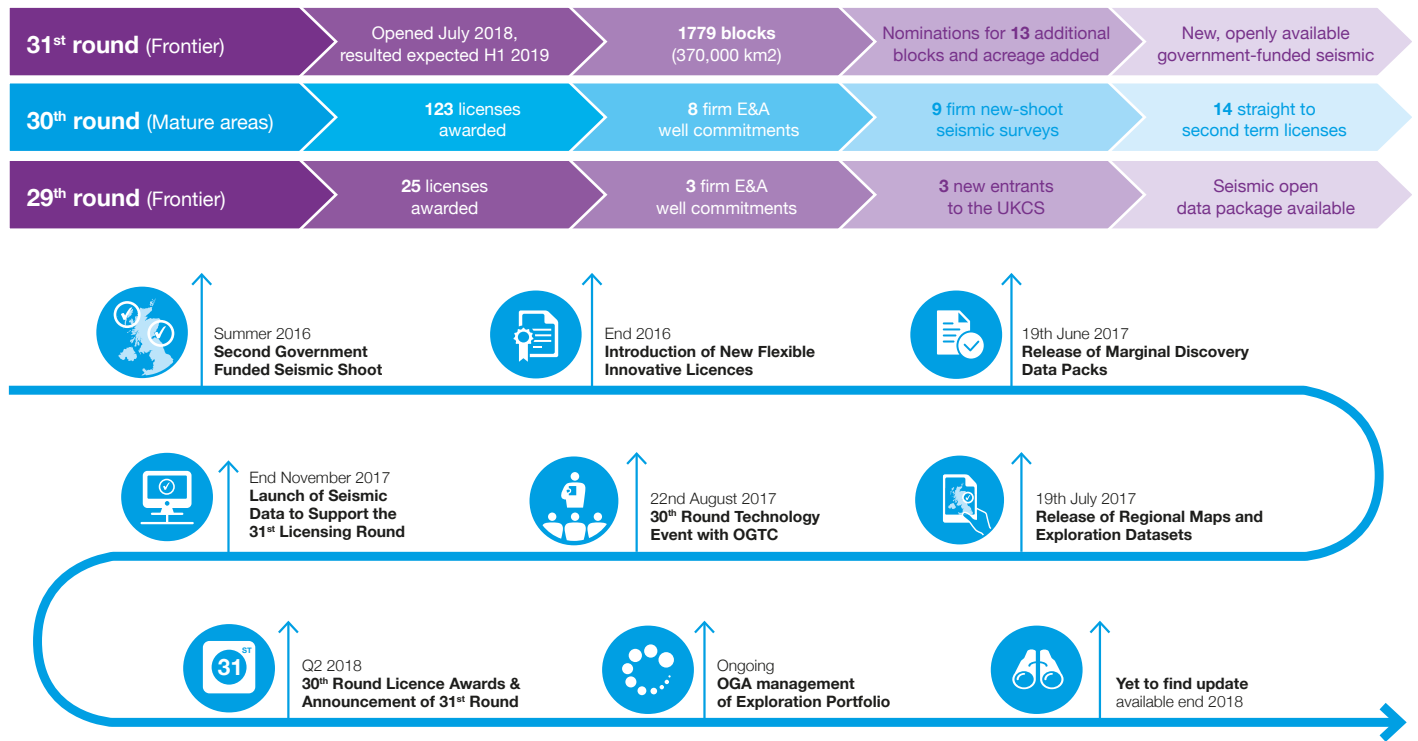
BP responsible for costs up to a gross £174 million; with £31.32 million net to Serica

BP will meet Serica's estimate of decom costs at the point of sale

Innovative approach to facilitate right assets right hands

Exploration on the UKCS

The UKCS has considerable discovered resource base (more than 3bnboe) and Yet To Find (6bnboe)*

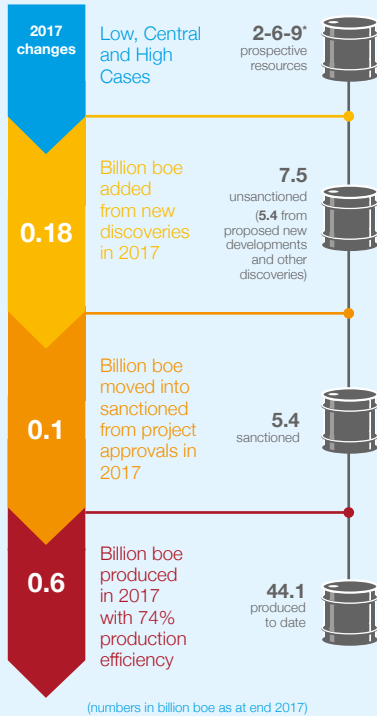


* Source: OGA data

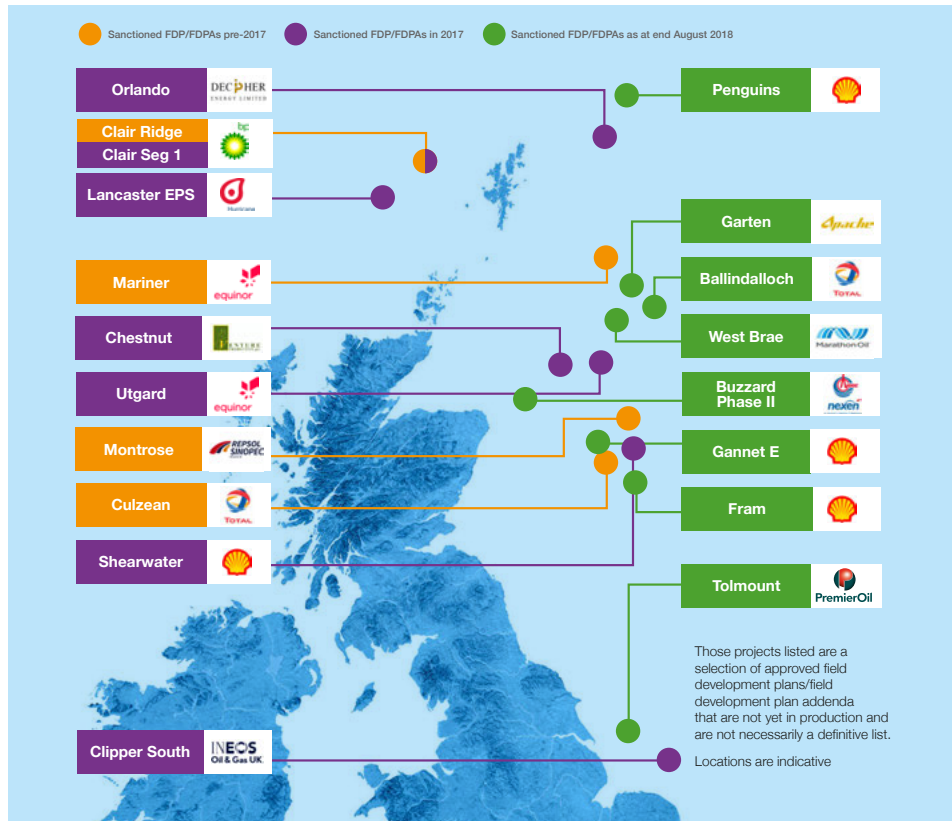
New and flexible licencing regime delivering quicker paybacks and expediting projects

Development on the UKCS

UKCS resource progression



Source: OGA Data

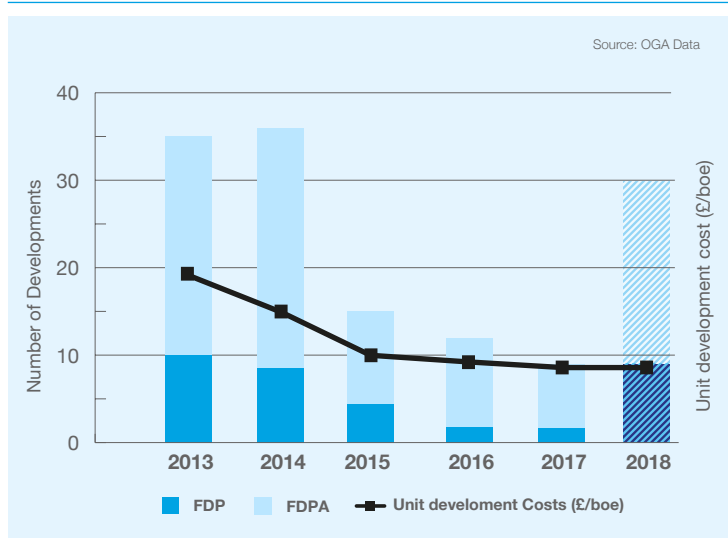


New developments are vital for replacing production and realising value

UKCS value proposition

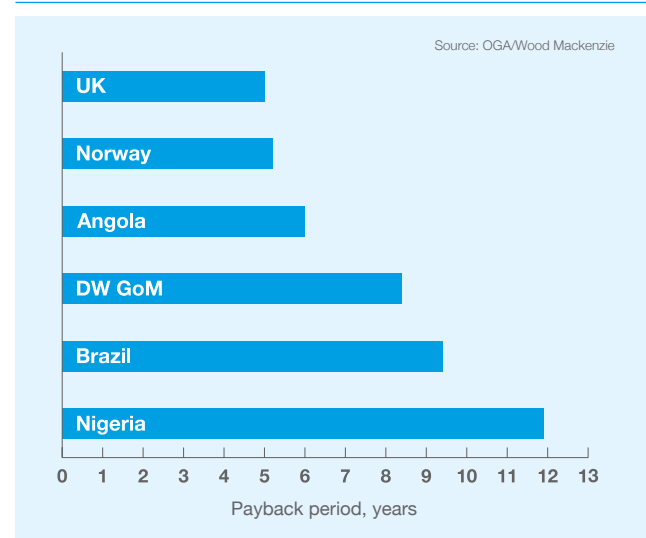
The UKCS presents investors with an opportunity to develop assets at historically low costs with internationally competitive payback periods

Field development plans and Unit Development Costs



- Per barrel development costs less than half the 2013 level
- Significant increases in projects expected in 2018 and 2019
- Unit costs stable

Payback periods



- UKCS still has diverse portfolio of opportunities, from large, complex developments to small, low cost tie-backs
- Opportunities and dramatically lower unit costs mean UKCS boasts world class payback periods

*Unit development costs are at the point of sanction. Projected figures at August 2018

Vision 2035: an additional 3.7 billion boe added to 2015 projections

Marginal discoveries

Potential solutions to unlock this prize:

Clustering

Cluster development could lead to significantly improved CAPEX efficiencies

- Potential clusters of marginal discoveries in CNS and Moray Firth
- Clustering opportunities to exploit synergies in economies of scale



Technology

Available and potential future innovations can unlock marginal developments, such as:

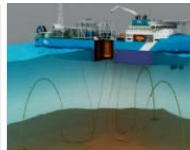
- State-of-the-art inversion
- Advanced structural models
- High-angle, ERD
- Improved drilling technique
- Subsurface scope simplification
- Low cost NUI
- Efficient topsides modifications
- Multilateral wells
- Tie-backs of the future
- Standalone facilities



Contracting strategy

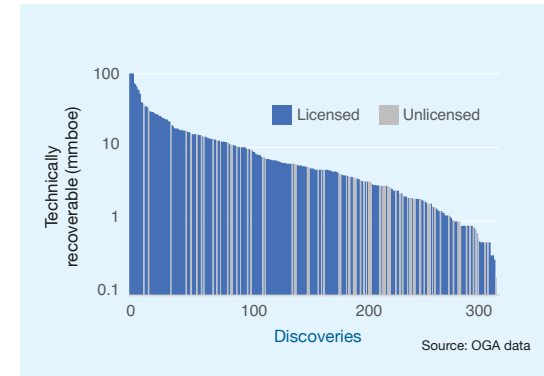
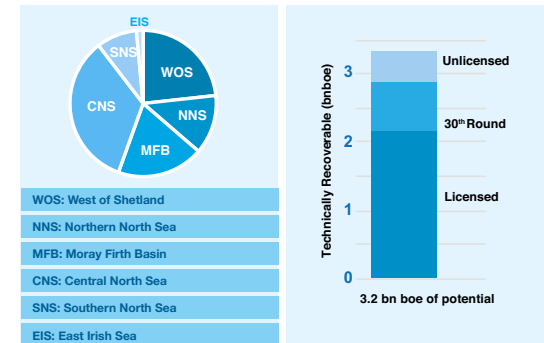
Novel contracting strategies including:

- Appropriate risk/reward sharing and greater collaboration between operators and supply chain
- Transactions funded by deferred consideration
- Tariff payments once production commences based on minimum rate
- Functional tender rather than price tender
- Collaborative Contractor Club



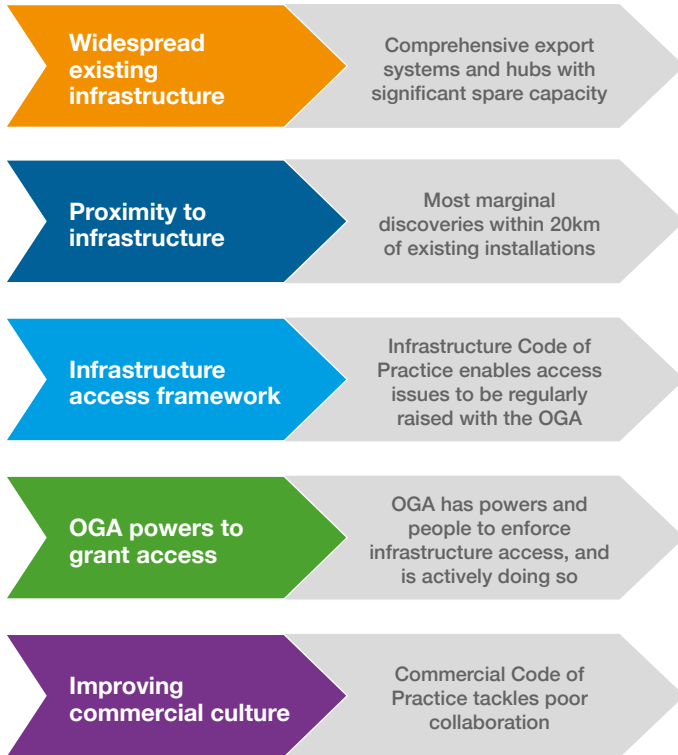
Breakdowns of discovery volumes

– 3.2 bn boe of potential



Over 300 marginal discoveries offer significant additional opportunities

Marginal discoveries and access to infrastructure

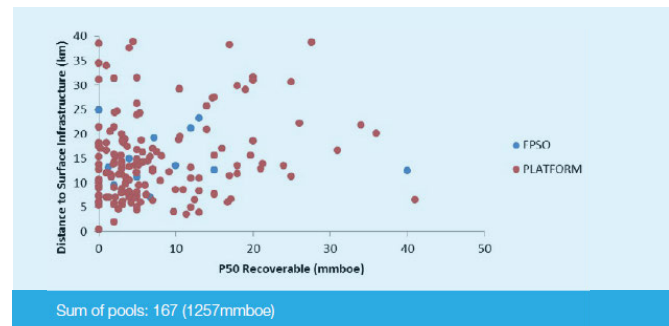


Infrastructure Access

OGA powers offer a potential solution to realise value



Oil discoveries to surface infrastructure



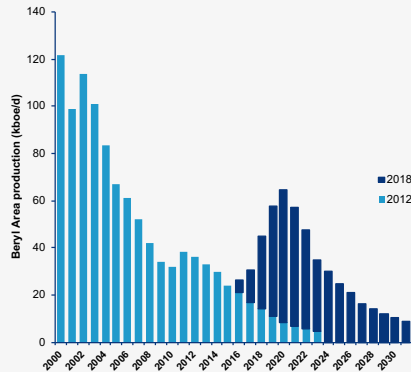
Source: OGA data

OGA powers and existing infrastructure key to unlocking value from marginal discoveries

Success from late life assets



Beryl Area (NNS) production change

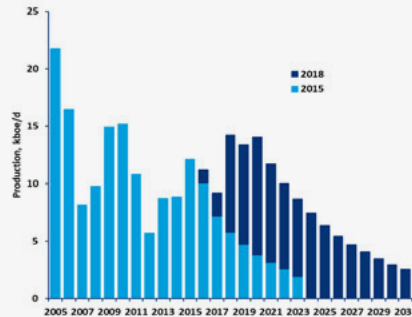


High quality seismic acquisition and processing

Successful near field infrastructure-led exploration: Garten discovered in 2018 (the UK's 2500th well)

Fast tracked nearby discoveries to add value

Anasuria cluster (CNS) production change

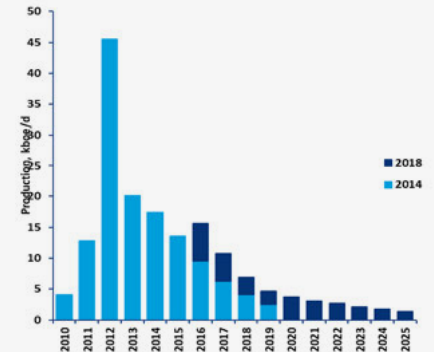


Reducing costs by re-using subsea equipment

High quality technical work enabling effective well interventions

Opex reduced, production uptime stabilised, with further upside to be achieved through building on the successful investment on the vessel and wells to date

Sean Area (SNS) production change



Increasing uptime by re-wheeling the compressor and installing a new booster compressor

Potential for further infill drilling

Other opportunities in satellite discoveries such as Sean South West technical reserves; further appraisal needed

Source: OGA/Wood Mackenzie

The OGA does not provide endorsements or investment recommendations

The OGA is creating value for UKCS investors

Asset stewardship ensures Operators consistently do the right thing to maximise value for all.

Key focus is resource progression and production optimisation

Benchmarking drives industry wide performance improvement

Tiered strategic engagement ensures asset owners are delivering

Robust data highlights value enhancing opportunities

Area plans create development and operational value efficiencies unlocking incremental value for multiple parties with similar aims

OGA and industry can initiate, but area plans are led and delivered by industry

OGA holds industry to account for delivery of plans to ensure commitments are satisfied and value is realised

Hub Strategies should ensure a MER UK outcome.

Strategies will facilitate an integrated hub view and foster long term JV alignment

This will increase value and highlight future potential to neighbouring assets and potential third parties

OGA encouraging the shooting of new seismic to realise resource progression and redevelopment opportunities.

Example of new area plan:
Buchan Area Plan



Unlicensed acreage with value creation potential

OGA identifying vision for multi asset, integrated, area development (prospects, discoveries, and mature fields)

Area plan includes promotion of unlicensed discoveries and prospectivity

An Area Plan approach could efficiently develop 200 – 300 mmboe

Full life cycle decommissioning opportunities

537

Fields with decommissioning activity

>370

Platforms to be removed

£1.7–2bn

Estimated annual cost for next five years

>4000

4,000 wells to be plugged and abandoned



>1,995,000

tonnes of topside to be removed

>1,960,000

tonnes of structure to be removed

~75,000

tonnes of subsea infrastructure to be removed

>9000

kms of pipelines to be decommissioned
(of which 5,000 km to be removed)

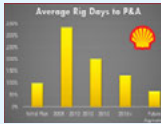
Where otherwise indicated the time period refers to life of basin

Source: OGA Data

Various opportunities to realise value from decommissioning on the UKCS

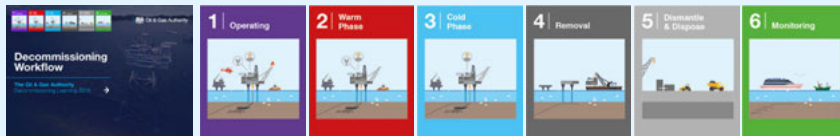
UKCS decommissioning

Evidence of real progress

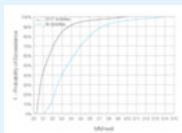


Increased competence and cost effectiveness is delivering savings

Sharing lessons learned



Benchmarking, cost and distribution



Minimum target of reducing UKCS decommissioning costs by 35%

On track for major cost reductions

2017: **£59.7 bn**

2018: **£55.7 bn**

7% reduction

*[P50] like for like: 2017 inventory & 2016 prices Source: OGA Data



Murchison



2 years ahead of schedule
estimated final cost 88%
of sanction cost

Lessons learned to help
halve cost of future projects

Early engagement with contractors
to ensure flexibility of schedule

Sharing/engagement with regulators,
peers and industry

Decommissioning is an opportunity, not a barrier for UKCS investment

UKCS infrastructure

Specialist infrastructure investors are seeing, and realising the value, of investing in UKCS infrastructure. The OGA is supportive of this diversity of infrastructure players



Infrastructure investors funding offshore development



Tolmount development sanctioned by the joint venture and infrastructure partners in August 2018

The development will comprise a minimal facilities platform and new gas export pipeline owned and paid for by CATS and Dana

Innovative financing structure where Premier pays a tariff for the transportation and processing of Tolmount gas

Demonstrates the value of upstream and midstream operators collaborating to stimulate future investment



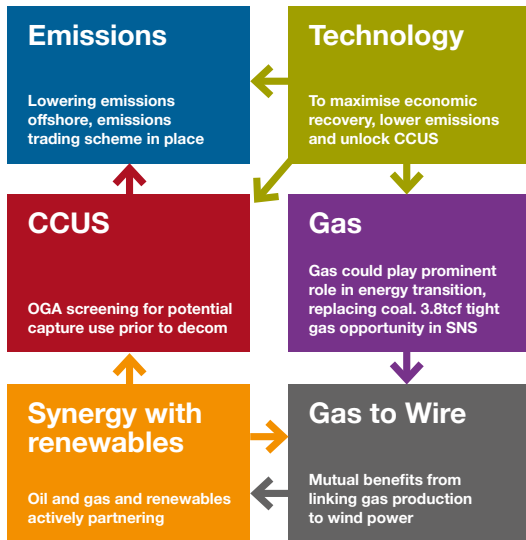
Tolmount

UKCS offers a variety of infrastructure investment opportunities; not just traditional midstream assets

Energy transition and vision 2035

The OGA, Government and industry are considering the opportunities that the energy transition will present for UKCS fields and infrastructure

MER UK and the Energy Transition



Activity	Schematic	Potential Applications
Platform Electrification <ul style="list-style-type: none"> Connect offshore platforms to an electrical power source to reduce costs and emissions 		<ul style="list-style-type: none"> SNS: power existing gas hubs from nearby windfarms WoS: use floating offshore wind to create ring main
Power-to-Gas <ul style="list-style-type: none"> Use offshore windfarm power to produce hydrogen by water electrolysis Use offshore platforms and pipelines to produce/store hydrogen 		<ul style="list-style-type: none"> SNS and EIS: use redundant infrastructure
Gas-to-Wire <ul style="list-style-type: none"> Generate power from gas offshore and transmit to shore using windfarm infrastructure 		<ul style="list-style-type: none"> SNS and EIS: convert late-life infrastructure into offshore power generation
CO₂ transport and storage <ul style="list-style-type: none"> Re-use of oil and gas infrastructure and spent fields 		<ul style="list-style-type: none"> SNS and EIS: use redundant infrastructure
North Sea Wind Power Hub <ul style="list-style-type: none"> New, artificial 'energy islands' for very large scale hydrogen production from wind 		<ul style="list-style-type: none"> Integrate UK offshore power and gas (including hydrogen) activities

The energy transition offers value creation opportunities for the UK oil and gas sector

Contact us at:


oga.correspondence@ogauthority.co.uk

OGA Headquarters

AB1 Building
48 Huntly Street
Aberdeen
AB10 1SH

OGA London Office

4th Floor
21 Bloomsbury Street
London
WC1B 3HF

 www.linkedin.com/company/oil-and-gas-authority

 twitter.com/ogauthority



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