UK Centre for Marine Energy Research

Mission

Now operate Phase 3 as the

UK Centre for Marine Energy Research

whose core membership and management team will

- ensure joined-up regional, disciplinary and thematic effort to meet the challenges in accelerating deployment towards and through 2020 targets

- maintain the international brand image and UK world-lead in marine energy

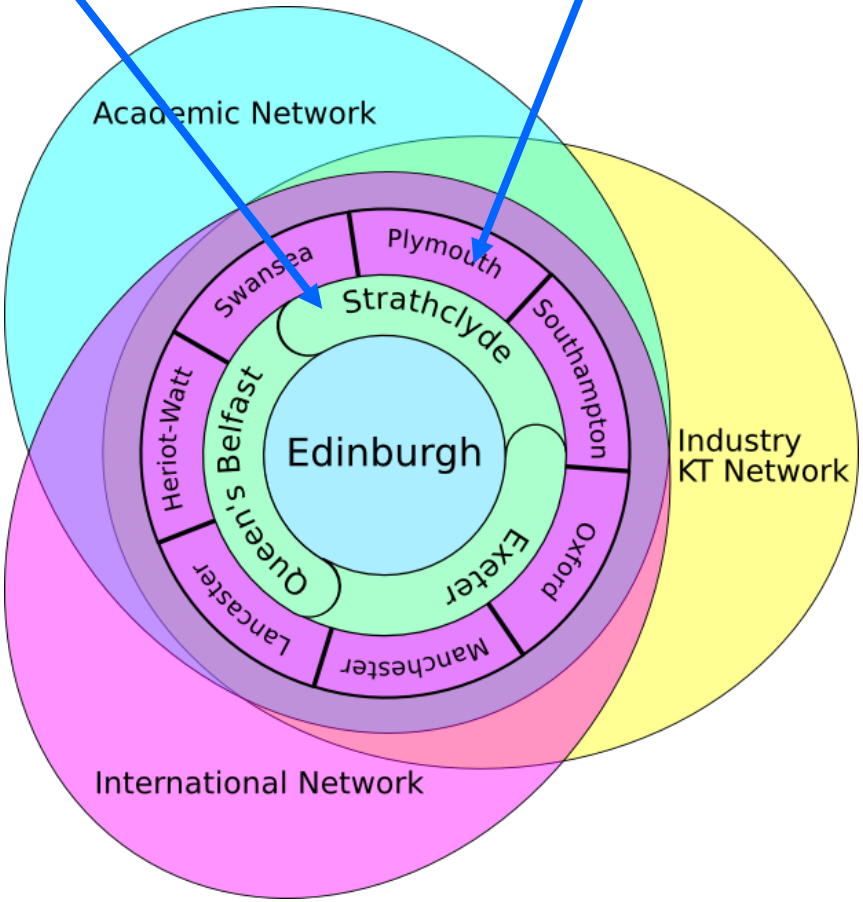
Rationale and Vision

Within this landscape UKCMER will

- *Conduct world-class **fundamental and applied research** that assists the marine energy sector to accelerate deployment and ensure growth in generating capacity through 2020 targets.*
- *Expand and operate an inclusive **marine network** of academic researchers, industry partners and international collaborators.*
- *Continue to provide the highest quality of **doctoral training and knowledge transfer** in partnership with industry to build intellectual and human capacity for the sector.*

Structure

Core universities
Edinburgh,
Queen's Belfast,
Strathclyde,
Exeter



Associate universities
Plymouth,
Heriot-Watt,
Lancaster,
Manchester,
Swansea,
Oxford,
Southampton

Management

Core responsibilities within UKCMER

Wallace:	Executive Director, Marine Champion;
Bryden:	Research Director, Technology R&D foresighting;
Ingram:	Doctoral Training Manager, EU liaison
Jeffrey:	Marine Network Manager, Road-mapping and industrial liaison
Whittaker:	Natural Environment, Deployment Infrastructure, Ireland and Wales liaison
Johnstone:	Knowledge Exchange, Economic Interface, Scotland liaison
Smith:	Supply Chain and Policy Interface, England and South-West liaison

Strategy

UKCMER will:

- work with developers, industry, academia and other stakeholders to conduct fundamental and applied research that accelerates deployment;
- maintain and refresh national and international roadmaps;
- keep the research programme agile and adaptive to scope and seed-fund foresighting work;
- propagate consequent applications to councils and sponsors from RCUK through TSB, Carbon Trust, FP7, ETI, to the RDAs and UK governments;
- work with funders and sponsors to help shape future calls for proposals to ensure thematic fit with the sector's needs up to and beyond 2020;
- interact with other UK and European programmes.

Research Themes and Aims

Examples from analysis of roadmaps and developer consultation

Arrays and farms:

To optimise array design and inform planning and consenting we will understand the hydrodynamic processes and nature of the interactions between waves and current on the behaviour of devices and moorings during installation and subsequent operation.

Turbulence:

To reduce the need for over-design against fatigue, increase reliability, power quality and affordability we will understand the loadings arising from turbulent effects of upstream eddies and those shed from mooring structures.

Component and system reliability:

To improve reliability we will increase ability to predict wear and fatigue life of components and devices operating well away from their design conditions. This will quantify and reduce economic impacts of wear, maintenance and failure regimes.

Research Themes and Aims

Mooring and Foundations:

To reduce installation and station-keeping costs we will develop general fixing technologies based on the geographic and geotechnical characteristics of the sea floor.

Power Take Off:

To develop PTOs for the marine environment that accept the stochastic reciprocating input of wave power we will develop integrated design techniques.

Environmental impact:

To avoid un-necessary restriction we will understand and quantify the effects of energy extraction and modifications of flow on marine mammals, flora, fauna and sediment within the ecosystem over timescales ranging from immediate to long term at proximities ranging from direct to ambient.

Synergies in Infrastructure:

To investigate possible cost reductions from sharing of deployment, maintenance and transmission infrastructures with offshore wind, and oil and gas we will explore the economic, societal and technological feasibility and ensuing benefits.

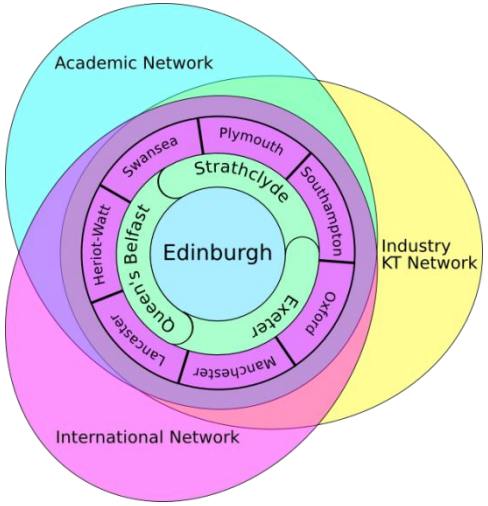
Marine Network

Managed, outward-facing, open-access marine network includes:

Academic staff with research interests in or related to marine energy from university and HE colleges that are not already core or associate members.

International academics or industry partners in USA, Canada, Taiwan, China, Japan, Hong Kong, Korea, France, Spain, Germany, Ireland, Norway and Portugal.

Industry KT network will work alongside the Energy Generation and Supply KTN.



Training and Development

- Continuing demand for trained marine energy researchers to supply both the industrial and research sectors.
- UKCMER proposes to continue doctoral training courses but to include industrial, CPD, participants.
- PhD students will be allocated in year 1 to core and associate universities and in year 2 to include network universities in response to the evolving research landscape.
- Studentships will be supplemented by knowledge transfer partnership (KTP) associates working on industry led EngD projects directly addressing industrial challenges from the network.