

Supergen



Offshore
Renewable
Energy

The Supergen Offshore Renewable Energy (ORE) Hub

Foundations for Ireland-UK Floating Wind 12 March 2021

Professor David White (University of Southampton)

Professor Deborah Greaves (University of Plymouth)



Supergen



Offshore
Renewable
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The Supergen Offshore Renewable Energy Hub provides **research leadership to connect** academia, industry, policy and public stakeholders, **inspire innovation** and maximise societal value in offshore wind, wave and tidal energy.

Supergen ORE Hub Objectives

Provide Visible Research Leadership

Inspire

- **Execute and publish** a distinctive and ambitious world class **research** through the core programme
- **Inspire and facilitate** a programme of co-ordinated UK led **research** through the flexible fund
- Be a **beacon** for equality, diversity and inclusion (**EDI**)
- **Support** development of **early career researchers** (ECR)

Connect

- Be a **respected voice** for policy makers and a **trusted partner** for industry
- Have strong **international** collaboration
- Take a **whole systems** approach to ORE

£2,200,000

Invested into research through our funding rounds



146

Early Career Researchers in our Network



60+

publications associated with the Hub



Over 30

events engaging with academia, industry, policy makers and the public



What is the Supergen ORE Hub?



WAVE





WIND



TIDE


Supergen

Offshore
Renewable
Energy

Engineering and
Physical Sciences
Research Council

Management Group

- Each Partner University brings complementary research and technical expertise.



Beth Scott
University of Aberdeen

Henry Jeffrey
University of Edinburgh

Feargal Brennan
University of Strathclyde

Tim Stallard
University of Manchester

James Gilbert
University of Hull


Xiaowei Zhao
University of Warwick

Richard Willden
Byron Byrne
University of Oxford


Deborah Greaves
University of Plymouth

David White
University of Southampton


Philipp Thies
University of Exeter




Professor Deborah Greaves
OBE
Director of the Supergen ORE Hub
(University of Plymouth)




Professor Tim Stallard
Co-Director of the Supergen ORE Hub
(University of Manchester)




Professor David White
Co-Director of the Supergen ORE Hub
(University of Southampton)




Henry Jeffrey
Co-Director of the Supergen ORE Hub
(University of Edinburgh)




Professor Richard Willden
Co-Director of the Supergen ORE Hub
(University of Oxford)




Professor James Gilbert
Co-Director of the Supergen ORE Hub
(University of Hull)




Professor Philipp Thies
Co-Director of the Supergen ORE Hub
(University of Exeter)




Professor Beth Scott
Co-Director of the Supergen ORE Hub
(University of Aberdeen)



Professor Byron Byrne
Co-Director of the Supergen ORE Hub
(University of Oxford)



Professor Xiaowei Zhao
Co-Director of the Supergen ORE Hub
(University of Warwick)



Professor Feargal Brennan
Co-Director of the Supergen ORE Hub
(University of Strathclyde)

Industry Advisory Board

A wide group of stakeholders from across all ORE disciplines, representing Research, Industry, Government, Academia and Innovation.

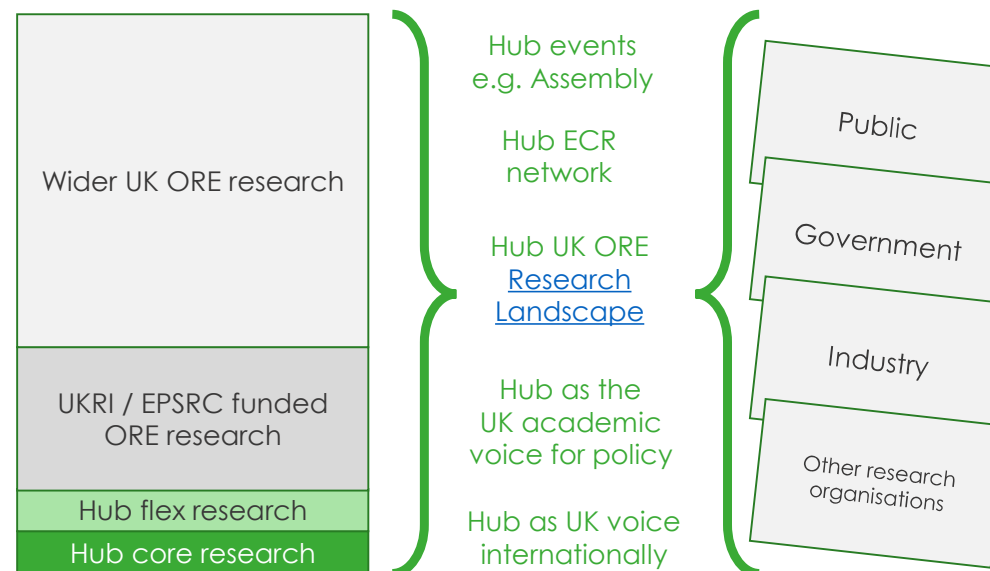


Inspire

- Research Landscape
- Flexible funding
- Resource prioritisation

Connect

- Assembly and events
- ECR network
- Research Alignment Group
- Advisory Board
- Influence policy – voice for sector



Research Landscape

Interactive web-based landscape tool to enable industry, government and researchers to share opportunities and challenges across challenge themes, and allows researchers to promote ORE projects to the wider community.

www.supergen-ore.net/research-landscape

Supergen Energy

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ORE Facilities






ECR Community

News & Events

Welcome to the Supergen ORE Hub

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Find out more



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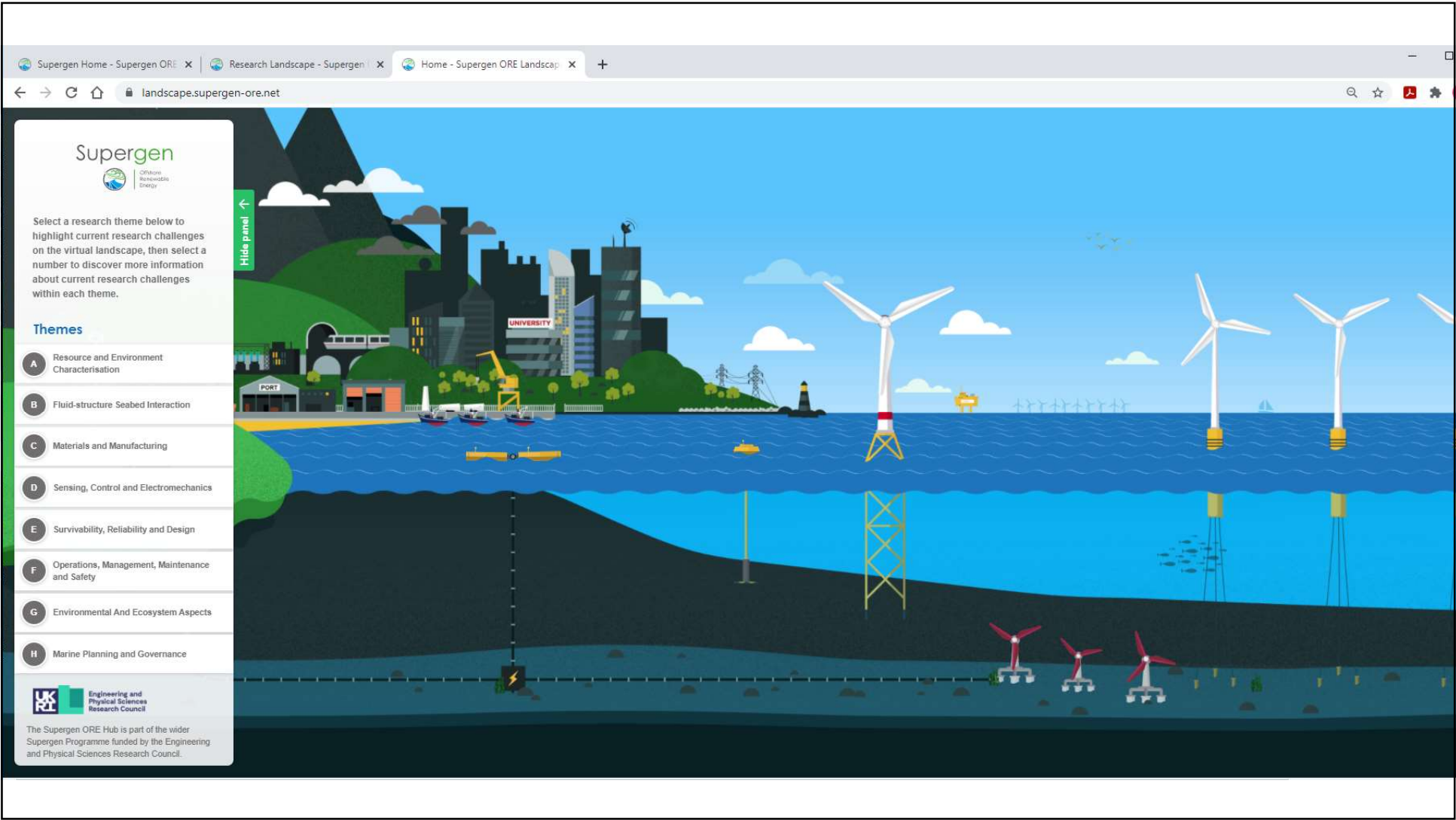
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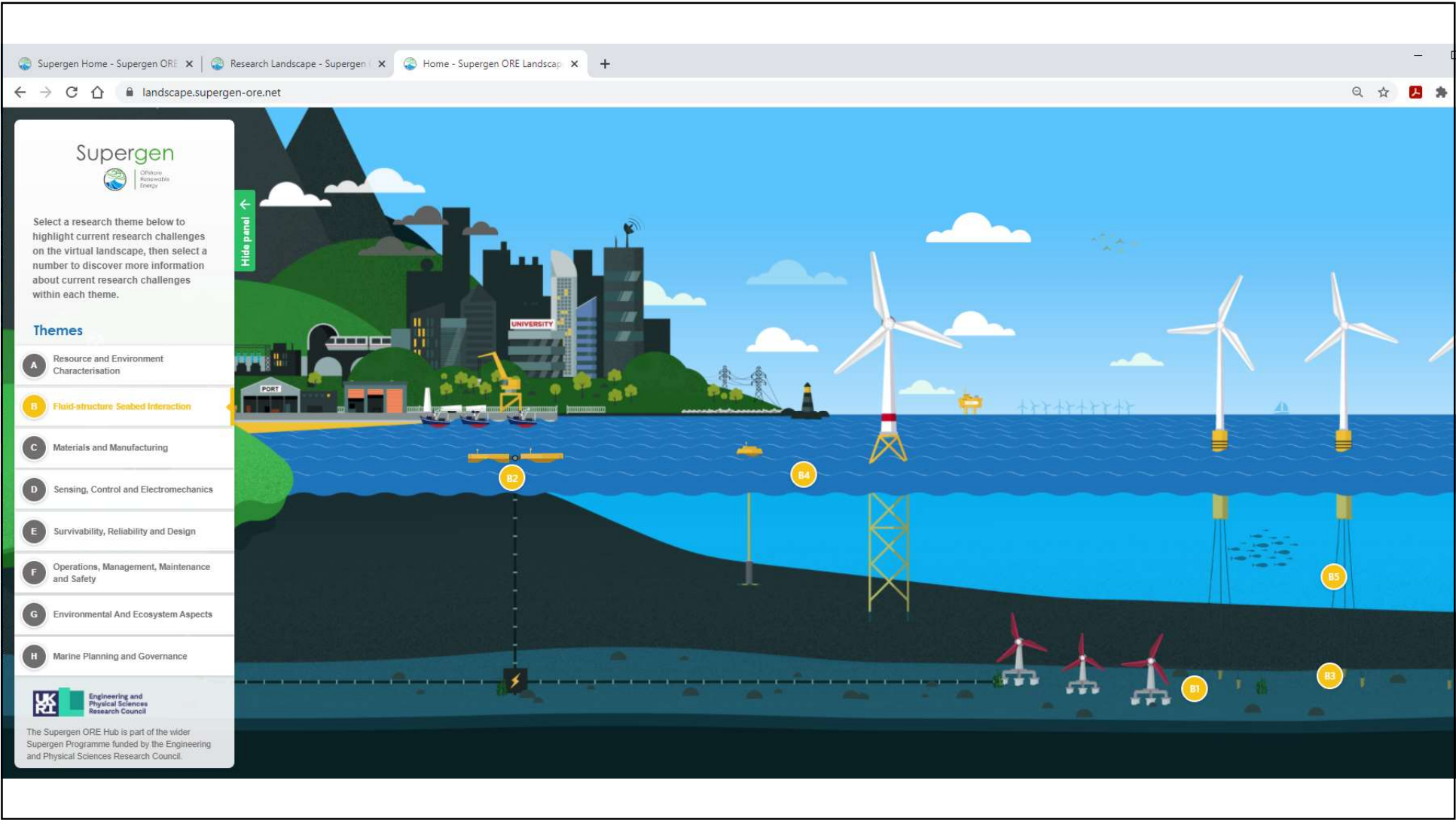
Successfully funded research projects

8

Professor David White, University of Southampton, david.white@soton.ac.uk

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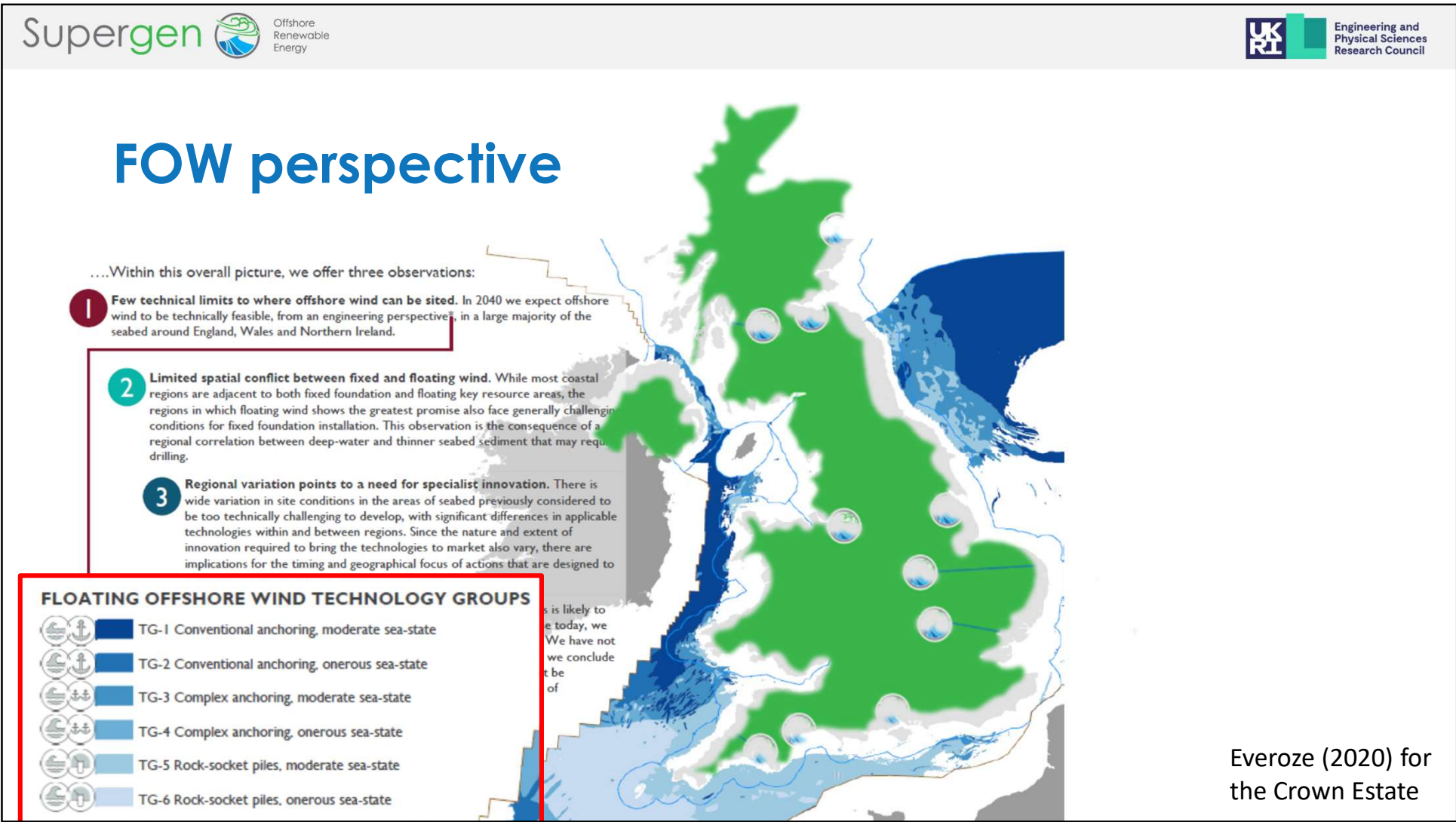


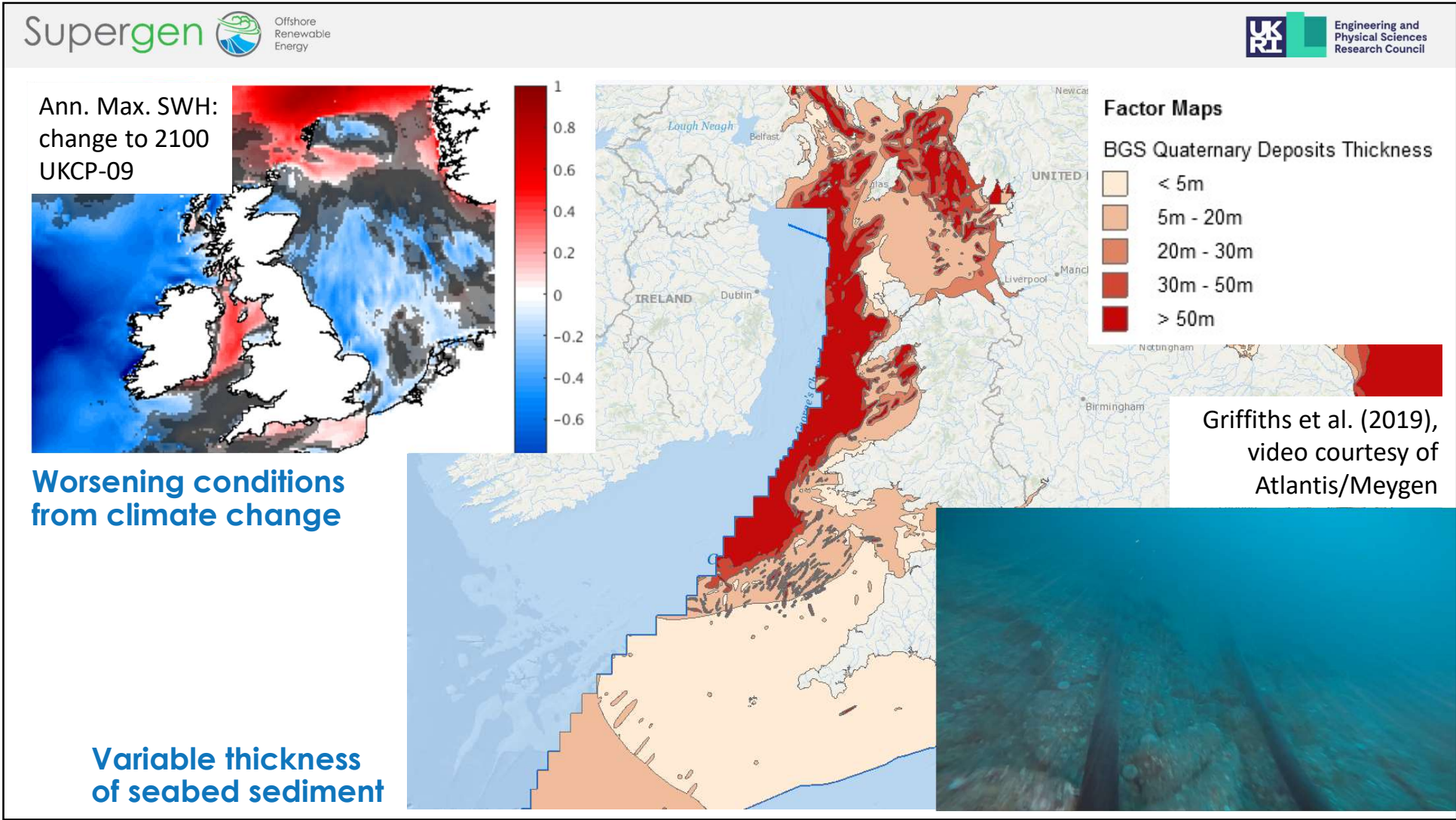
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Core Research

Find out more:
<https://supergen-ore.net/about>







Core and Flexible Fund Research

Find out more:
www.supergen-ore.net/flexible-funding



Flexible Funding

- Round 1 and 2 (2019/20): 22 projects, £2.2m Flexible Funding; £2.4m in industry match
- Round 3 (2021), £0.85m
- Two-stage blind review process underway
- Collaboration with ORE Catapult in Round 2 and ORE Catapult's Floating Offshore Wind Centre of Excellence (FoW CoE) in Round 3

Supergen Cross-Hub Workshops

- ORE Hub, Energy Storage Network+, and Energy Networks Hub: ORE Transmission & Storage
- ORCA and ORE Hub: Offshore Robotics
- Seedcorn funding made available

Find out more:
www.supergen-ore.net/flexible-funding

“Aligning our relevant research priorities with Supergen ORE’s Flexible Funding calls is a win-win – encouraging vital collaboration between industry and academia to solve many of the technology challenges facing the offshore renewable energy sector today.”

Paul McKeever, Head of Electrical Research for ORE Catapult and Chair of the Supergen ORE Hub Industry Advisory Board

“This funding will allow projects to support the development of strategic relationships between academic partners and supply chain organisations, and the acceleration the commercialisation of floating offshore wind.”

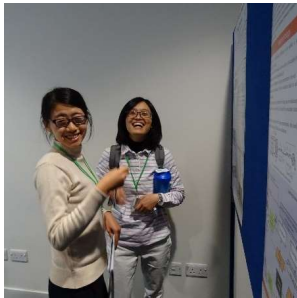
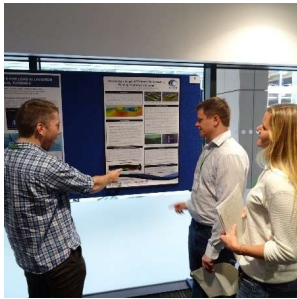
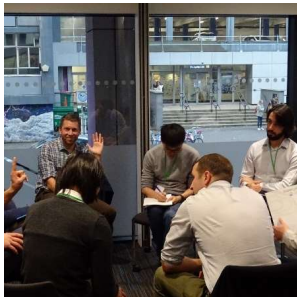
Ralph Torr, Programme Manager at ORE Catapult

<div><div><div>Supergen</div><div>Offshore Renewable Energy</div></div><div>Flex Funding</div></div>	
<div><div>Recycling Composite Wind Turbine Blade for High-Performance Composite Manufacturing</div><div>Lead Institution: University of Strathclyde</div></div>	<div><div>Impact of in-service oscillatory movement on insulation reliability of AC and DC cables serving...</div><div>Lead Institution: University of Manchester</div></div>
<div><div>Satellite Climate Observation for Offshore Renewable Energy Cost Reduction (SCORE)</div><div>Lead Institution: University of Edinburgh</div></div>	<div><div>Demonstrating a machine learning system to integrate metocean data, sensor networks, and model...</div><div>Lead Institution: University of Exeter</div></div>
<div><div>Veers' Extension to Non-neutral Incoming Winds (VENTI)</div><div>Lead Institution: University of Surrey</div></div>	<div><div>LoadTide</div><div>Lead Institution: University of Edinburgh</div></div>
<div><div>Enhancing Control Capability of ORE Systems for Stress Management and Grid Support</div><div>Lead Institution: University of Warwick</div></div>	<div><div>Investigation into the coupling of a wave energy converter with a reverse osmosis desalination plant</div><div>Lead Institution: Queen's University Belfast</div></div>
<div><div>Novel Approaches for Physical Model Testing of Floating Wind Turbine Platforms</div><div>Lead Institution: University of Strathclyde</div></div>	<div><div>A hybrid and scalable digital twin for intelligent direct drive powertrain condition monitoring</div><div>Lead Institution: University of Strathclyde</div></div>
<div><div>Accounting for Current in Wave Buoy Measurements</div><div>Lead Institution: University of Manchester</div></div>	<div><div>WTIMTS - Wave-Turbulence Interaction and Measurement for Tidal Stream</div><div>Lead Institution: Swansea University</div></div>
<div><div>Flow measurement for accurate tidal turbine design</div><div>Lead Institution: University of Bath</div></div>	<div><div>Cable scour from fluid-seabed interactions in regions of mobile sedimentary bedforms</div><div>Lead Institution: Bangor University</div></div>
<div><div>Passive Control of Wave Induced Platform Motions for Semi-submersible FOWTs</div><div>Lead Institution: Manchester Metropolitan University</div></div>	<div><div>V-SCORES (Validating Surface Currents at Offshore Renewable Energy Sites)</div><div>Lead Institution: University of the Highlands and Islands</div></div>
<div><div>Autonomous Biomimetic Robot-fish for Offshore Wind Farm Inspection</div><div>Lead Institution: University of York</div></div>	<div><div>Advanced, Modular Power Take-Off Design for Marine Energy Converters</div><div>Lead Institution: University of Edinburgh</div></div>
<div><div>ALPHA: Numerical Analysis of Laterally Loaded Piles Divided in Chalk</div><div>Lead Institution: Imperial College London</div></div>	<div><div>CORrosion And fatigue protection of offshore wind Turbine structures using additive manufacturing...</div><div>Lead Institution: Cranfield University</div></div>
	<div><div>Smart piezoelectric metamaterials for partial discharge monitoring</div><div>Lead Institution: University of Strathclyde</div></div>
	<div><div>Improved Models for Multivariate Metocean Extremes (IMEX)</div><div>Lead Institution: University of Exeter</div></div>

ECR Network

- **157 members** of our ECR Network, with an ECR Committee
- LinkedIn discussion group for ECR community members
- Highlighted events include:
 - Three ECR Forums (Plymouth, Glasgow and this year virtual!)
 - Competition to attend the Houses of Parliament launch event, and meet with policy-makers
 - Workshops on Fellowship applications, career development, research topics
 - ECR Cross-hub webinars – *sharing of current ECR projects & wellbeing and working from home*
 - Opportunity to attend Global Offshore Wind 2020
- Awarded two rounds of ECR Research Funding
 - 16 projects at a total of £82,000 invested
 - Designed to be a flexible fund for ECRs to support small activities in developing ECR career skills and/or research.

Join the network: www.supergen-ore.net/ecr-community




Core, Flexible Fund and ECR Research


Find out more:
<https://supergen-ore.net/ecr-community/ecr-research-funding>



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Engineering and
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Research Council

ECR Funding

Research stay at Johns Hopkins University (USA) to develop international collaborations
Dr Pablo Ouro - Cardiff University

Structural health monitoring for wind turbine blades via graphene self-sensing adhesive layer...
Marzena Pawlik - University of Derby and Dr Maozhou Meng - University of Plymouth

Offshore floating foundations using self-sensing carbon fibre textile-reinforced concretes
Dr Shanshan Cheng - University of Plymouth

Going where modern technology cannot: novel adaption of conventional approaches to recover seabird...
Dr James Waggitt - Bangor University and Dr Shaun Fraser - University of the Highlands and Islands

Aeroelastic Modelling and Predictive Control of a 20-MW Offshore Wind Turbine
Dr Yinan Wang - University of Warwick

Let's be blunt and drop the mic! An experimental study of very thick flatback airfoils
Dr Marinos Manolesos - Swansea University

Wide-Bandgap-Enabled Dynamic Braking System for Grid Integration of Offshore Wind Farms
Dr Saeed Jahdi - University of Bristol

Industrial secondment to INEA, the leading Slovenian company in the field of manufacturing...
Giovanni Rinaldi - Research Fellow at the University of Exeter

Directionally Spread Surface Wavepackets subject to an Abrupt Depth Transition (ADT)
Dr Samuel Draycott, University of Manchester

Multi-use platforms at sea (MUPS): an innovative way to manage offshore space and reduce coastal...
Dr Jonathan Demmer, Bangor University

A Novel, Robust, Near-shore, Wave Energy Converter for Remote Communities
Dr Rachel Nicholls-Lee, University of Exeter

Parametric study for flapping foil system for harnessing wave energy
Dr Liang Yang, Cranfield University

Innovative and cross-disciplinary wave energy research, aiming to develop a revolutionary Smart...
Dr. Saishuai Dai and Dr. Liang Li, University of Strathclyde

Hydrodynamic Performance and Survivability of an Oscillating Water Column Wave Energy Converter...
Dr John Samuel, University of Plymouth

Hygro-thermal effects on the translamellar fracture toughness of composite laminates
Dr Ganapathi Ammasai Sengodan, University of Bristol

Development of an integrated anchor model via industry engagement
Dr Katherine Kwa, University of Southampton

ORE Facilities Survey and Interactive Map

With 99 facilities mapped, users can find further information and contact details across the following facility types:

- Aeroelastic, blade and cable testing
- Demonstration sites
- Drive Train/Dynamometer Testing
- Electrical Systems Testing
- Foundations, Structural and Subsea Testing
- Hydrodynamics
- Icing Tunnels, Marine Environment and Meteorology and Radar
- Material and Mechanical Components Testing
- Robotics, Smart Energy and High Performance Computing Facilities
- Wind Tunnels



www.supergen-ore.net/ore-facilities

Stay in touch



www.supergen-ore.net



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www.linkedin.com/company/supergenore



supergenorehub@plymouth.ac.uk

Keep up-to-date with news and events by joining our mailing list
www.supergen-ore.net

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