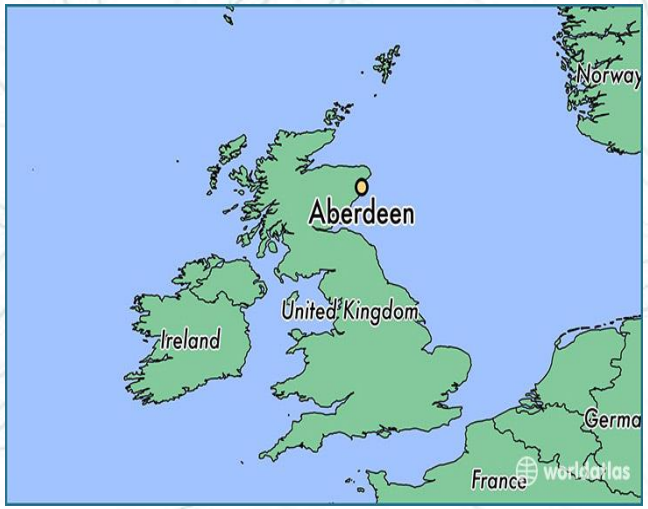
Net Zero Technology Centre

Technology Driving Transition

Aberdeen …



Scottish Government
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NEWS

£250m Aberdeen City Region Deal.

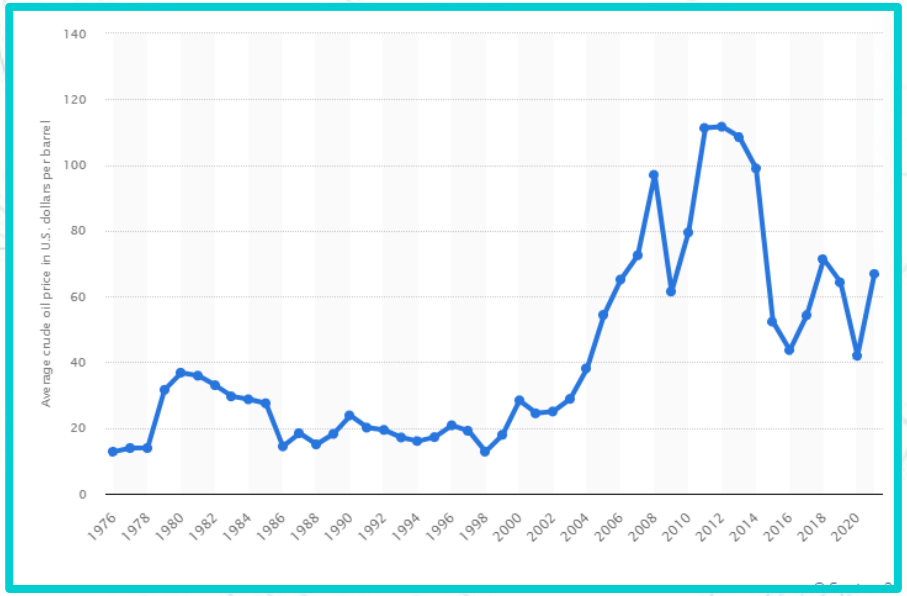
Published: **21 Nov 2016 11:30**

Part of: Economy

Signing completes agreement.

The Aberdeen City Region Deal was launched today with the official signing of the £250million agreement.

The terms of the deal commit both the UK Government and Scottish Government to jointly investing up to £250m while Aberdeen City Council, Aberdeenshire Council and local partners are committed to investing up to £44m over the next decade.



Enable

oil and gas industry diversification and transition to a net zero North Sea

Accelerate

technology to deliver an affordable net zero North Sea

Inspire

a culture of innovation and transformation for a reimagined energy future

Our mission: Developing and deploying technology for an affordable net zero North Sea

Strong delivery

£176m
invested with industry

26,500+
industry guests and visitors to the centre

23
commercialised tech

1,310+
technologies screened

£100m
leveraged from industry partners

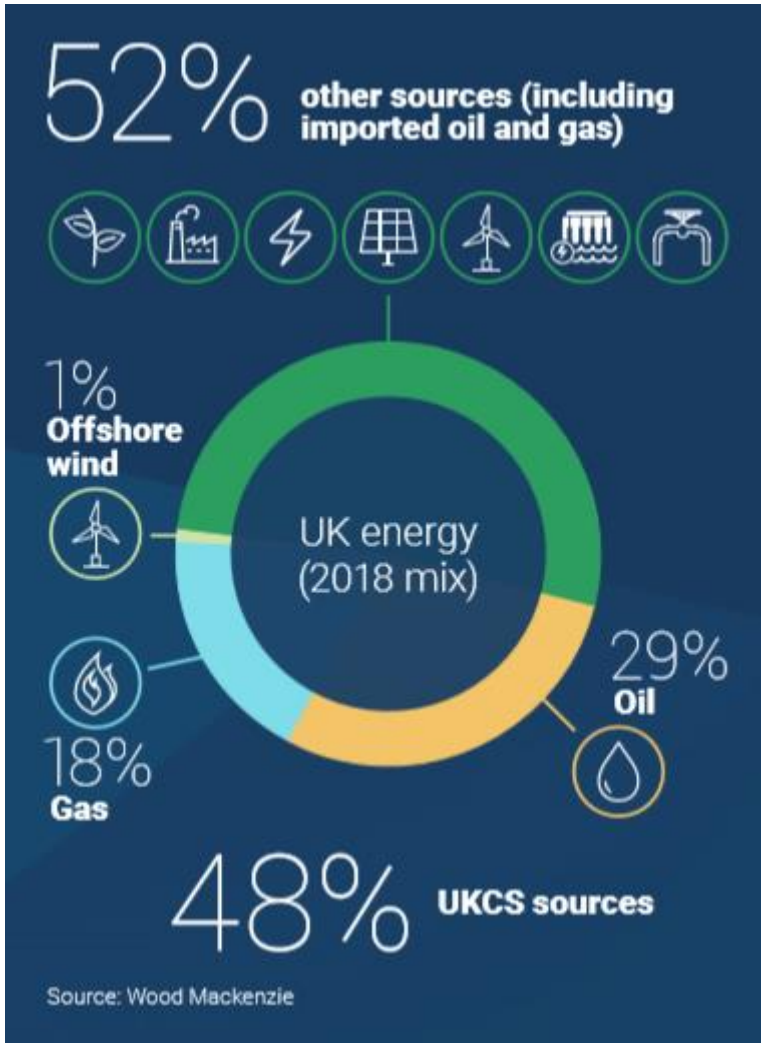
60
partnerships

£10-15bn
GVA potential

280
projects

115+ field trials complete, planned or underway

UKCS Energy & CO_2 Footprint



Electricity:
80% from Fossil Fuels

GHG Emissions:
Energy generation produces 23%

Oil & Gas Scope 1 in UKCS produces 3% (14.6 MtCO2e/yr)

Transport industry 28% (mostly by use of oil-based products)

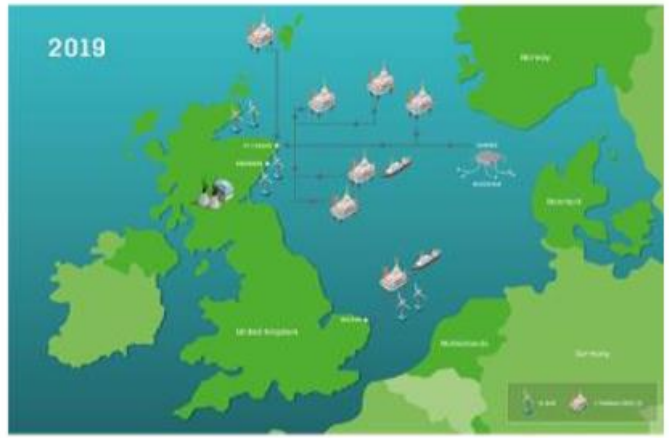
UKCS production
meets >75% of the UK's oil demand
50% the UK's gas demand
indirectly responsible for a large proportion of the UK's total GHG emissions

North Sea: transition to net zero

A net zero UK Economy enabled by the Oil & Gas sector

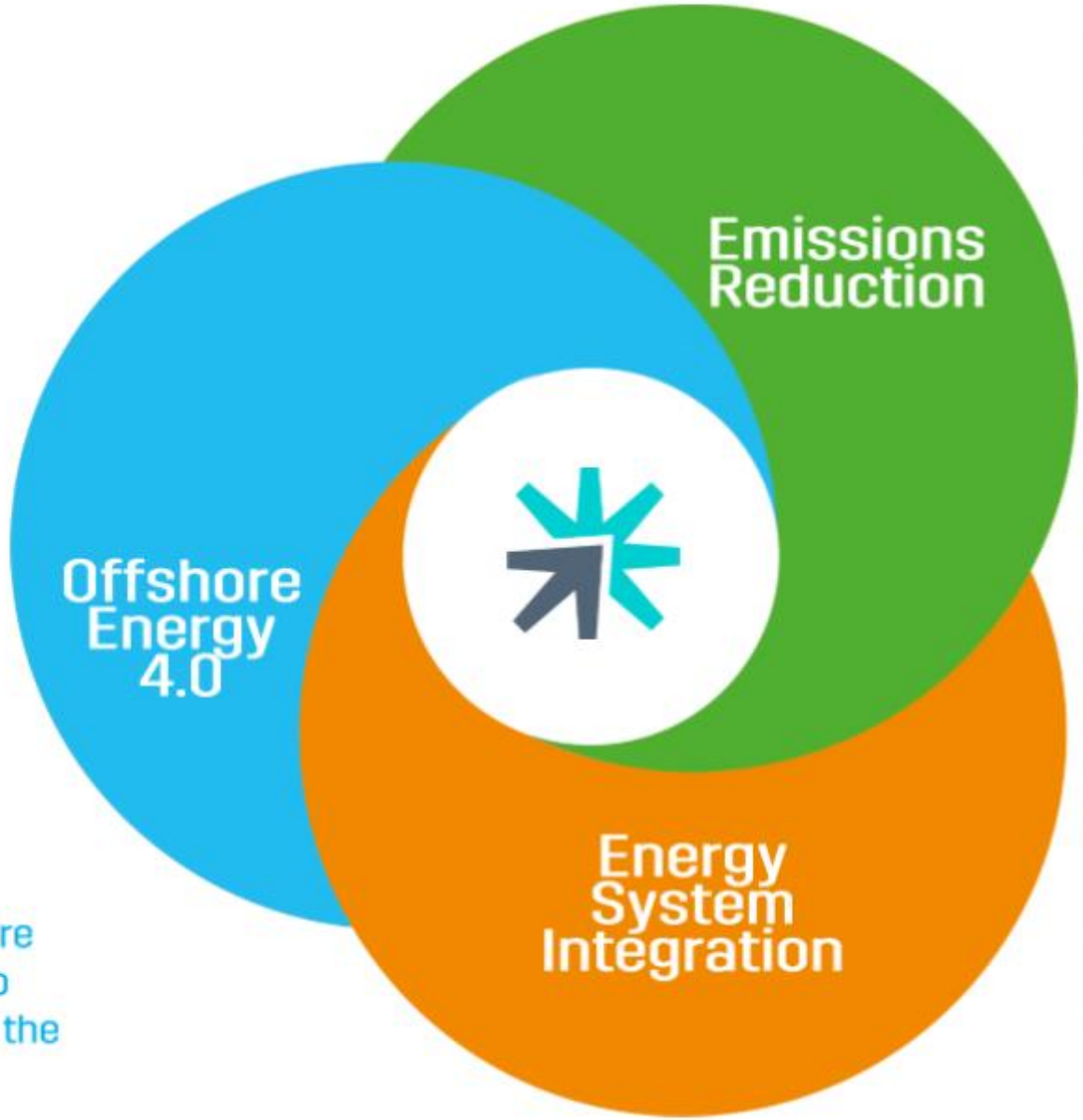
Enabling

Net zero Emissions O&G Offshore Operations	Offshore Renewables Integration	Hydrogen production leveraging the O&G industry	CCUS from industrial clusters and blue hydrogen production	
Vision 2035 production x today's oil & gas prices	CCC wind x £40/MWH	CCC H_2 x £2/kg	CCC CCS x £50/t	
2020	£15Bn	£1Bn	•	•	£18Bn
2030	£16Bn	£5Bn	£1Bn	£2Bn	£25Bn
2040	£12Bn	£7Bn	£12Bn	£2Bn	£33Bn
2050	£9Bn	£11Bn	£14Bn	£4Bn	£38Bn



1 Net Zero Solution Centre

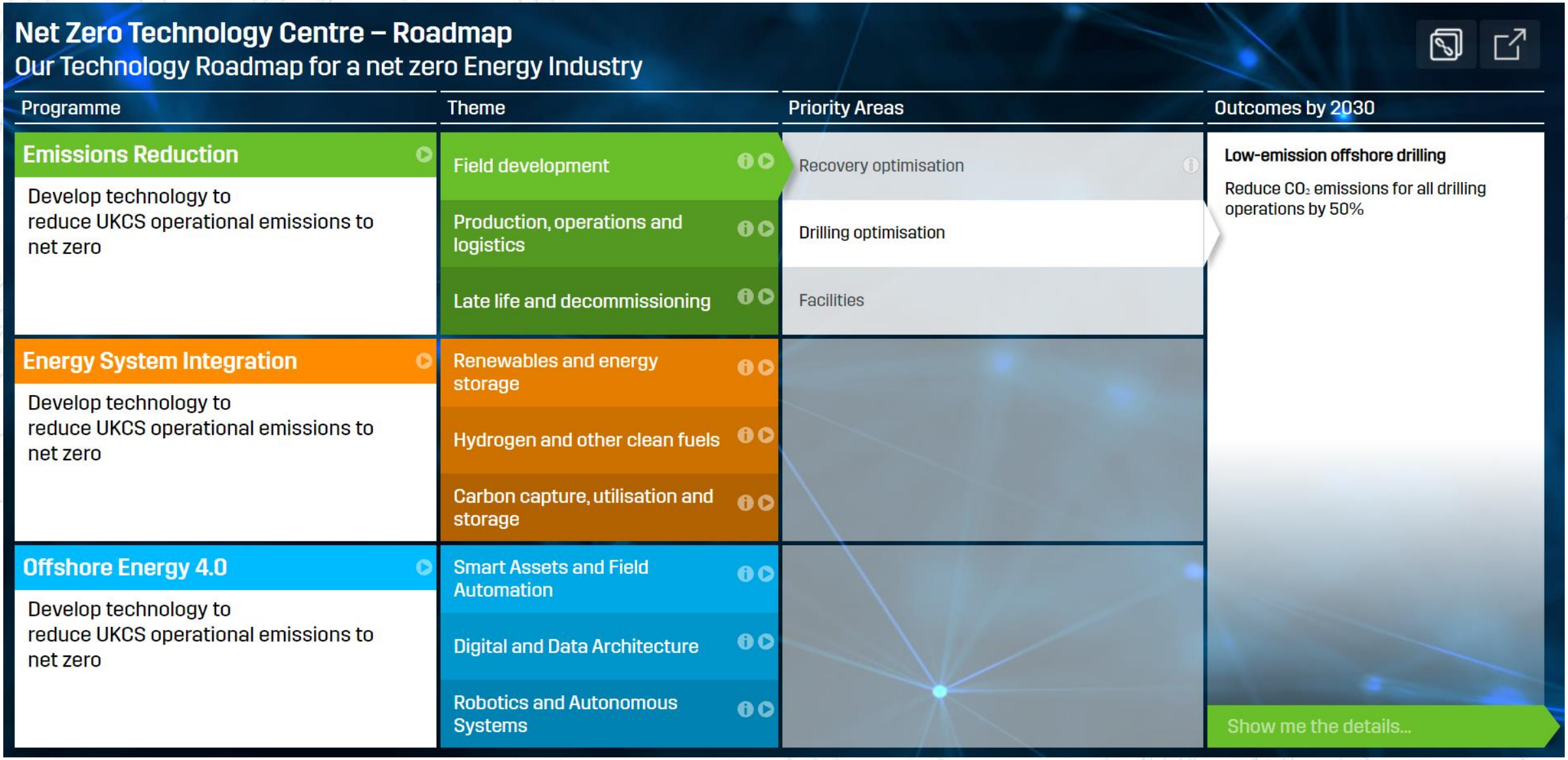
3 clear programmes



Oil and gas are key part of the future energy mix, but we must decarbonise operations.

Digitisation and automation are critical for a net zero future, to reduce emissions and unlock the potential of a smart basin.

We need investment and innovation in new affordable clean offshore power and storage solutions to create an integrated energy future.



https://roadmaps.netzerotc.com/RoadmapVis.html

Net Zero Technology Centre – Roadmap

Our Technology Roadmap for a net zero Energy Industry

Overview Path

Emissions Reduction

Field development

Drilling optimisation

Low-emission offshore drilling

Reduce CO_2 emissions for all drilling operations by 50%

Go back to the overview...

Challenges

Drilling

Projects: 3

Planning & Construction

Projects: 11

Technology Gaps / Projects

TECHNOLOGY GAPS

- Automated drilling: DCS machine learning, Retrofit AI to interface with older DCS and equipment & Predictive modelling
- Minimise Waste Generation/ Waste Management
- Improve/ Optimise Drilling Efficiency & Surveying: Drilling Analytics, Predictive T&D, flow management
- Artificial intelligence to control closed loop rig control systems,
- Analysis of real-time drilling data, automating drilling parameters for optimum performance

OUR PROJECTS

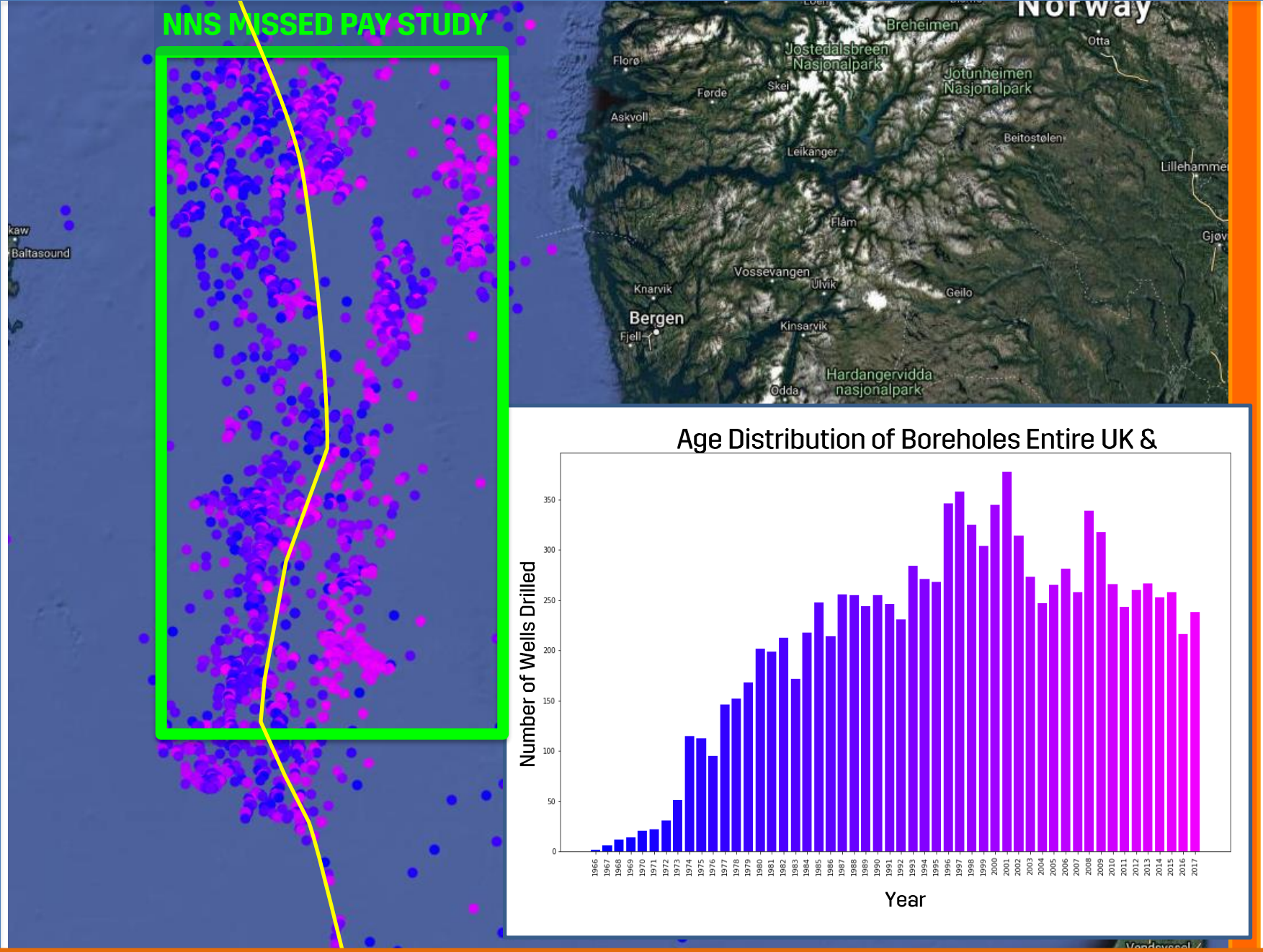
COMPLETED	LIVE
Pragma - Variable inflow control valve	
Glass Technology Services Ltd - Wellbore stability using glass technology	
Chrysaor E&P Services Limited - Multi stage Fracturing	

https://roadmaps.netzerotc.com/RoadmapVis.html

Wells Initiatives of the Future

- Data driven
- Net Zero O&G Drilling and P&A operations
- New wells for geological Hydrogen storage (inject/reproduce)
- New wells for CCUS
  - Injectors
  - Producers
  - Brine release
- Recompletion and P&A of existing wells with CCUS / Hydrogen storage
- Deep Geothermal onshore
- Repurposing wells offshore for Deep geothermal
- Ability to do this in an increasingly busy UKCS - directional



DataCo
Data & Information Management

Operator	Boreholes
Taqa	526
CNR	501
Apache	459
Shell	457
Enquest	436
Total	285
Marathon	236
Total&Maersk	223
BP	164
Equinor	40
Contributed Boreholes	**3327**
Wells from NDR for these	**556**
NPD Wells in Area	**767**
	4650

Age Variety of Boreholes

Data Types of 12,046 NDR Boreholes by year

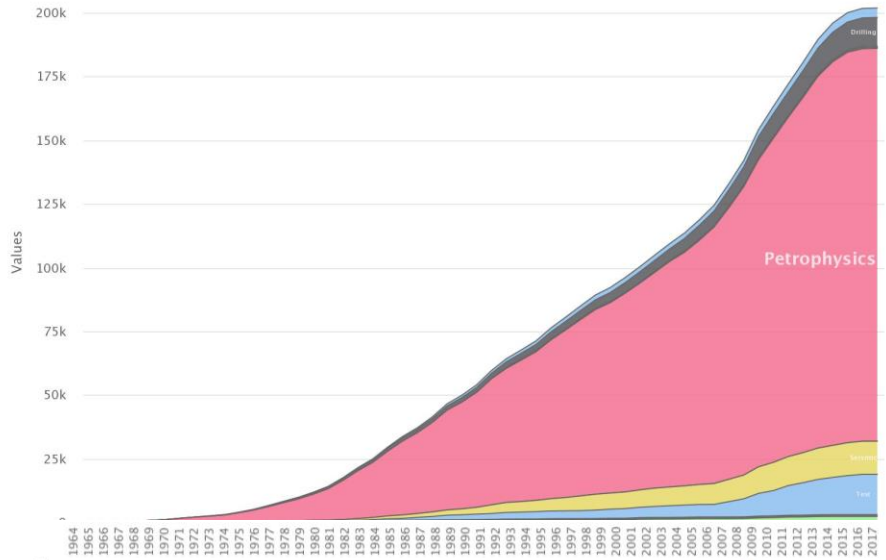
Structured Files

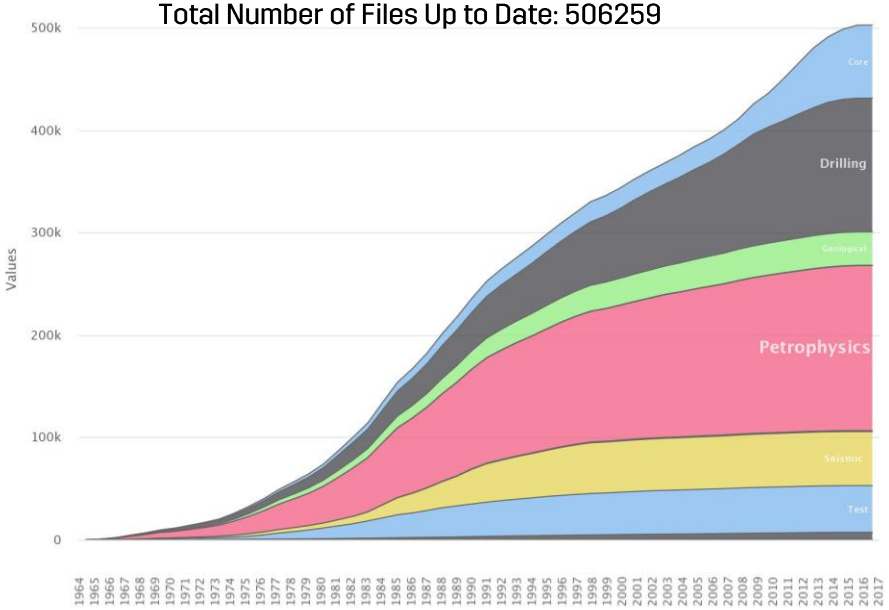
Total Number of Files Up to Date:207242

Unstructured Files

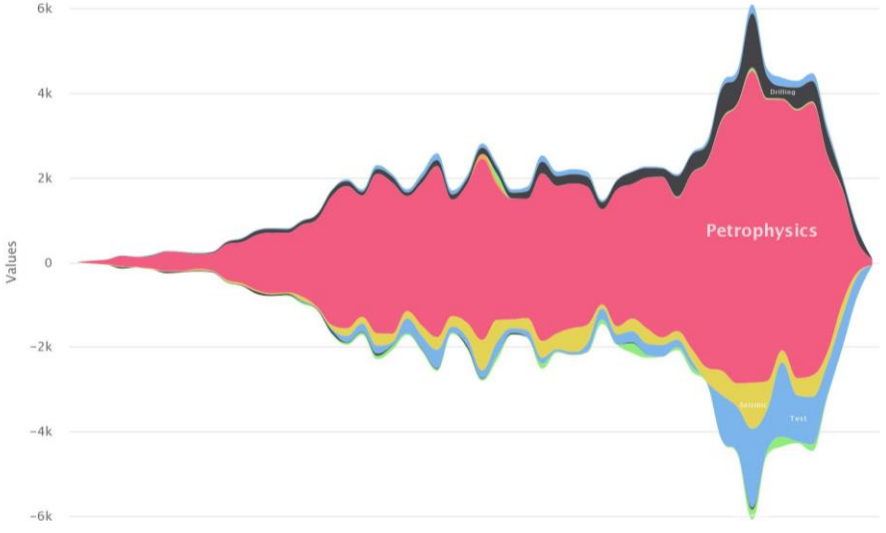
Total Number of Files Up to Date: 506259

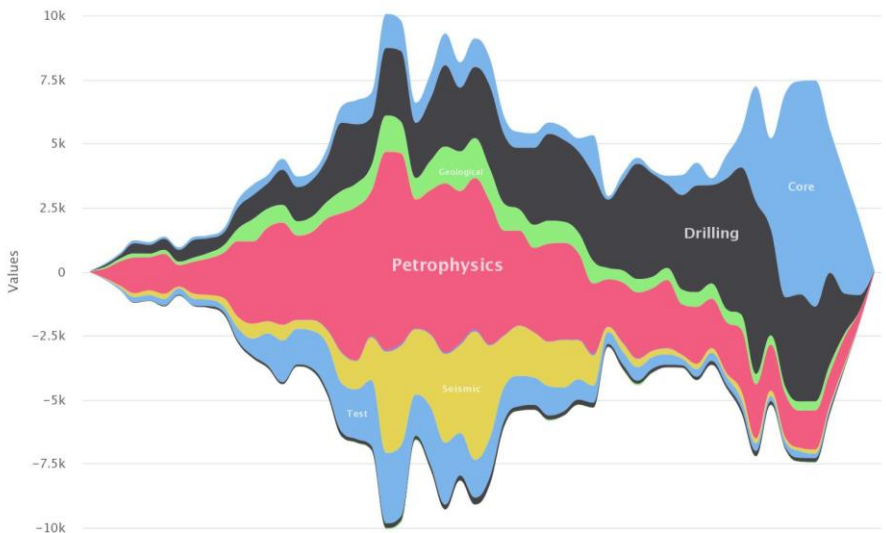
Cumulative Amount





Created per Year



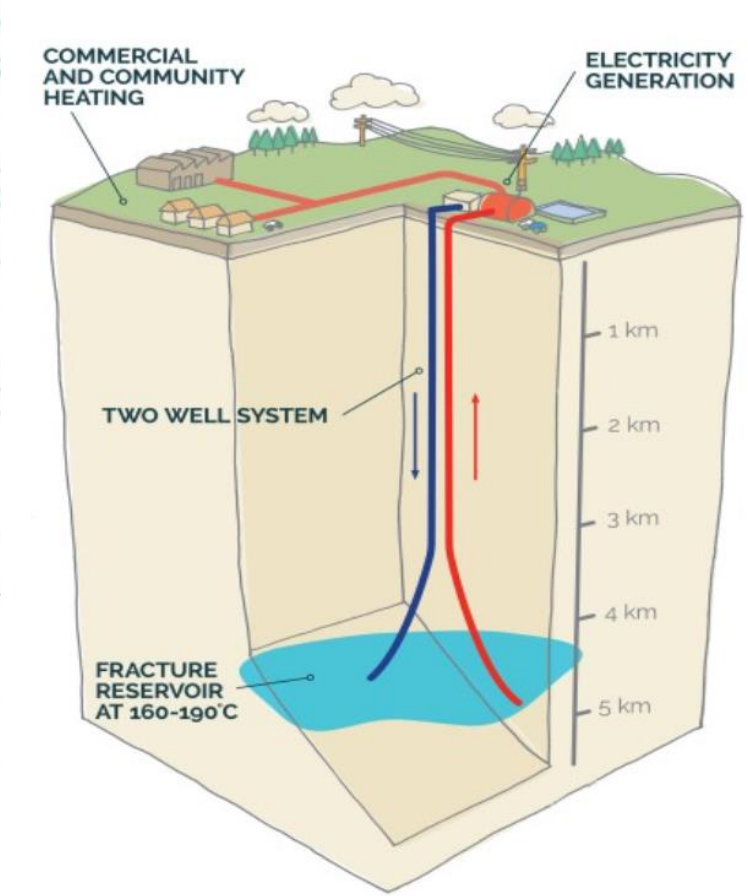


Key

- Core
- Drilling
- Seismic
- Test
- Geological
- Geology
- Well
- Well seismic
- Petrophysics
- Production

DataCo
Data & Information Management

Deep Geothermal Doublet



- >1,5km
- Closed loop – spent water re-injected to maintain pressure
- >100 Electricity producers WW
- Possible at lower temp reservoirs 70 – 120degC
- ORC efficiency improvement needed
- Offshore opportunity …


#HelloFuture

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