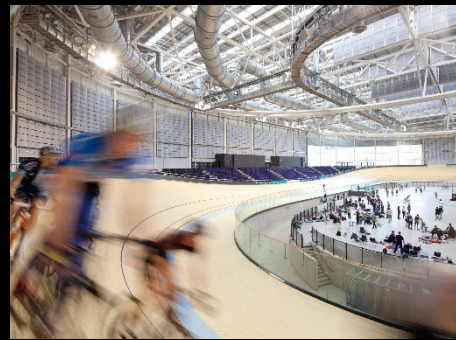


# Decommissioning Offshore Wind

Lessons learned from the O&G Industry

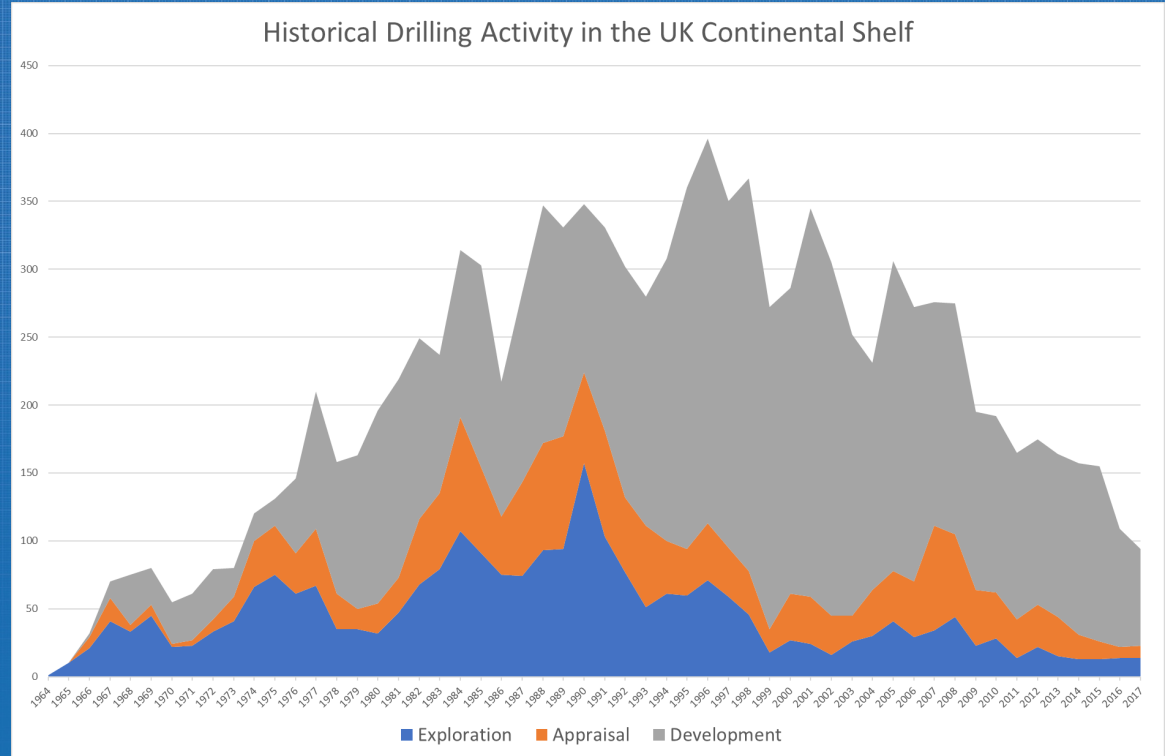
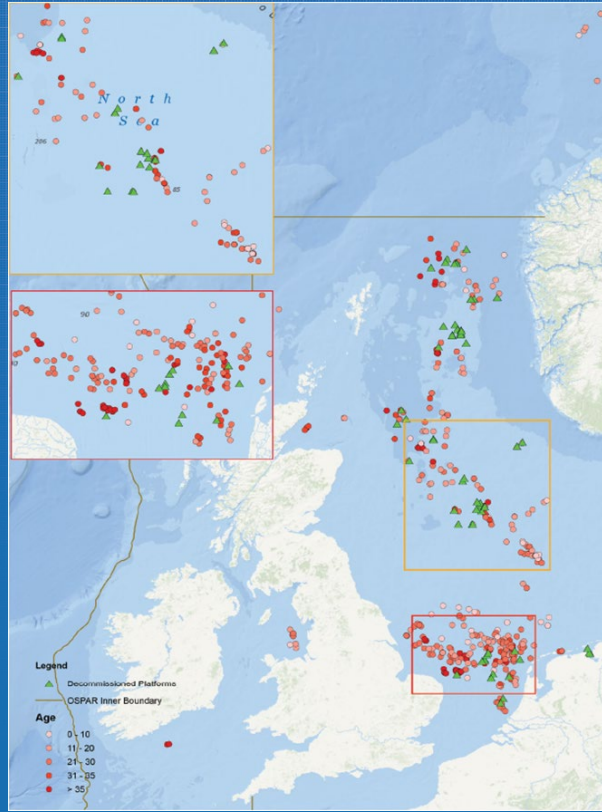
**Clare Lavelle**  
Arup

ARUP

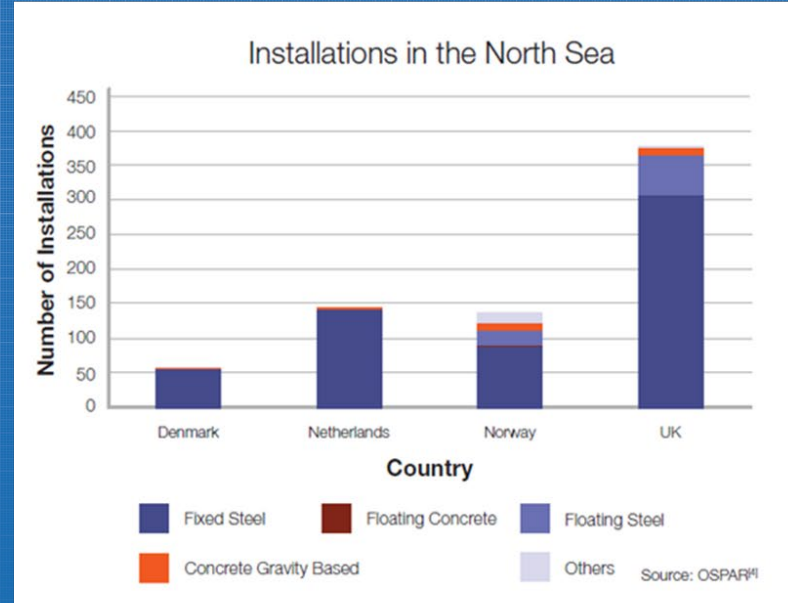




# The Ageing North Sea



# The Infrastructure



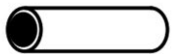


# The Next Ten Years



Installations

79



Pipelines

5,618 km



Wells

1,224



Mattresses

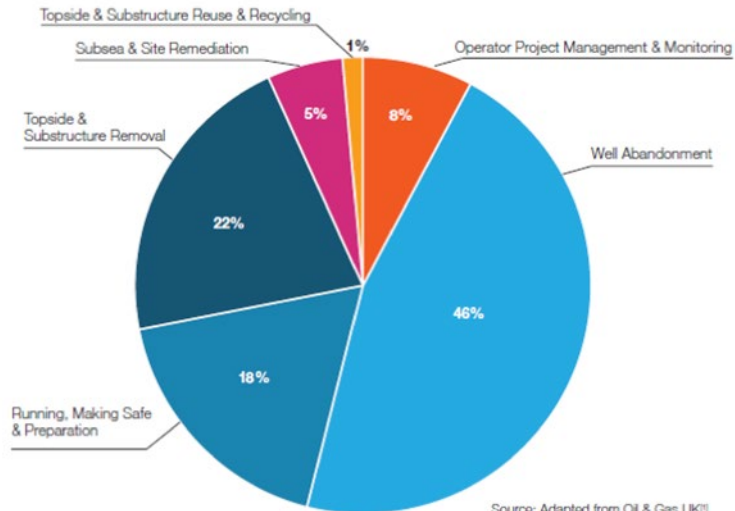
9,495



Subsea Infrastructure

82,480  
tonnes

Resource Breakdown Structure Average  
UKCS Expenditure (2014 - 2022)



Source: Adapted from Oil & Gas UK<sup>11</sup>



# OSPAR Decision 98/3





# The OSPAR Legacy





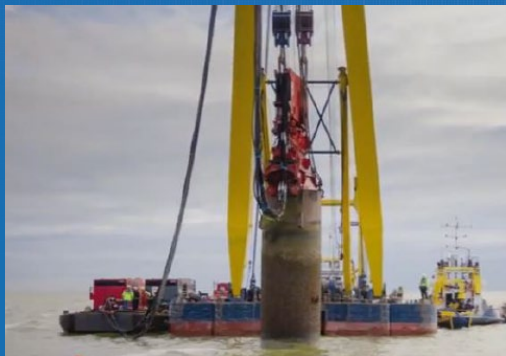
# Lessons Learnt?

- Engineering
- Environment and Regulation
- Economics





# Offshore Wind Decommissioning to Date

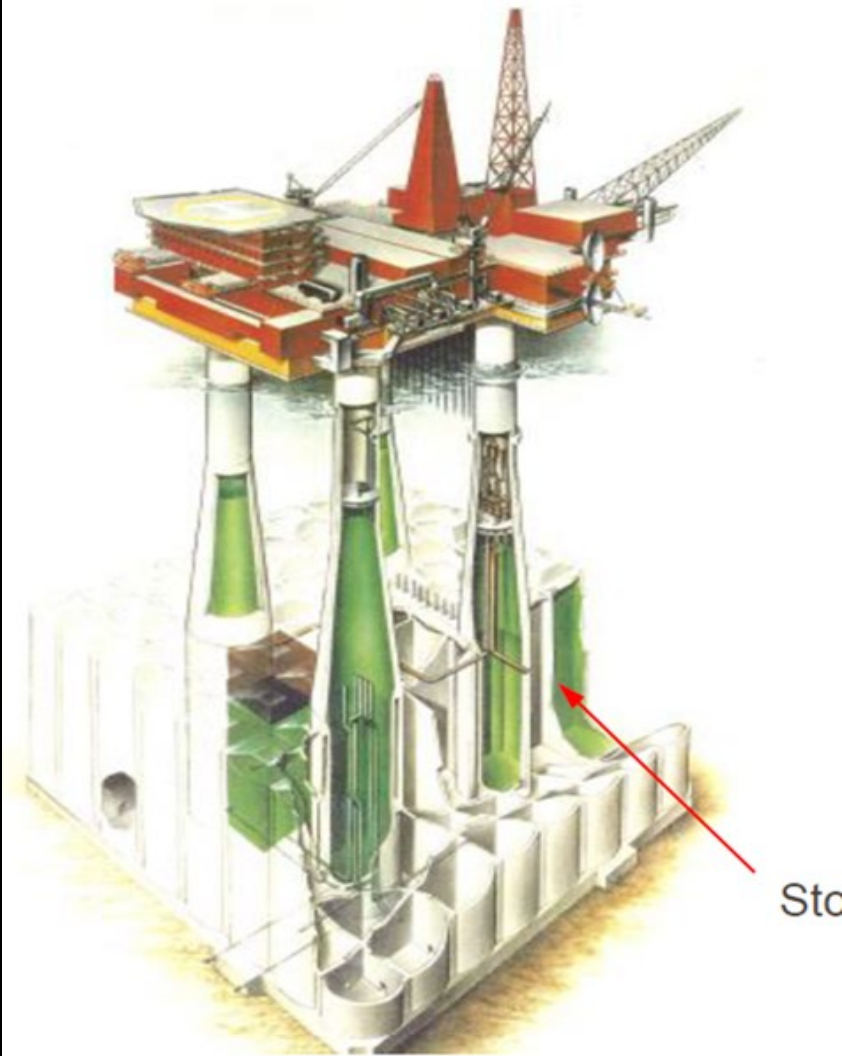


OFW name	Location	Operator	WTGs	Foundatio ns	Nameplate capacity	Status
Vindeby	Denmark	Dong Energy	11 x Bonus B35/450kW	CGB	4.95 MW	Decommissioned 2017
Yttre Stengrund	Sweden	Vattenfall	5 x Neg Micon 2MW	Monopile	10 MW	Decommissioned 2016
Lely	Netherlands	Nuon (Vattenfall )	4 x NedWind 40/500kW	Monopile	2 MW	Decommissioned 2016
Hooksiel	Germany	Offshore Wind Solutions	1 x Bard 5.0MW	Tripile	5 MW	Decommissioned 2016
Robin Rigg	Scotland	E.ON	60 x Vestas V90-3MW	Monopile	180 MW	2 turbines decommissioned 2015
Beatrice demonstrator	Scotland	RSRUK and SSE	2 x Senvion 5MW	Steel jackets	10 MW	In decom planning

# Engineering

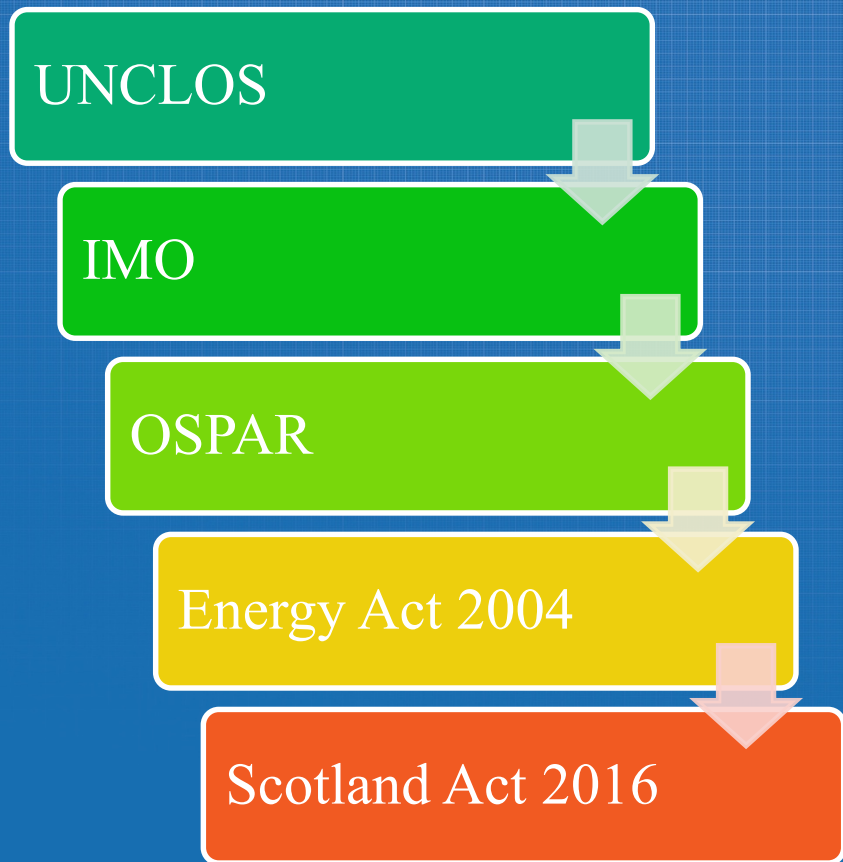
- Design to remove
- Good record keeping
- Collaborate
- Innovate

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# Regulation



*“Any installations or structures which are abandoned or disused shall be removed to ensure safety of navigation, taking into account any generally accepted international standards established in this regard by the competent international organization. Such removal shall also have due regard to fishing, the protection of the marine environment and the rights and duties of other States. Appropriate publicity shall be given to the depth, position and dimensions of any installations or structures not entirely removed.”*

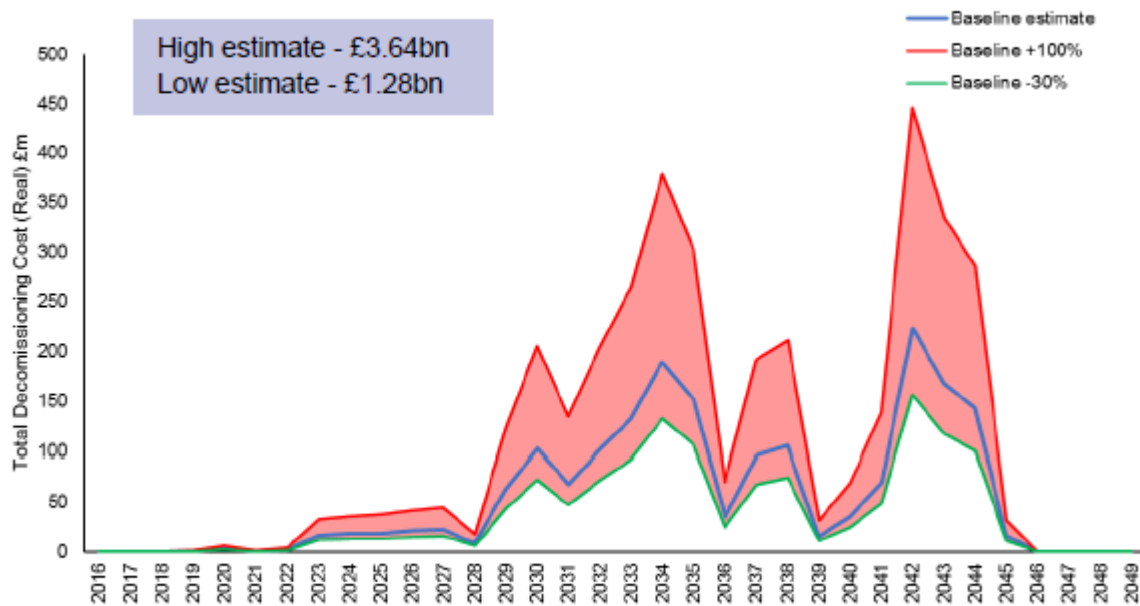
# Regulation

- Evidence based approach
- Define decommissioning
- Streamline Decommissioning Programme
- Aligning policy

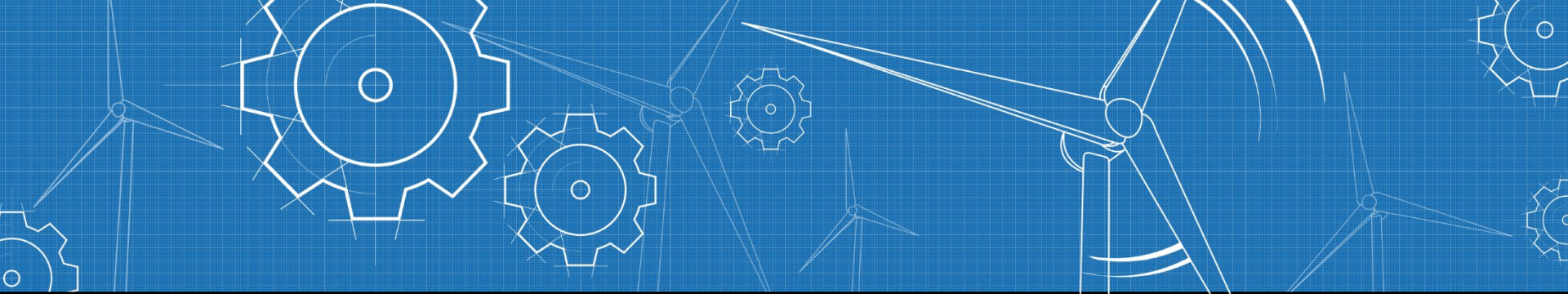




# Cost Estimating and Securities



Estimated decommissioning cost range based on AACE cost classifications



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