



Developing a Research Route Map for the Environmental Sustainability of Marine Renewable Energy

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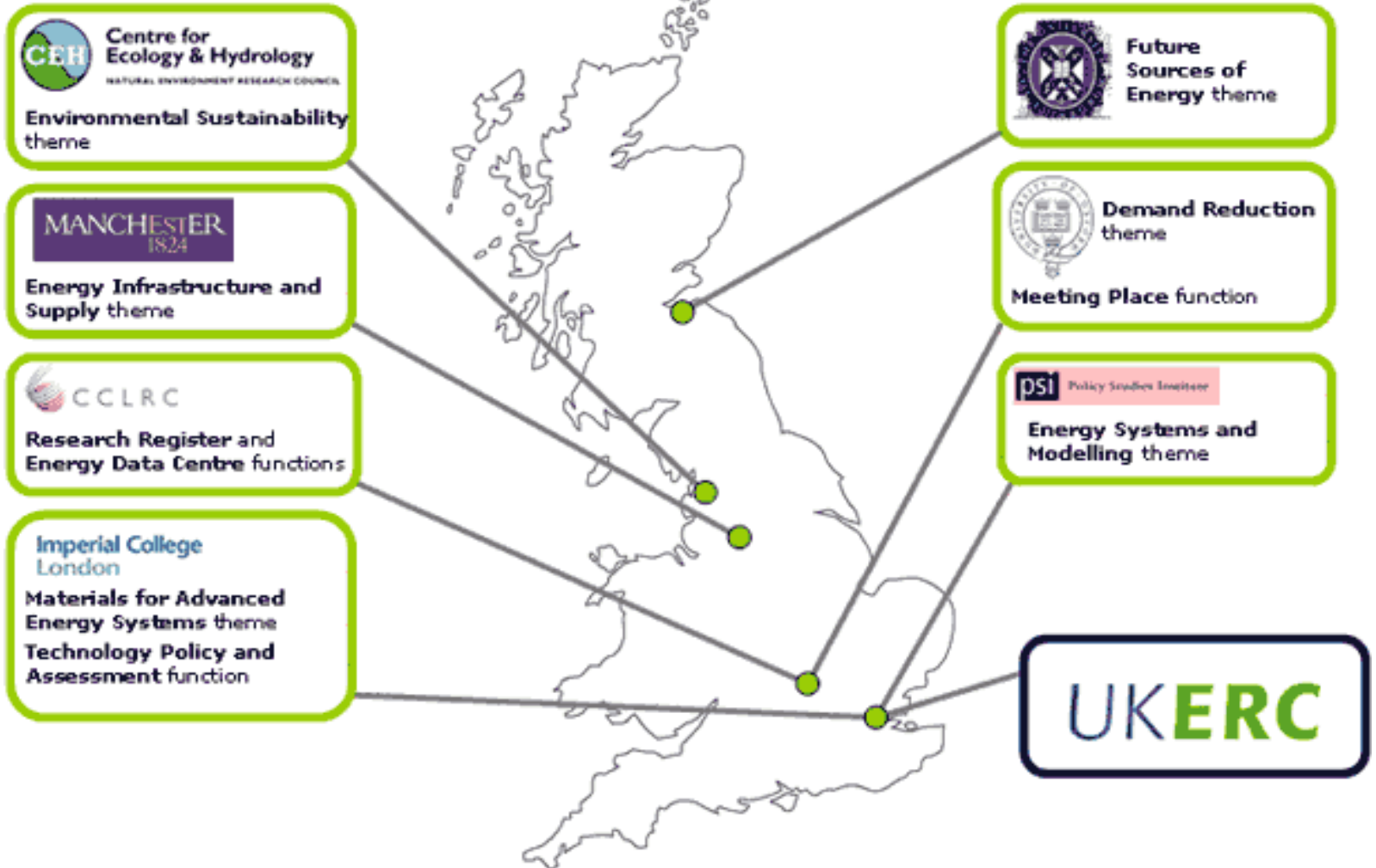
UKERC



Presentation Plan

- Introduce UKERC
- Route map process
- Current Landscape
- Research Priorities
- Time-line Diagrams

Where are we?



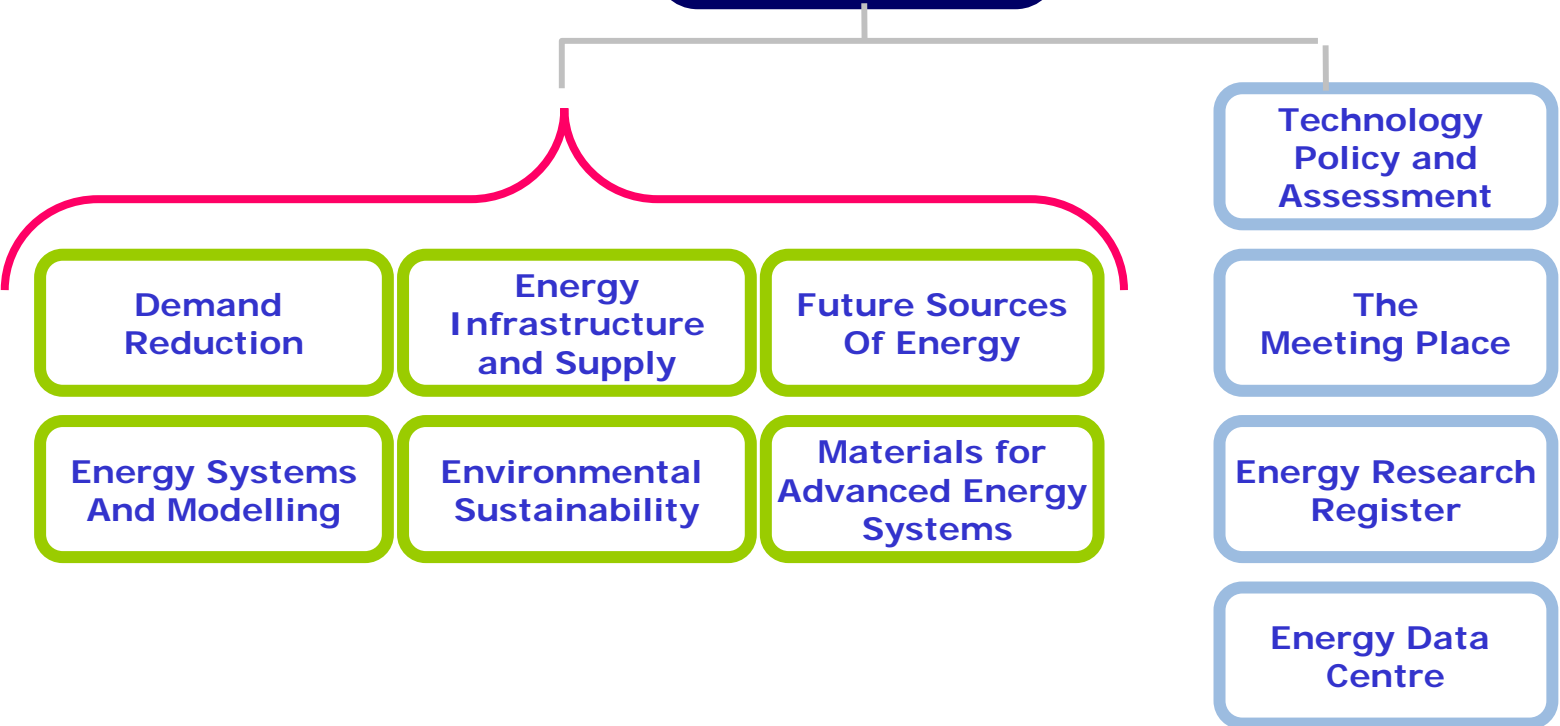
UKERC Structure



John Loughhead,
executive
director



Professor Jim Skea,
research
director



An illustration of several offshore wind turbines in a field, rendered in a light teal and white color scheme. The word "Why?" is centered over the middle of the image.

Why?

- The UKERC Marine Road-map is being compiled to:
 - identify the research priorities
 - identify critical areas of research – potential show-stoppers.
 - identify areas and groups for collaboration outside the current research landscape.
 - advise on research funding strategies
 - demonstrate the need for coordinated research activity between academia and industry

Energy Research Atlas

“an authoritative and comprehensive account of capabilities and unsolved research problems across the energy domain”

Research Landscape:

Characterising energy-related research activities and capabilities (program level)

Research Register:

An on-line searchable database of energy related awards and projects

Research Route Map:

Identifying the sequence of research and other problems to be overcome before new technologies become commercialised

Research Route maps

- Work with the research community and stakeholders to identify existing maps and research needs, fill in gaps and bring these together into a single “atlas”
- Identifying the sequence of research problems to be overcome before new technologies can be commercially viable.
- Consensus-based, interdisciplinary and dynamic
- Need to be scenario-based
- Currently no environmental research route maps



Current Landscape

- Research Funding
 - UKERC (Research Councils)
 - JNCC
 - Oceans 25
 - CE – Marine Stewardship Programme
 - COWRIE }
▪ RAG }
- Fundamental Research Providers
 - Only a few University research groups active in environmental impacts marine renewable technologies
- Applied Research Providers
 - Full-scale Offshore Test Facility – EMEC, Orkney
 - Proposed Wave Hub project in SW England



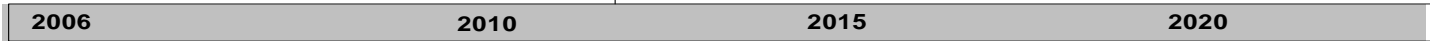
The background of the slide features a light teal color with a faint, stylized illustration of several wind turbines. The turbines are depicted in white and grey, with their blades extending outwards. The overall aesthetic is clean and modern, typical of a professional presentation.

Landscape Analysis

- Research Priorities
 - Marine energy SEA for all of UK - Baseline
 - Fishing impacts – reefing effects and management
 - Noise
 - Coastal Processes
 - Energy Extraction
 - Seals, Cetaceans and turbines
 - EMF
 - Impacts from full arrays

Timelines: Test Facilities

All test facilities in place with uniform test protocols and standards



Review existing small & medium scale tank test facilities & implement recommendations

Develop combined wave & current tank

Offshore component test platform

Implement Environmental monitoring at offshore test facilities (EMEC & WAVEHUB)

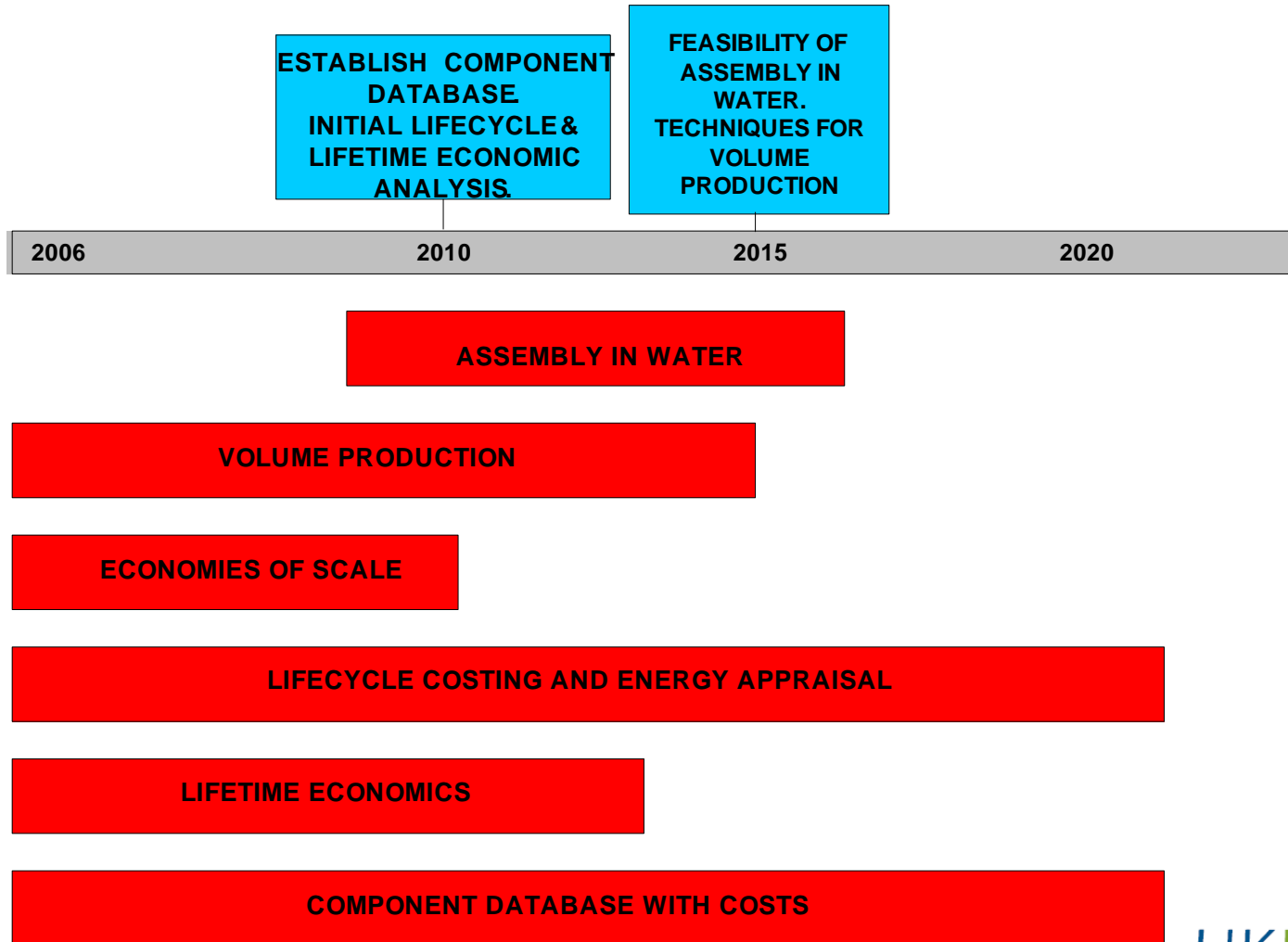
WaveHub - demonstrating small arrays

Testing Guidelines :
1/100th – 1/10th – Full

Testing Standards :
1/100th – 1/10th – Full



Timelines: Life cycle & Manufacturing



Timelines: Environmental

Basic understanding of environmental issues & some experimental data from early projects.

Experimental data on environmental issues from full scale projects

2006

2010

2015

2020

FOUNDATIONS

SCOURING

NOISE

EMF FROM POWER CABLES

OTHER MARINE USERS

EFFECT ON MARINE LIFE AND ECOSYSTEM

IMPACT OF ENVIRONMENT ON PERFORMANCE

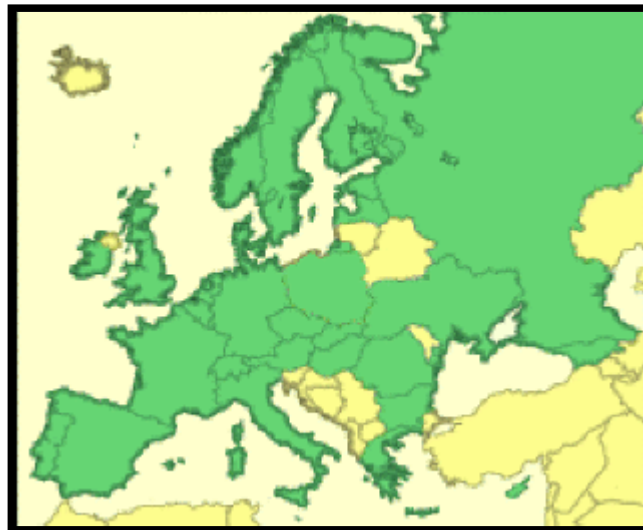
MONITORING SYSTEMS

CLASSIFICATION OF DEVICES ACCORDING TO ENVIRONMENTAL IMPACT



Future Activities

- Cooperate at EU level and with other EU partners
 - **EU wide route map?**
 - **National route maps feeding into EU Research route map**





Questions ?

Thank you for your attention

For more information

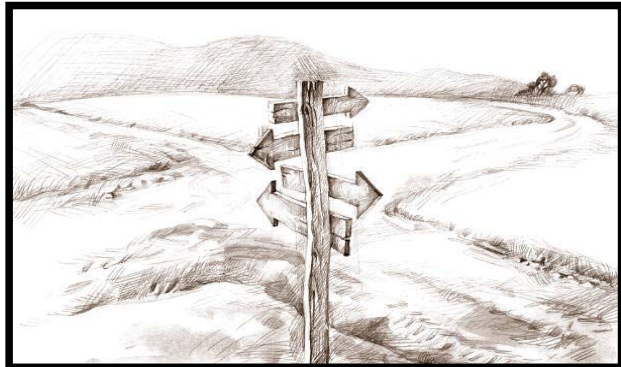
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