

Marine Energy

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Ocean Energy: An ETI IMPACT

Henry Jeffrey

London

November 2017



**Imperial College
London**



**University
of Southampton**



Background

**North Sea, Oil and Gas
Energy**



**Marine Renewables:
World 1st commercial
grid connected project**



SuperGen Marine



IEA OES



ETI Strategy group

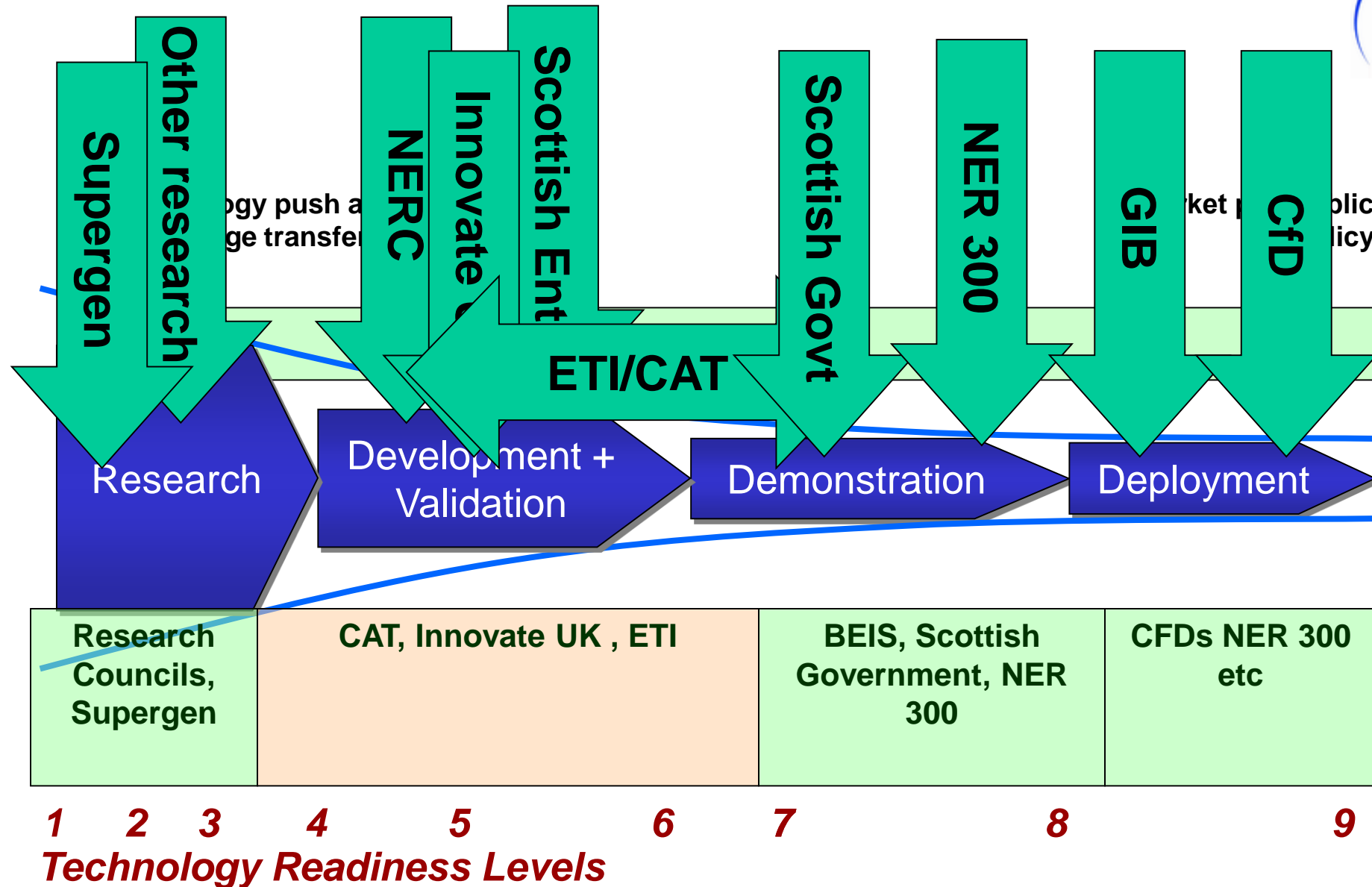
Structure



- **Strategic sector postion**
- **Marine Roadmap**
- **Perawat**
- **WEC and TEC**



Funding the sector



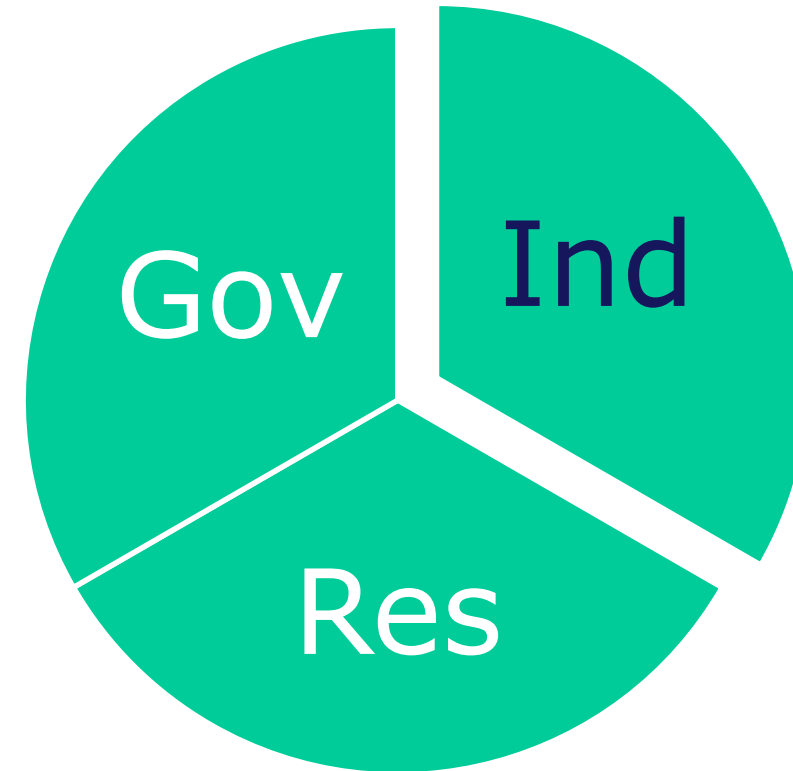
Strategic Advisory Group



Government

Research

Industry



Marine Road map



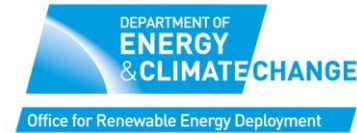
- **UKERC**
- **2 updates**
- **3rd Underway**
- **Significant impact**



Influence



UK



European



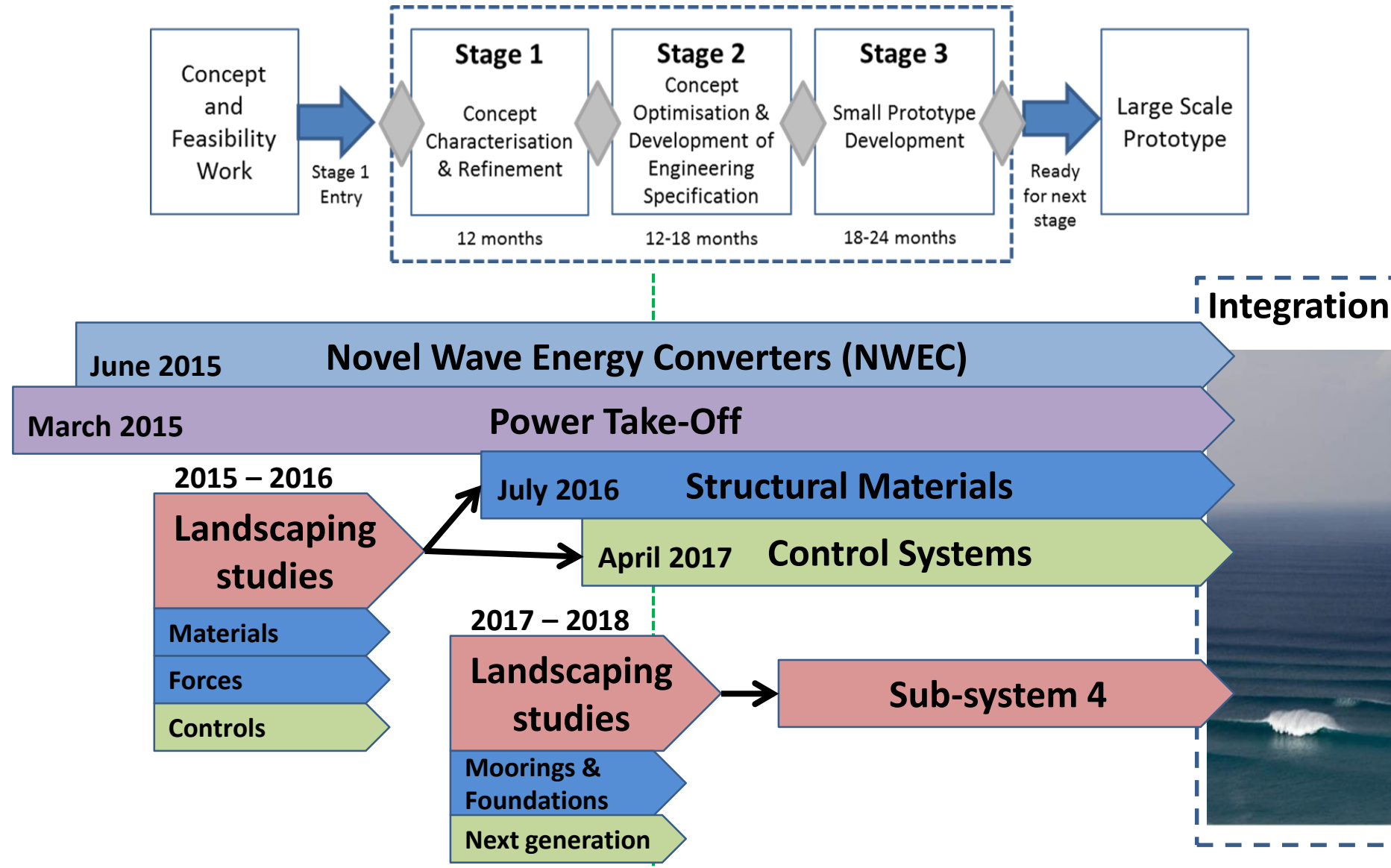
International



Wave Energy Scotland

Technology Development and Collaboration in
WES

WES Programme



Active Technology Projects

Novel Wave Energy Converters



Hinged Barge



Submerged Point Absorber



Bulge Wave



Power Take-Off

Di-electric Generator



Electric



Hydraulics



Gearbox



Polymer Spring



Structural Materials

Concrete



ARUP

Quoceant

Specialists in Marine Energy & Technology



Polymer



Elastomer



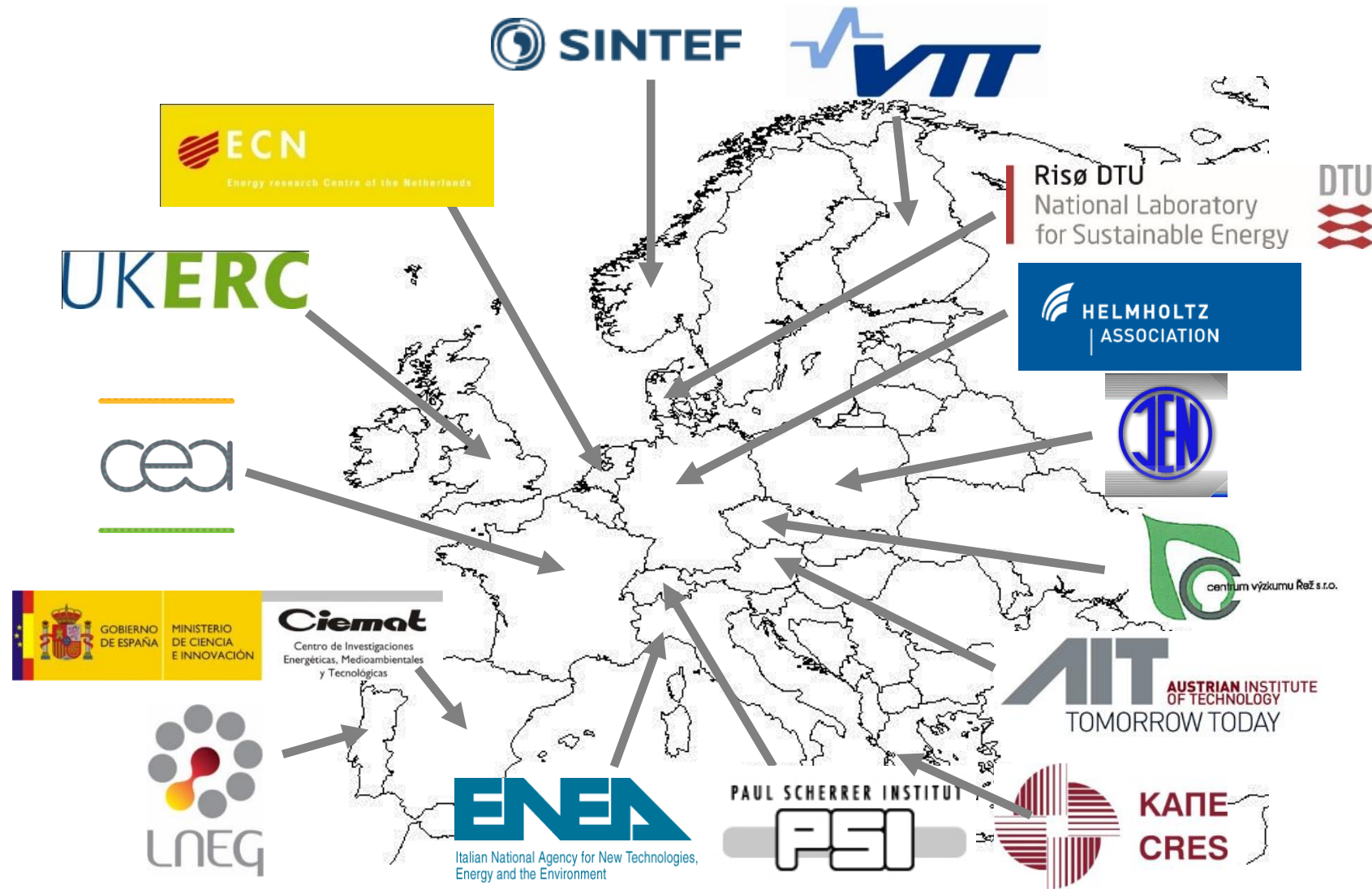
Other





EERA Ocean Energy

EERA Partners





AN INTERNATIONAL VISION FOR **OCEAN** ENERGY 2017

INDUSTRIAL GOAL

By 2050, ocean energy has the potential to have deployed over 300 GW of installed capacity.

SOCIETAL GOAL

By 2050, ocean energy has the potential to have created 680,000 direct jobs and saved 500 million tonnes of CO₂ emissions.

The OES Vision

for International Deployment of Ocean Energy



Utilization of ocean energy resources will:

- › Contribute to the world's future sustainable energy supply.
- › Supply electricity, drinking water and other products at competitive prices, creating jobs and reducing dependence on fossil fuels.
- › Reduce the world energy sector's carbon emissions, whilst minimizing impacts on marine environments.

Ocean energy may experience similar rates of rapid growth between 2030 and 2050 as offshore wind experienced in the last 20 years.

OES GLOBAL OCEAN ENERGY DEPLOYMENT VISION

Installed Capacity (GW)	300
Direct Jobs	680
Investment in 2050 year (US\$)	35 Billion
INDUSTRIAL GOAL (tonnes of CO2)	500

By 2050, ocean energy has the potential to have deployed over 300 GW of installed capacity.

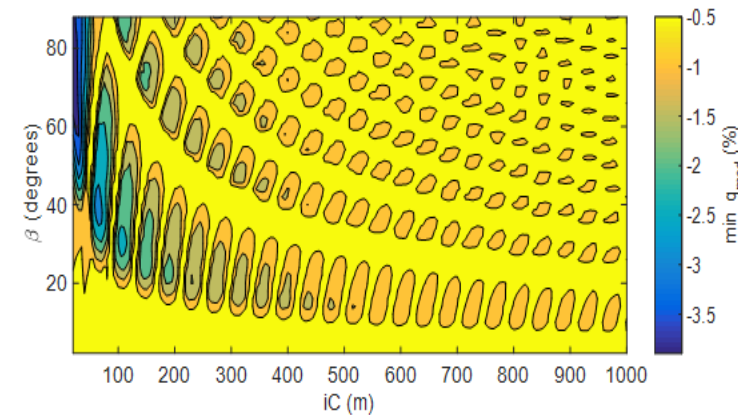
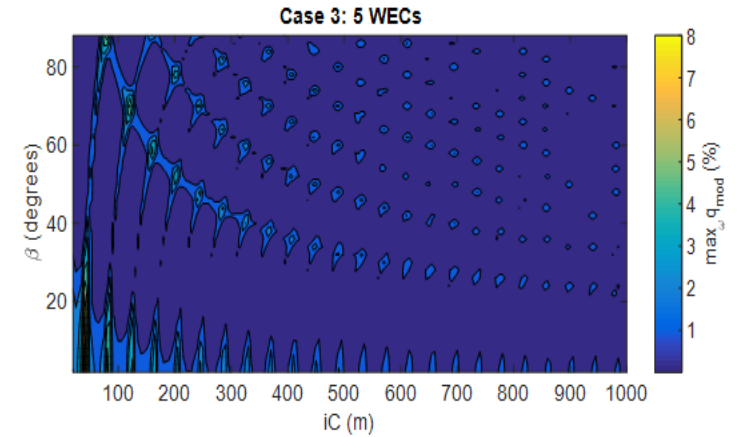
SOCIETAL GOAL

By 2050, ocean energy has the potential to have created 680,000 direct jobs and saved 500 million tonnes of CO2 emissions.

PERAWAT



- **Landmark point**
- **Underpinning tool for sector**
- **DNV GL sector tools**
- **University collaboration**





THE UNIVERSITY *of* EDINBURGH

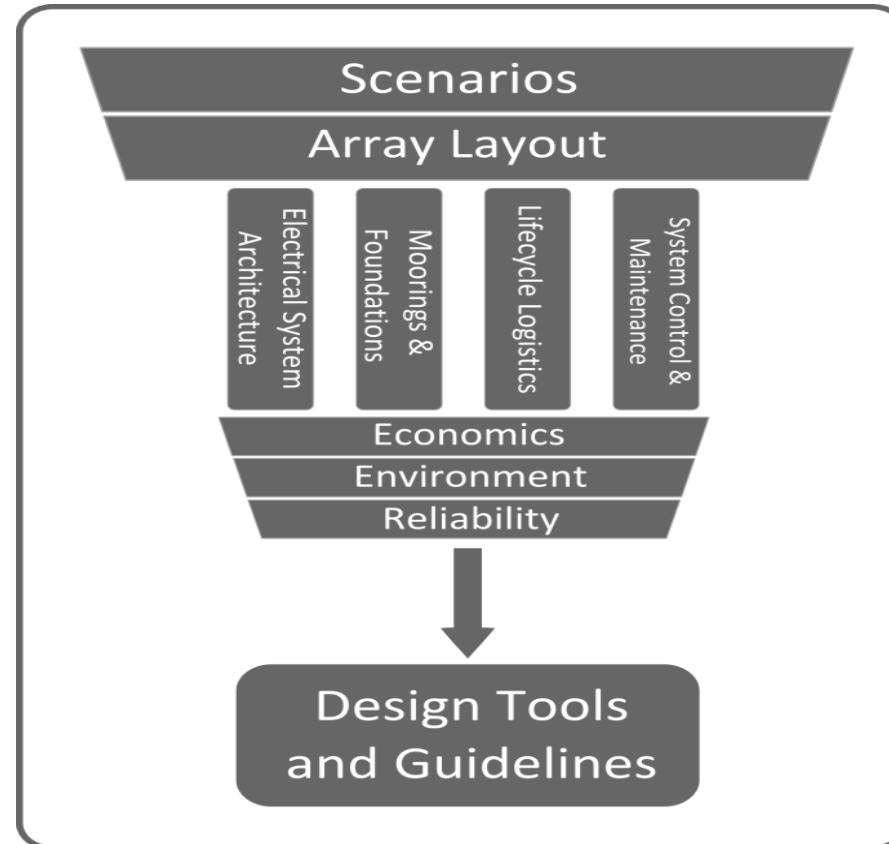


DTOcean



Illustration of the overall work-flow of the project

- **Scenarios**
 - **Array Layout**
 - **Electrical System**
 - **Moorings and foundations**
 - **Lifecycle logistics**
 - **System control**
-
- **Economics**
 - **Environmental**
 - **Reliability**
-
- **Design tools**



Structured Innovation



- **WEC and TEC**



Structure



If Carlsberg made marine energy!!!

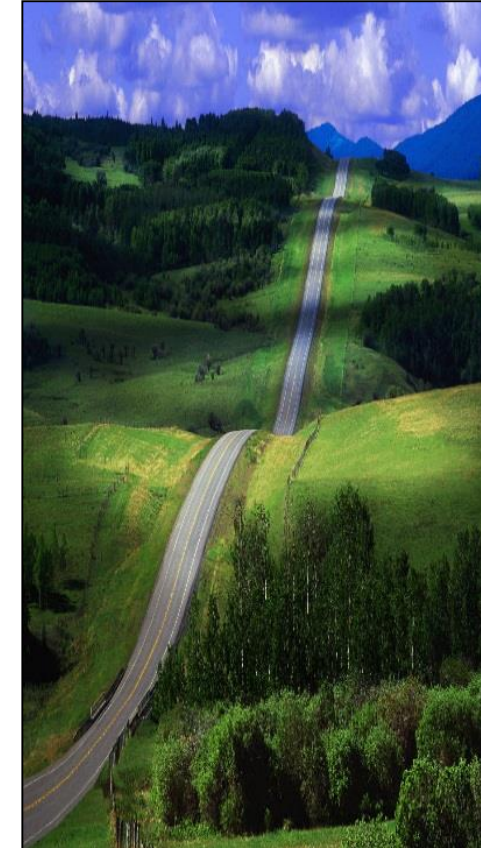


If Carlsberg did beer it would probably be the best beer in the world

Summary: Ocean energy



- **Impact @ UK , European and International levels**
- **Underpinned political and technology support for development of marine energy**
- **Support across/linking the TRL levels**
- **Tech Push and Market Pull**
- **Legacy in the projects**





Thank you for your attention!

