

# Supergen



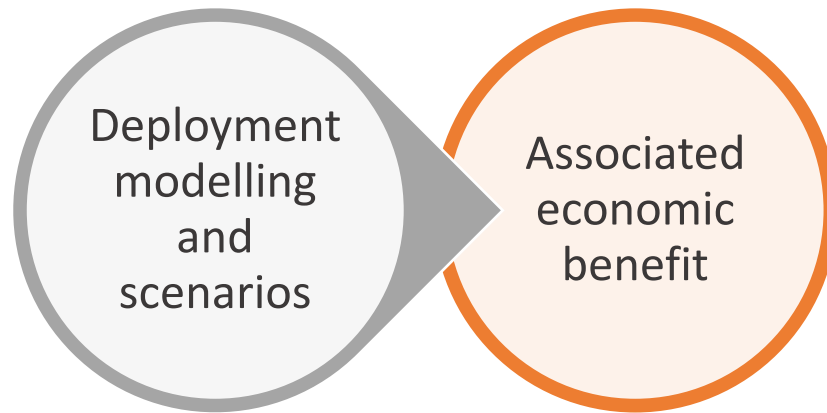
Offshore  
Renewable  
Energy

## What is the value of innovative offshore renewable energy deployment to the UK economy?

A Supergen Offshore Renewable Energy Hub  
Policy Paper prepared by the **Policy and Innovation Group**  
at the University of Edinburgh

# Introduction

- ▶ Deployment modelling and scenarios achievable at target costs and with varying competition from other generating technologies
- ▶ The economic benefit to the UK economy and supply chain associated with the achievement of each of these scenarios at a UK and global scale



*'As we scale up our ambitions and remain world leaders in green technology, it is vital that our economy realises the economic benefits of this large-scale infrastructure programme'*

- **BEIS**, Contracts for Difference Supply Chain Plan consultation, 2021



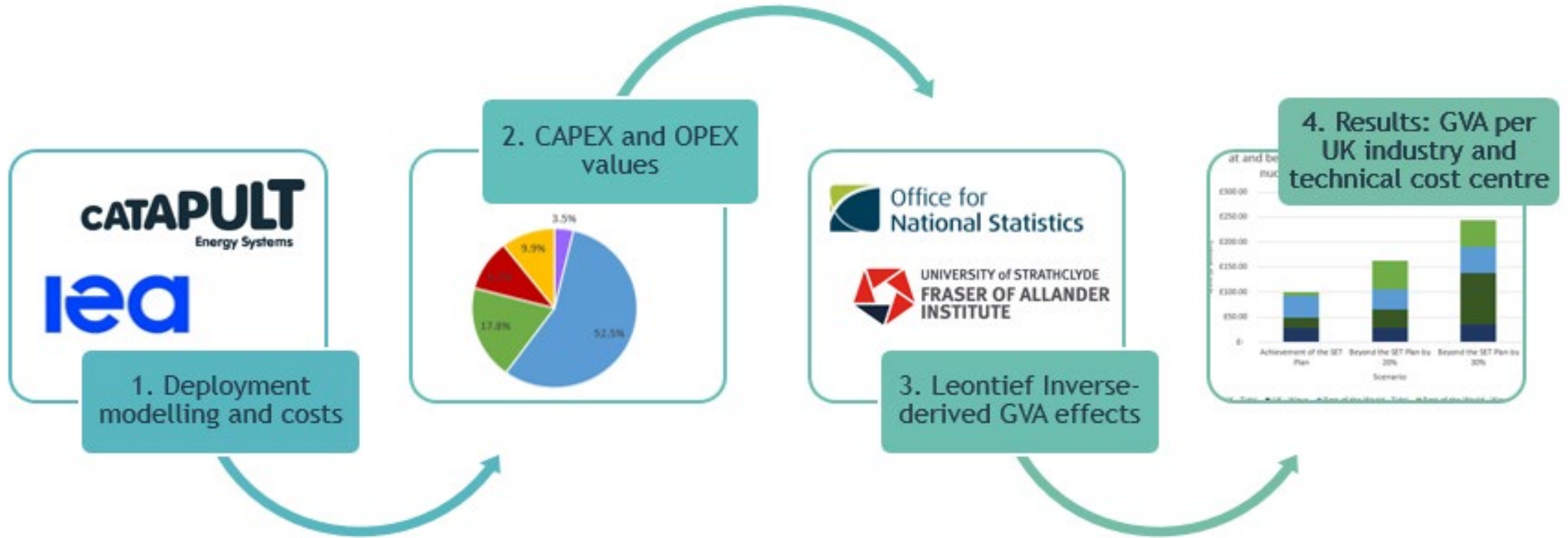
# The SET Plan

- The Strategic Energy Technology Plan (SET Plan) was laid out in 2015 to lead the clean energy transition in Europe.
- As part of this, the **SET Plans for Ocean Energy** and for **Offshore Wind** set **quantitative targets** to be achieved (right)



Technology	2030 target LCOE
Floating offshore wind	€90/MWh
Tidal stream	€100/MWh
Wave	€150/MWh

# Methodology

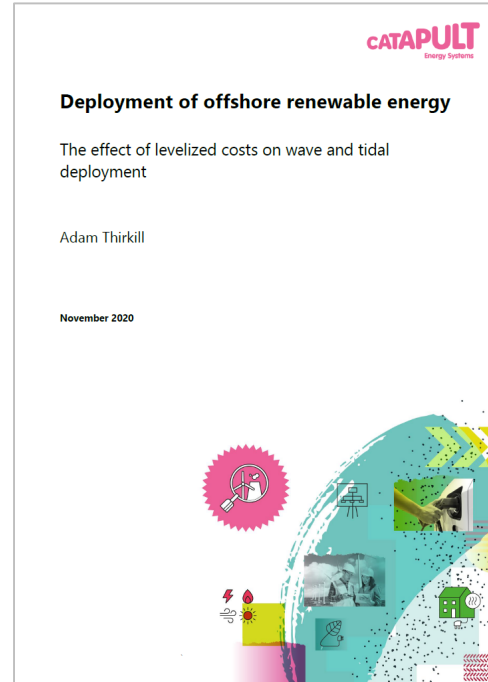


# Deployment Modelling



## UK

- ESME model run by the Energy Systems Catapult (ESC)
- Future Ambition (96%) Scenario



## Global

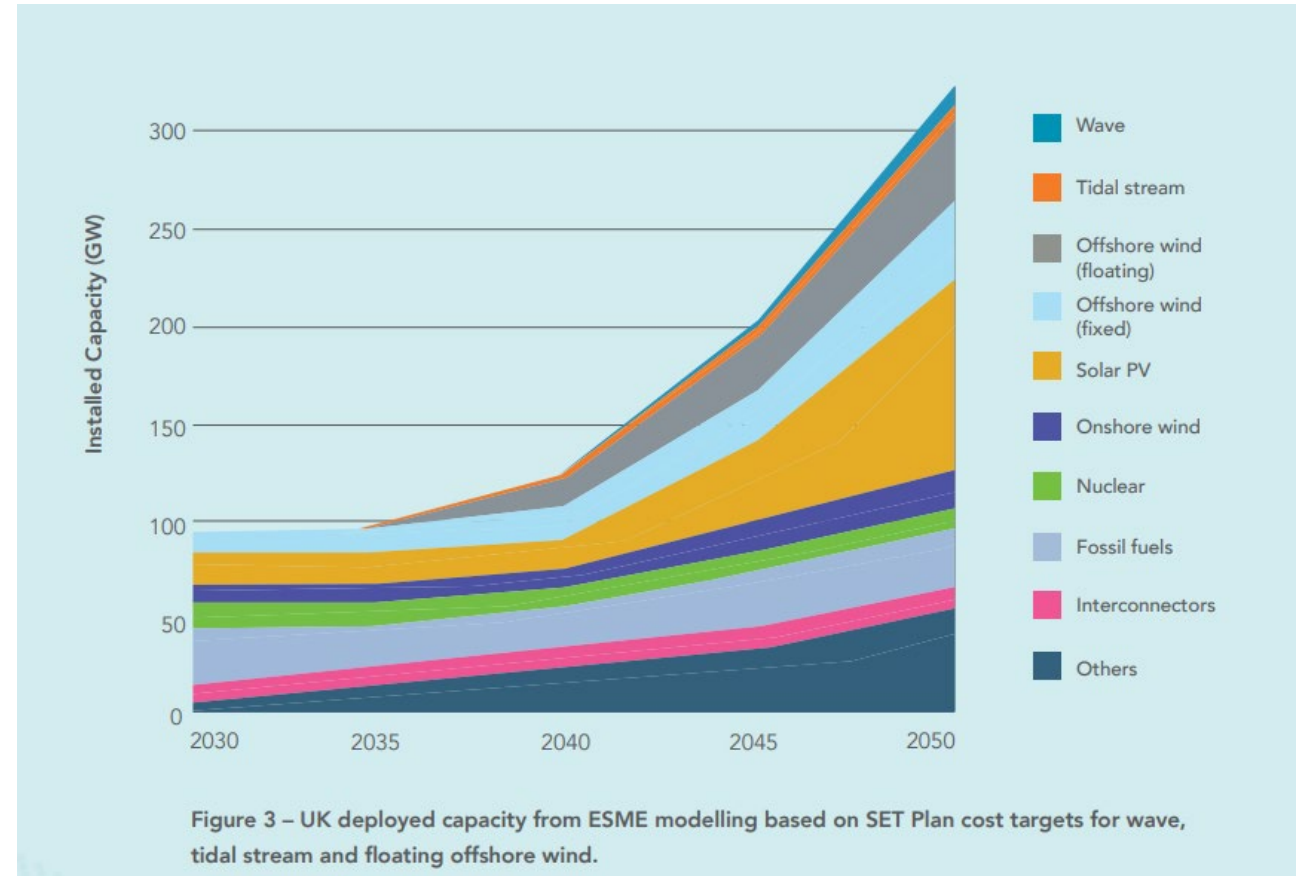
- TIMES model run by the IEA Energy Technology Perspectives (ETP) 2020 team
- Sustainable Development Scenario
  - Most ambitious of the ETP's three historical scenarios
  - Paris Agreement met



# UK electricity mix when SET Plan targets are reached

Over 200GW of renewables by 2050, including:

- 6GW of wave energy
- 6GW of tidal stream
- 45GW of floating offshore wind

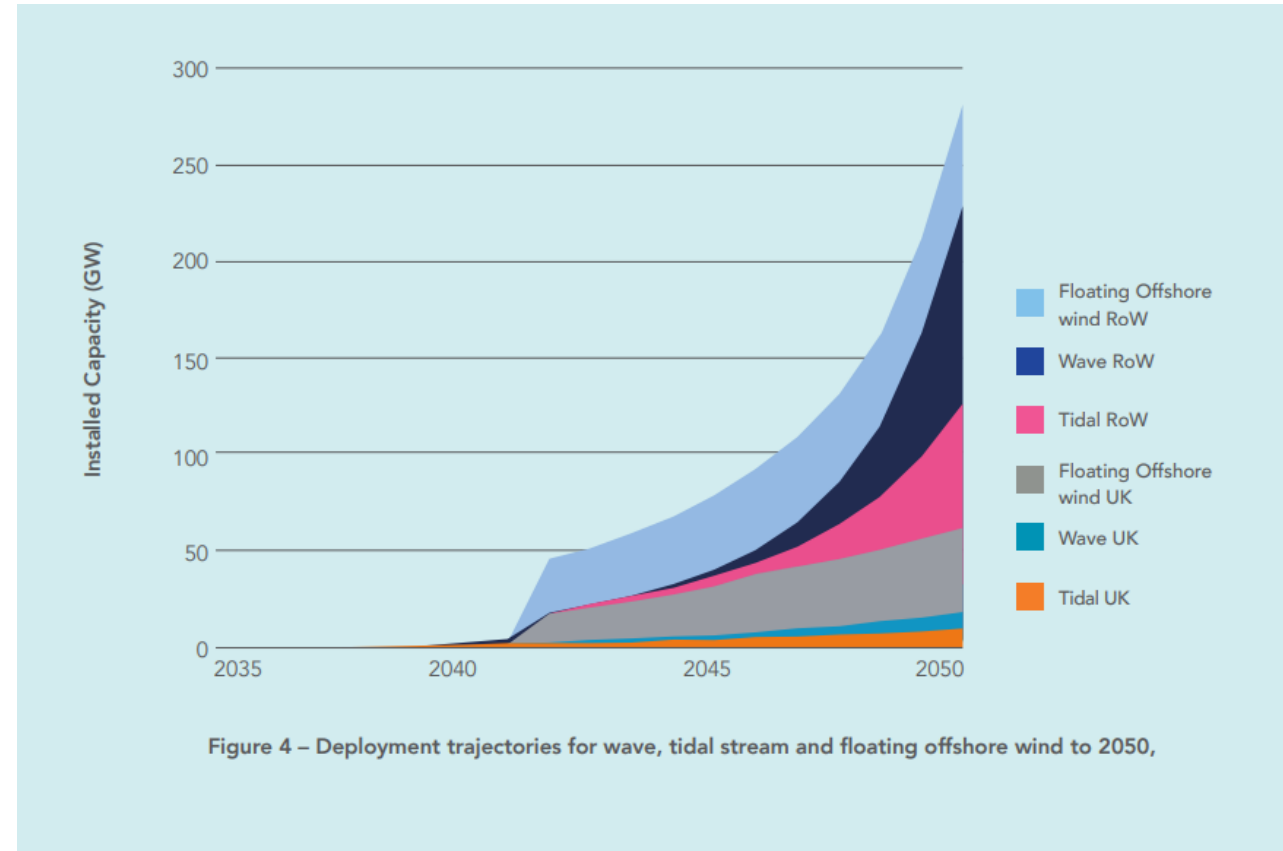


# Global deployments of innovative ORE



288GW of innovative ORE renewables globally by 2050, including:

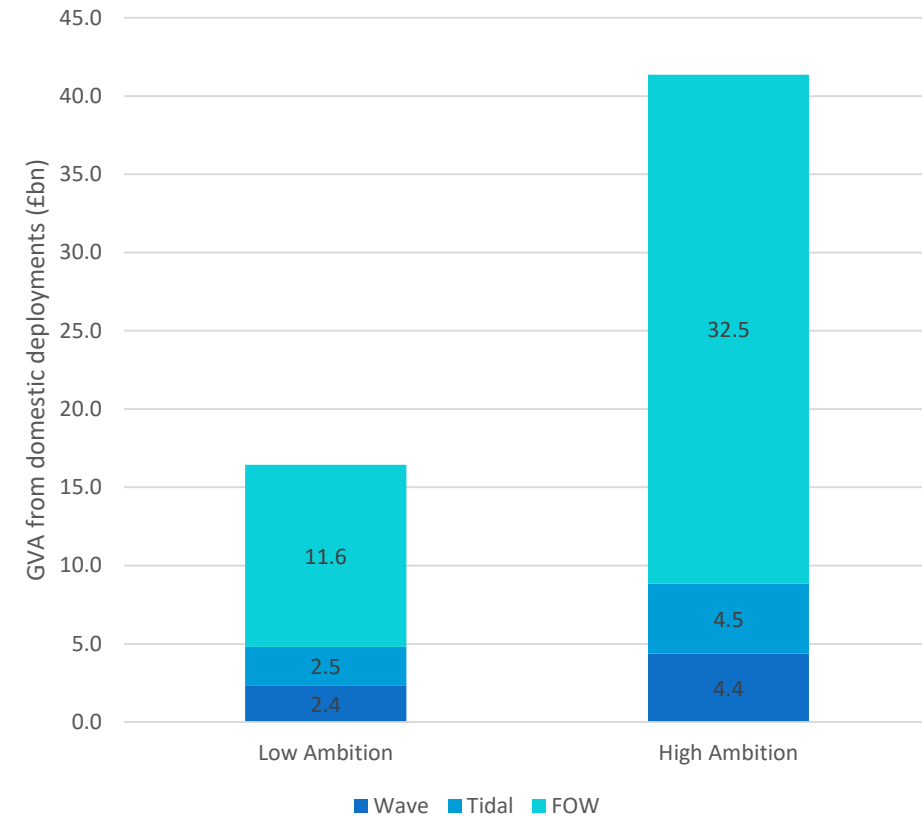
- 115GW of wave energy
- 77GW of tidal stream
- 96GW of floating offshore wind



# GVA generated for the UK economy for domestic deployments (£ billion)



- The Low Ambition scenario generates **£16.4bn in GVA for the UK economy**
- The High Ambition scenario generates **£41.4bn in GVA for the UK economy.**

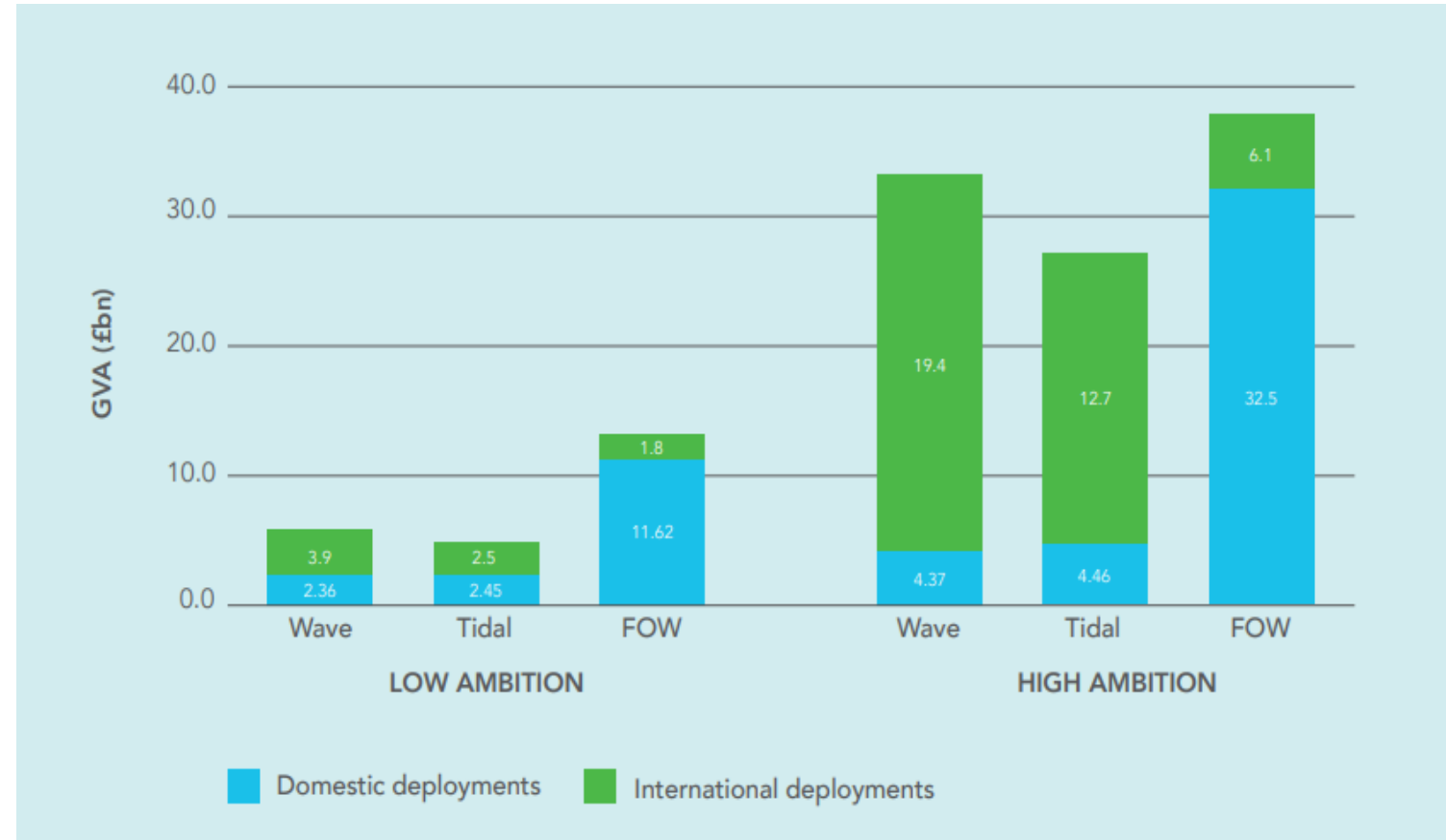




# GVA generated for the UK economy for domestic & international deployments (£ billion)



- The Low Ambition scenario generates a total of **£24.6bn in GVA for the UK economy**
- The High Ambition scenario generates a total of **£79.6bn in GVA for the UK economy.**



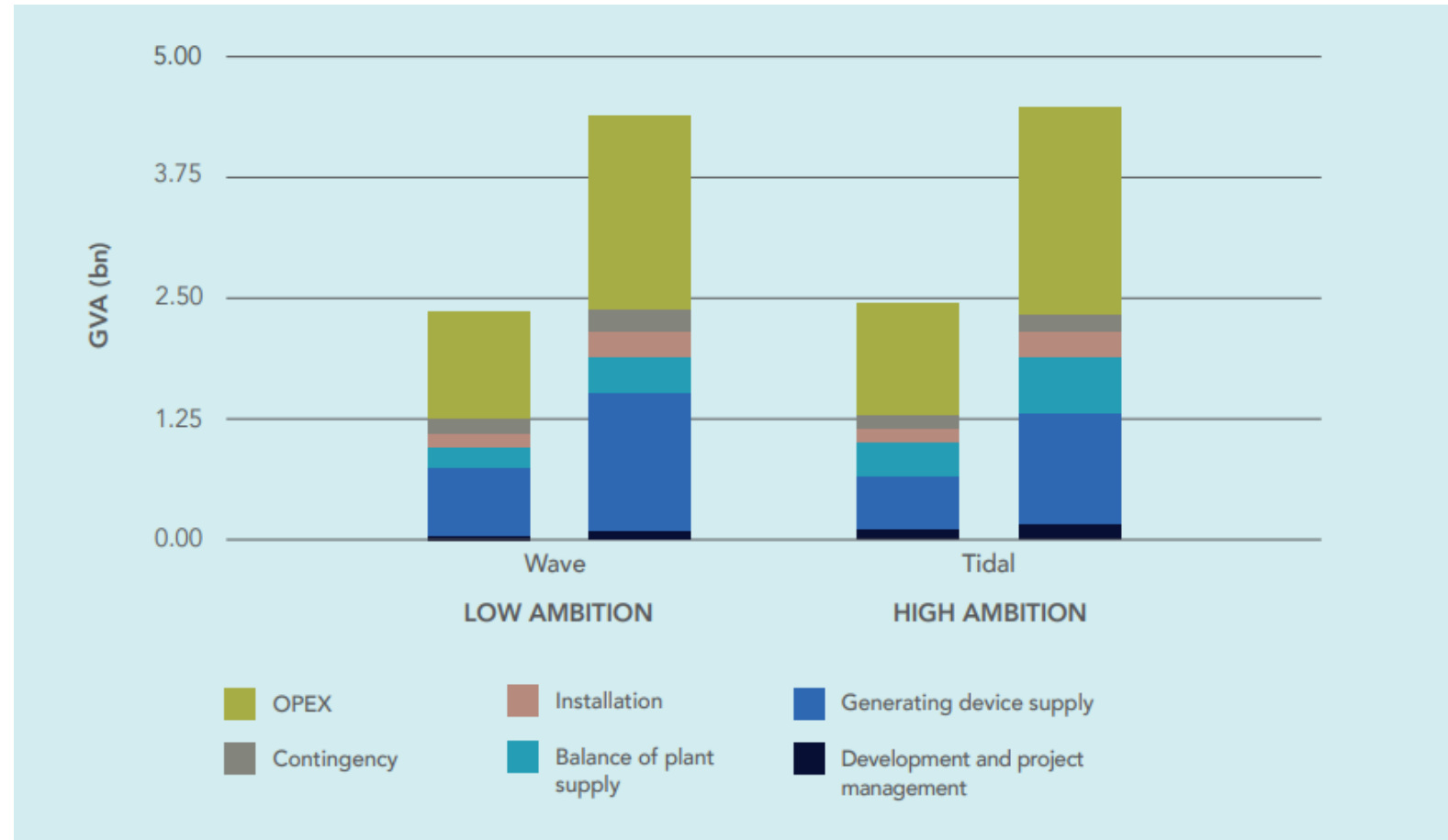


# GVA in the supply chain



# Which parts of the supply chain provide the highest GVA?

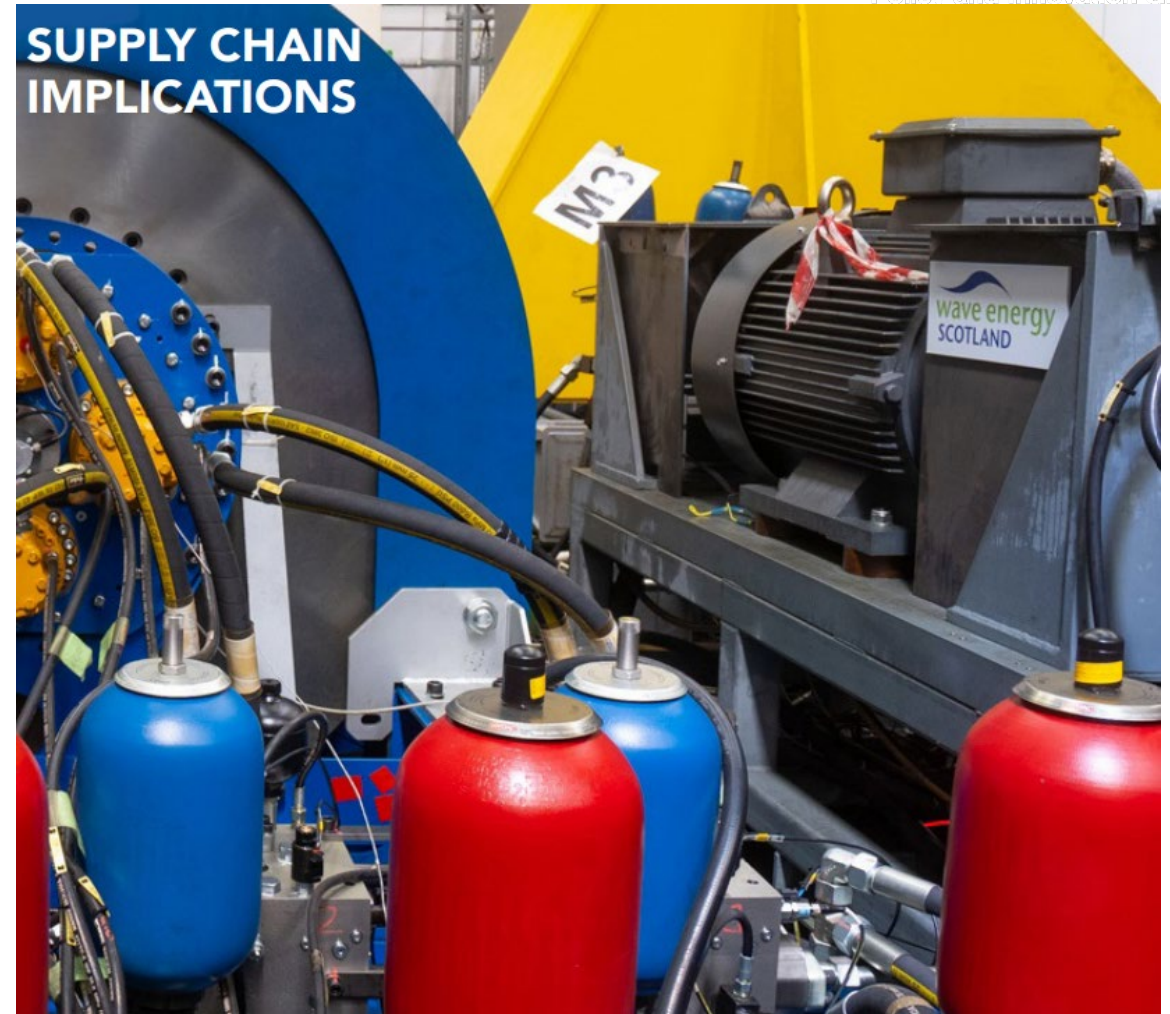
- The **lifetime OPEX** cost centre contributes the most to the incurred GVA
- The **balance of plant supply** generates the highest CAPEX-related GVA for FOW
- The **generating device** generates the highest CAPEX-related GVA for wave and tidal



# Summary



- Global deployments of wave, tidal stream, and floating offshore wind technologies produce a total of £24.6bn to £79.6bn in GVA to the UK economy, dependent on supply chain assumptions.
- Over a 3 fold increase depending on supply chain ability
- Investments will be made – where ?
- Significant NET ZERO and Just transition contributors



# Final report



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School of Engineering  
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