



Supergen



Offshore  
Renewable  
Energy

# Scenario 2040

**UK Offshore Renewable Energy in 2040:**

**A Sustainable and Competitive ORE Sector,  
and a Pathway to Net Zero by 2050**

*ORE Supergen Hub Assembly 2024,  
Plymouth, UK*

**UK  
RI**



Engineering and  
Physical Sciences  
Research Council

# Agenda: ORE Supergen Hub – Scenario 2040

Slide 2

- Climate change, net zero and 2040
- 2040 ORE Deployment Levels
  
- 2040 Outlook
  - Planning and Consenting
  - People
  - Supply Chain & Infrastructure
  
- Role of Research and Innovation



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# Agenda: ORE Supergen Hub – Scenario 2040

Slide 3

- Climate change, net zero and 2040
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  - People
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# Climate change, net zero and 2040

- Climate change impacts are growing
- Global consensus: net zero by 2050

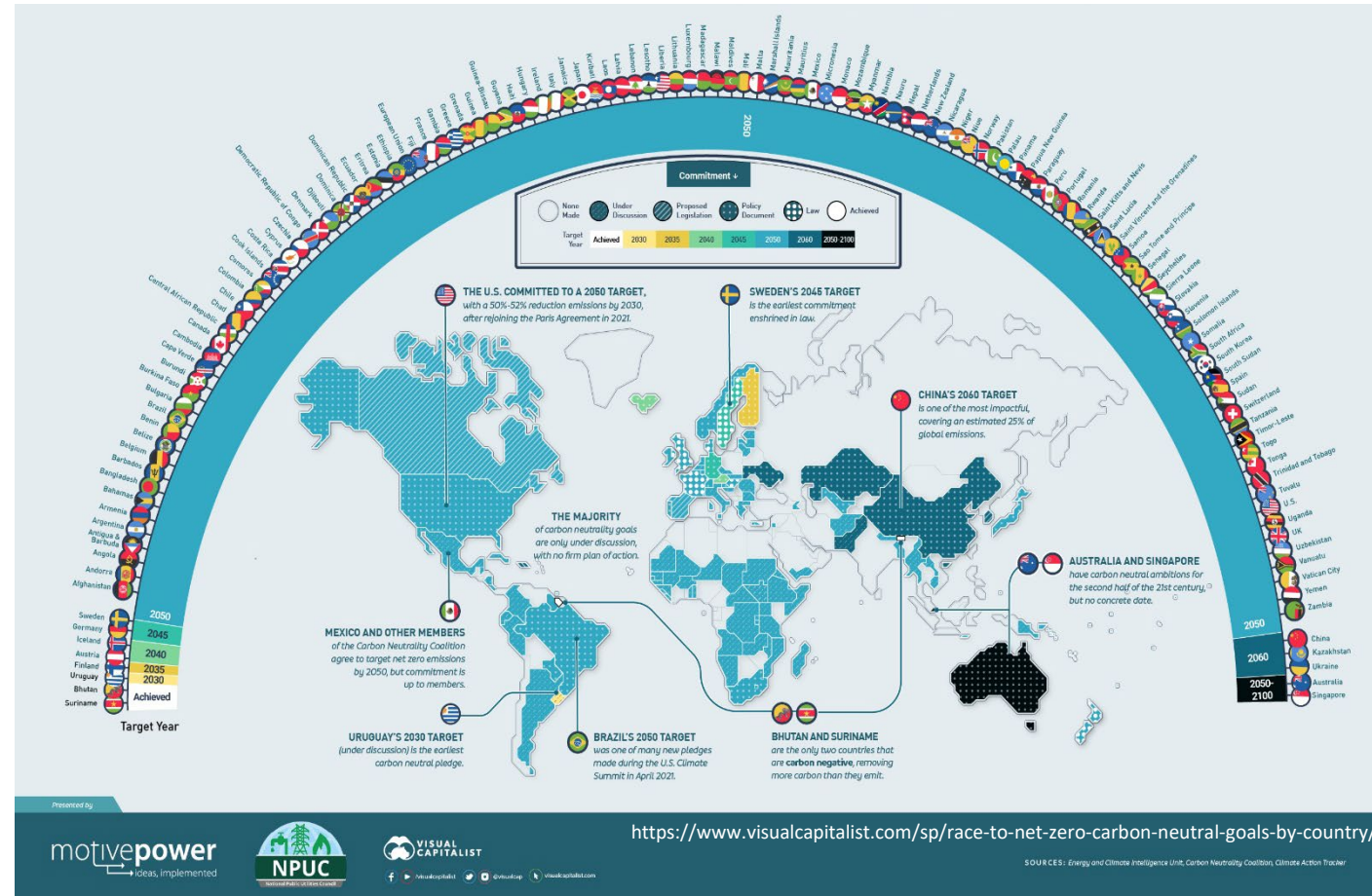
Article | [Open access](#) | Published: 17 April 2024

## The economic commitment of climate change

[Maximilian Kotz](#), [Anders Levermann](#) & [Leonie Wenz](#)

*Nature* **628**, 551–557 (2024) | [Cite this article](#)

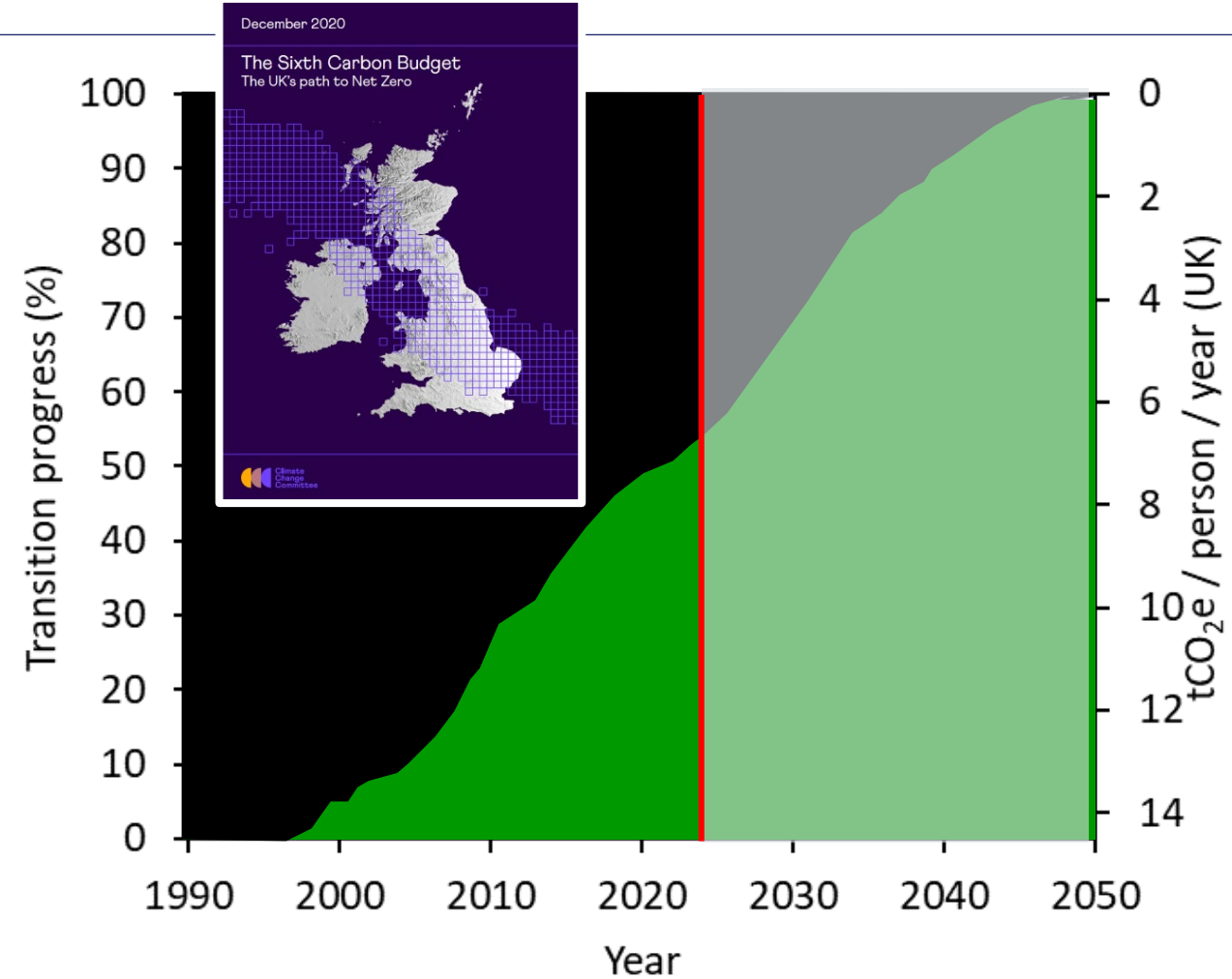
“Renewable energy ... is needed for our security ... and will save us money”



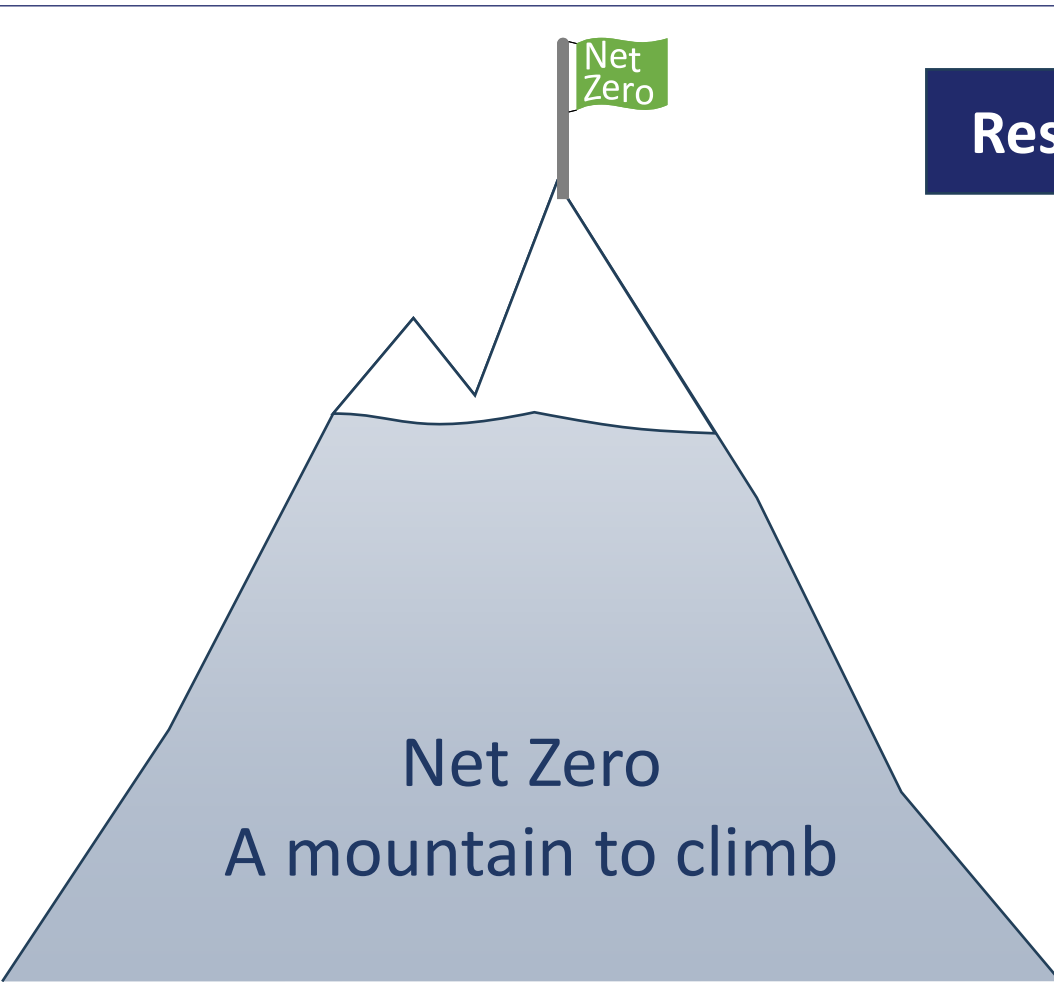
# Climate change, net zero and 2040

Slide 5

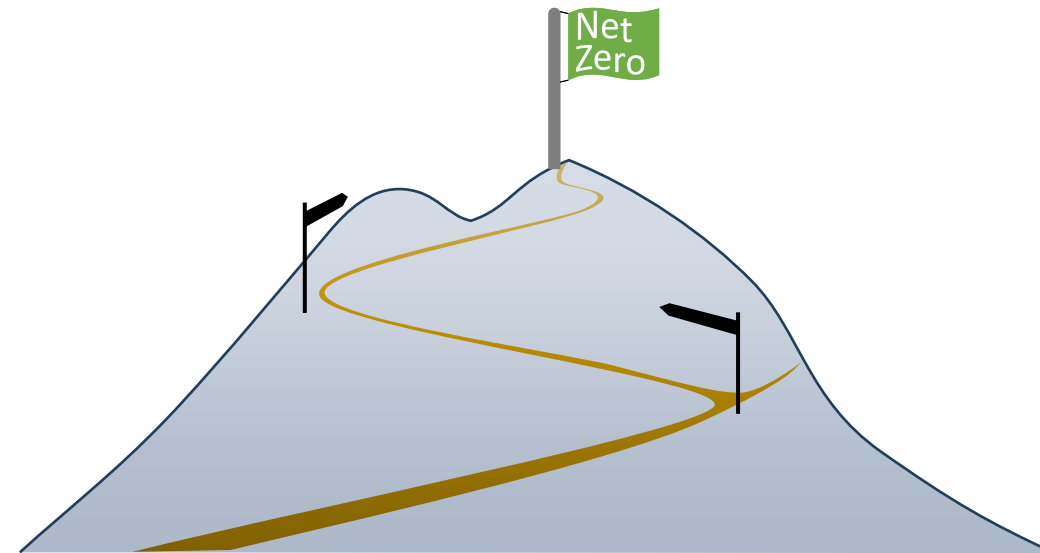
- Climate change impacts are growing
- Global consensus: net zero by 2050
- The UK is currently leading progress
- ORE has a central and global role to play
- We are using 2040 as a milestone
  - Soon enough to matter
  - Far enough to adapt for



# Net zero – how to climb the mountain?



- Reduce the scale of the task
- Signpost the best pathway



# Net zero – how to climb the mountain?

Slide 7

UK NEWS WEBSITE OF THE YEAR  
 The Telegraph News Sport Money Travel Business Health Opinion General election

Swiss government violated women's human rights by climate change inaction, ECHR rules

Strasbourg court finds Switzerland failed to do enough to combat global warming in a ruling that could have repercussions across Europe

Charles Hymas, HOME AFFAIRS EDITOR  
 9 April 2024 - 10:49am



Thank you  
 Your support powers our independent journalism

Undersea 'hybrid warfare' threatens security of 1bn, Nato commander warns

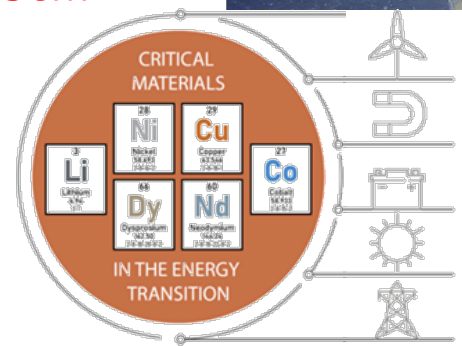
Underwater infrastructure vulnerable to Russian threats, says V Adm Didier Maletierre, after suspected sabotage of gas pipelines



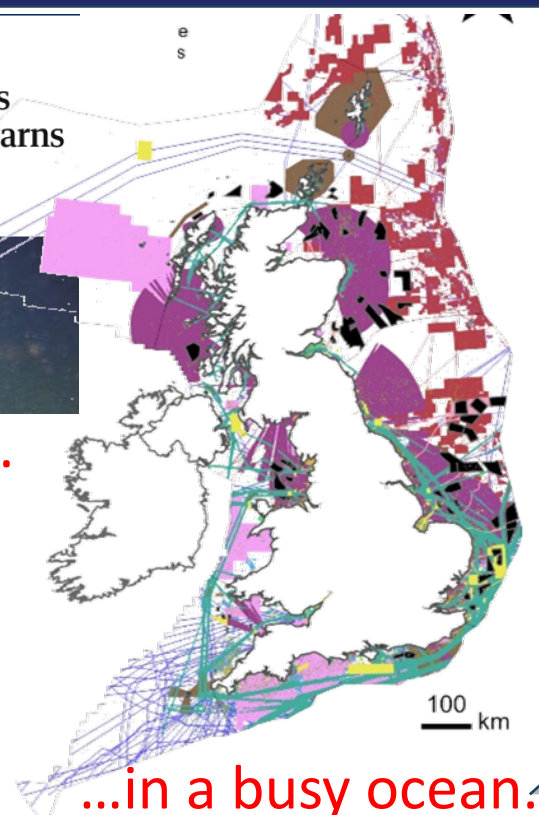
Research & Innovation

- Reduce the scale of the task
- Signpost the best pathway

A just...

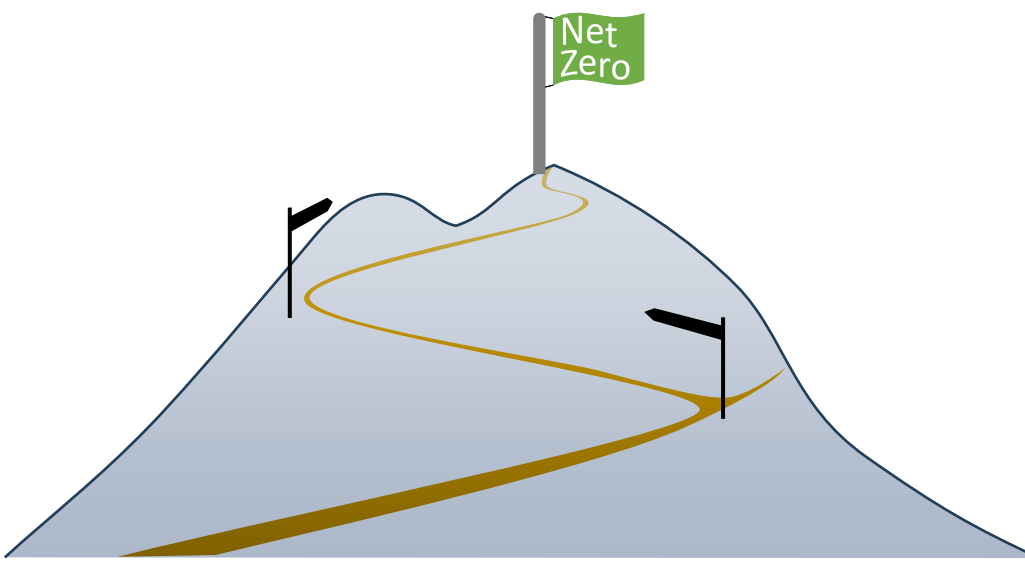


...secure...



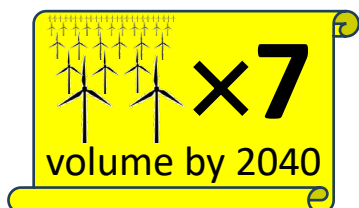
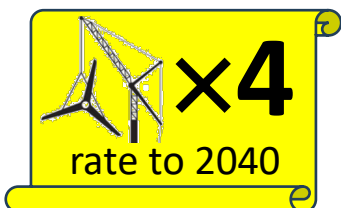
...and sustainable transition...

...in a busy ocean.

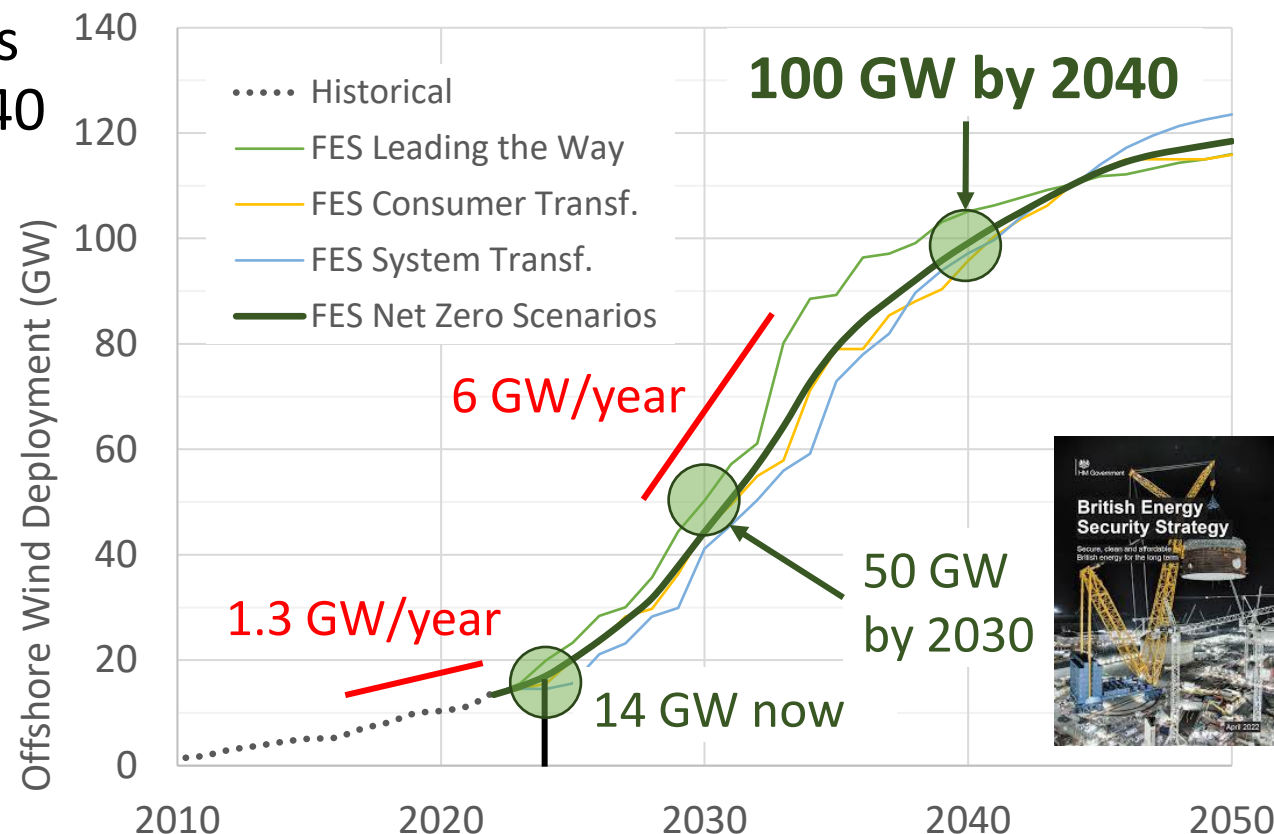


# 2040 ORE Deployment Levels

- National Grid ESO – Future Energy Scenarios Net Zero pathways: ~100GW of wind by 2040
- This is *seven times* the current capacity, deployed at *four times* the recent rate



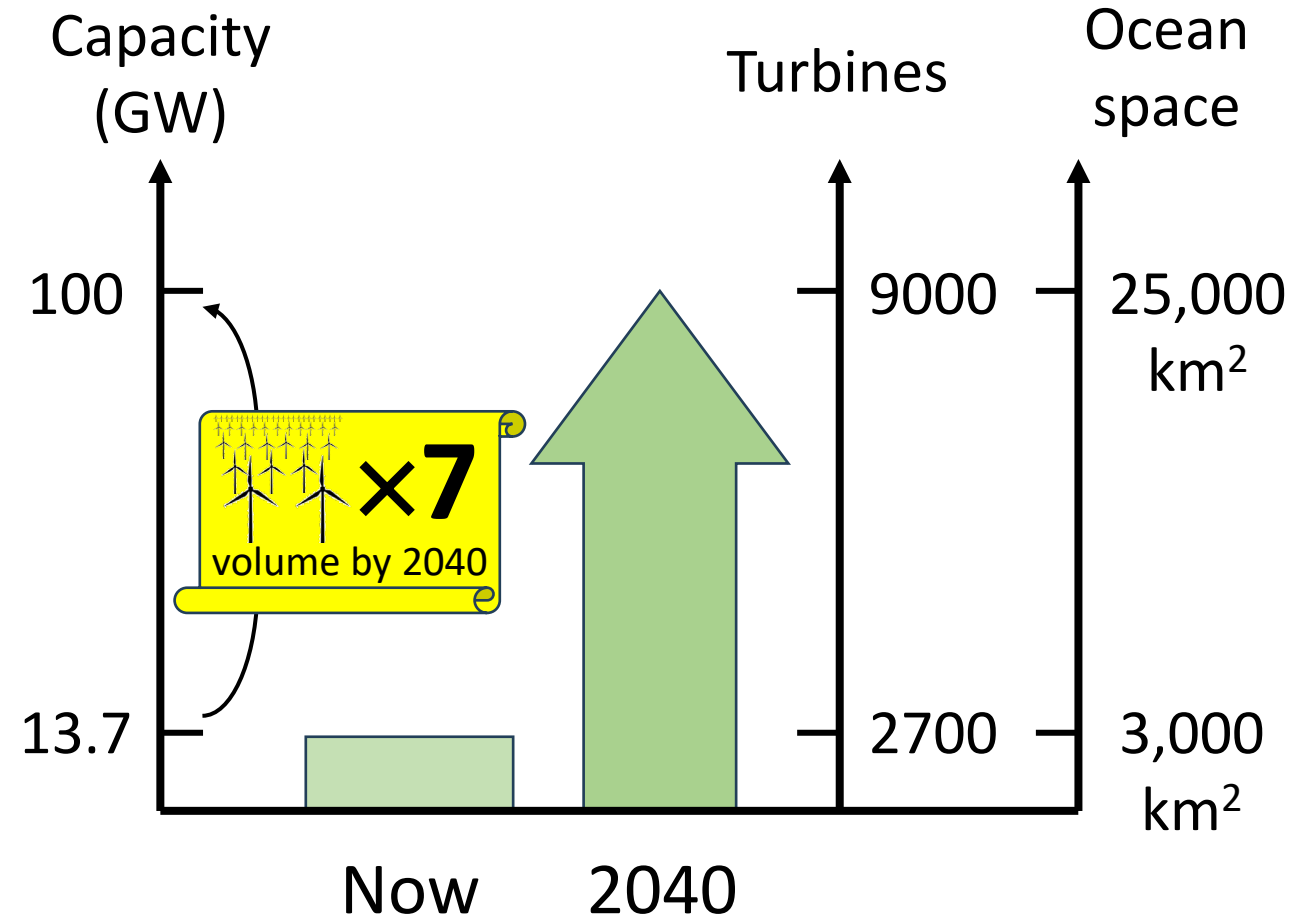
- Tidal and wave energy: similar trajectory
- Business-as-usual is not the optimum or easiest route to achieve this upscaling





# Agenda: ORE Supergen Hub – Scenario 2040

- Climate change, net zero and 2040
- 2040 ORE Deployment Levels
  - Wind: 100 GW of wind
  - Tidal, wave: 2 GW each
- 2040 Outlook
  - Planning and Consenting
  - People
  - Supply Chain & Infrastructure
- Role of Research and Innovation



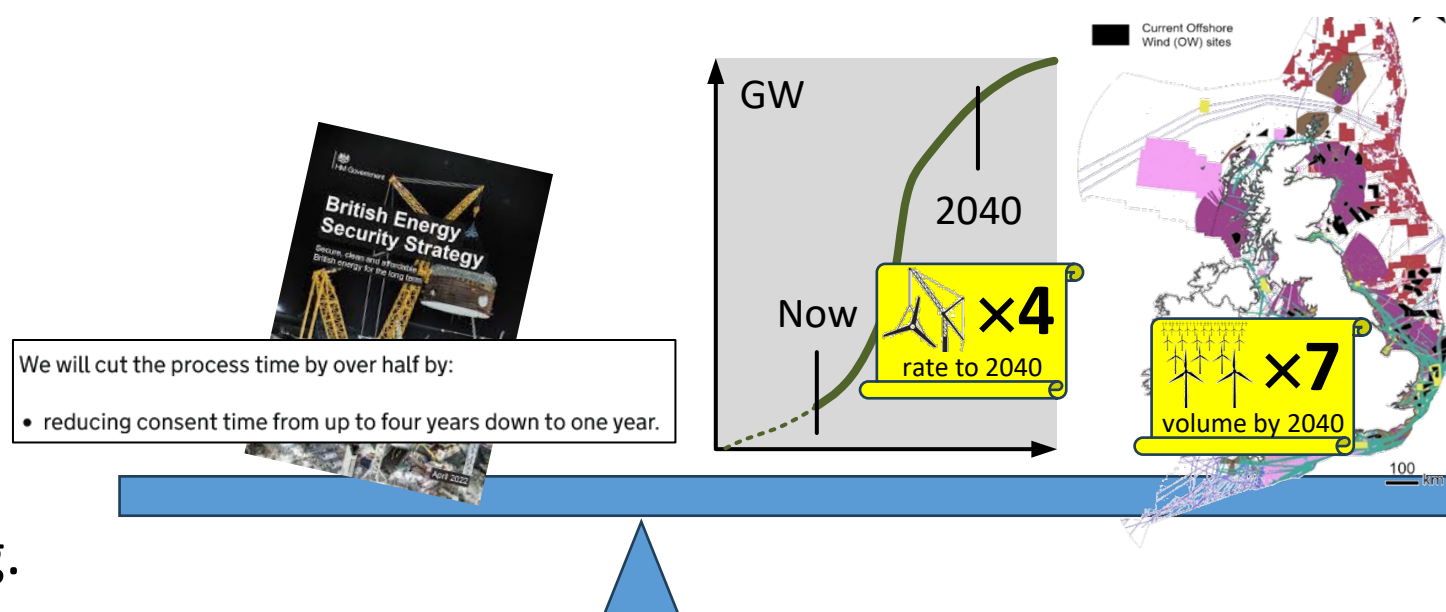
# 2040 Outlook: Planning and Consenting

- UK wind farms take ~11 years from leasing to completion.
- The British Energy Security Strategy aims to accelerate this process...
- ...but this is concurrent with our  $\times 4$  growth in installation rate.
- ...and our ocean is filling up, adding pressure to planning and consenting.

ORE Catapult (2023)

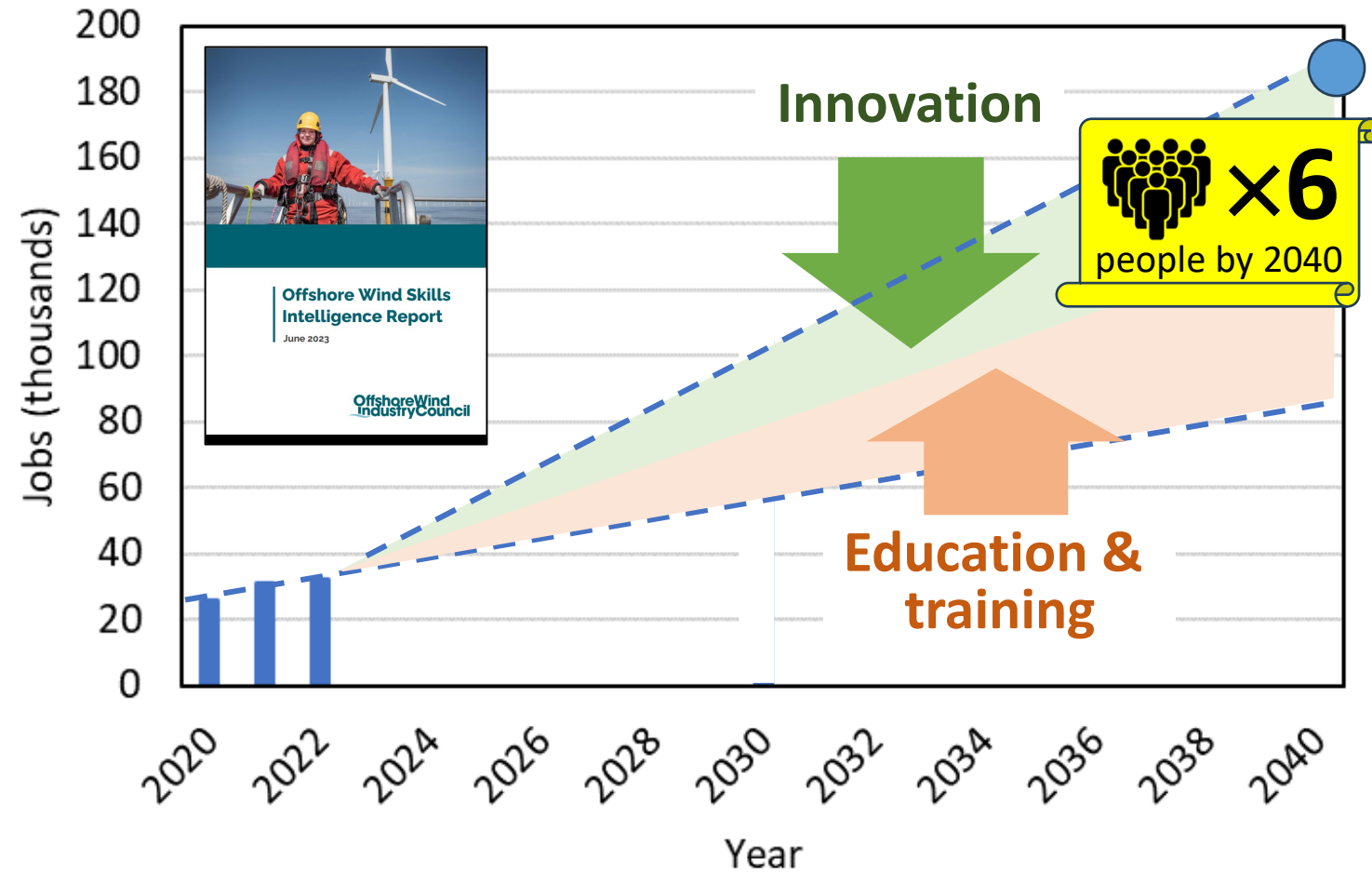
Year	1	2	3	4	5	6	7	8	9	10	11	12
Stage	Lease		Consent				Pre-cons		Deployment			

← 11 years →



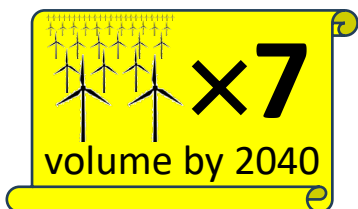
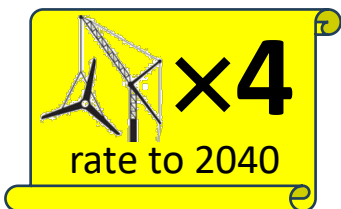
# 2040 Outlook: People

- Data from Offshore Wind Industry Council Skills Intelligence Reports
- The sector workforce shows steady recent growth...
- ...but the workforce needs to triple by 2030, and  $\times 6$  by 2040.
- Further **innovation** can make this target easier to reach...
- ...while we invest in future workforce **education and training**



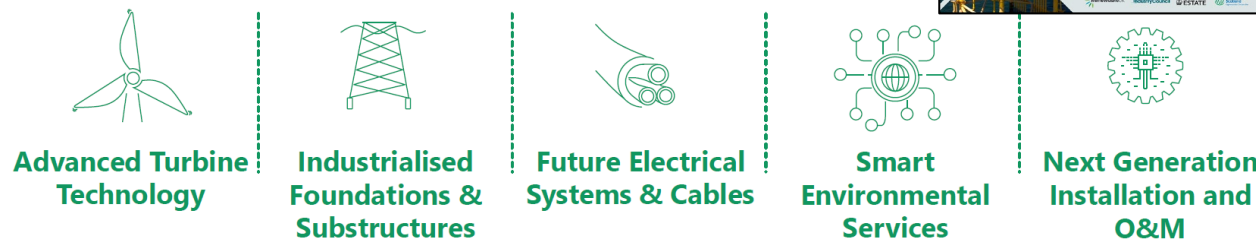
# 2040 Outlook: Supply Chain, Infrastructure & Grid Slide 12

- Supply chain, port infrastructure and grid connectivity have similar growth needs:



- Research and innovation eases the task...
- ...and underpins the UK's ambition to be a global technology leader in offshore wind (as well as saving us from climate change).

The UK should be a **global technology leader** in



UK Offshore Wind Industrial Growth Plan – launched last week


# Research and Innovation for ORE Growth

All of us have a role in the ORE journey:

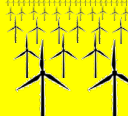
- Reduce the scale of the task
- Signpost the best pathway
- Train the team, align the stakeholders




So that we meet the ORE growth challenge...



**x4**  
rate to 2040



**x7**  
volume by 2040



**x6**  
people by 2040

...in a just, secure and sustainable way.

