

MaREI OVERVIEW

MaREI is the SFI Research Centre for Energy, Climate and Marine research and innovation co-ordinated by the Environmental Research Institute (ERI) at University College Cork. Our strengths lie in the multidisciplinary nature of our research teams allowing us to combine insights in offshore wind energy from across our 13 institutional partners and draw on our expertise across key areas. Collaboration and teamwork are the forces that unite and strengthen us and allow our collective expertise to be leveraged by all stakeholders both nationally and internationally.

Global Challenge 1
// The Energy Transition

“Facilitate the transition to a low-carbon energy future through the provision of the underlying research and innovation, and the training of the highly skilled leaders of tomorrow”

Global Challenge 2
// Climate Action

“Enable positive climate action through the provision of leadership in the areas of climate mitigation, climate adaptation, climate science, and climate dialogue”

Global Challenge 3
// Blue Economy

“Better understand and sustainably utilise the potential of our significant marine and coastal resources”

ENGAGEMENT AND IMPACT

SUPPORT INDUSTRY

Enhance the capacity of industry across the energy, climate, and marine sectors to enable sustainable economic development, including the creation of new products, services.

INFORM POLICY

Inform energy, climate, and marine policy by increasing and improving the scientific evidence base for policy-makers

EMPOWER SOCIETY

Support societal engagement on grand challenges to facilitate participatory action on the energy transition, climate action, and the blue economy

MaREI AT A GLANCE

200+ multi-disciplinary researchers across our institutional partners

80+ industry partners including start-ups, SMEs and large enterprises

13 institutional partners combining Ireland’s best talent in energy, climate and marine

36+ collaborating countries across industry, academia and government

HOST INSTITUTION
UCC University College Cork, Ireland Coláiste na hOllscoile Corcaigh

PARTNER INSTITUTIONS
DIAS, ESRI, MTU, etc.

“ Enhancing the capacity of industry across the offshore wind energy sector to enable sustainable economic development, including the creation of new products, services, companies, and jobs ”

www.marei.ie

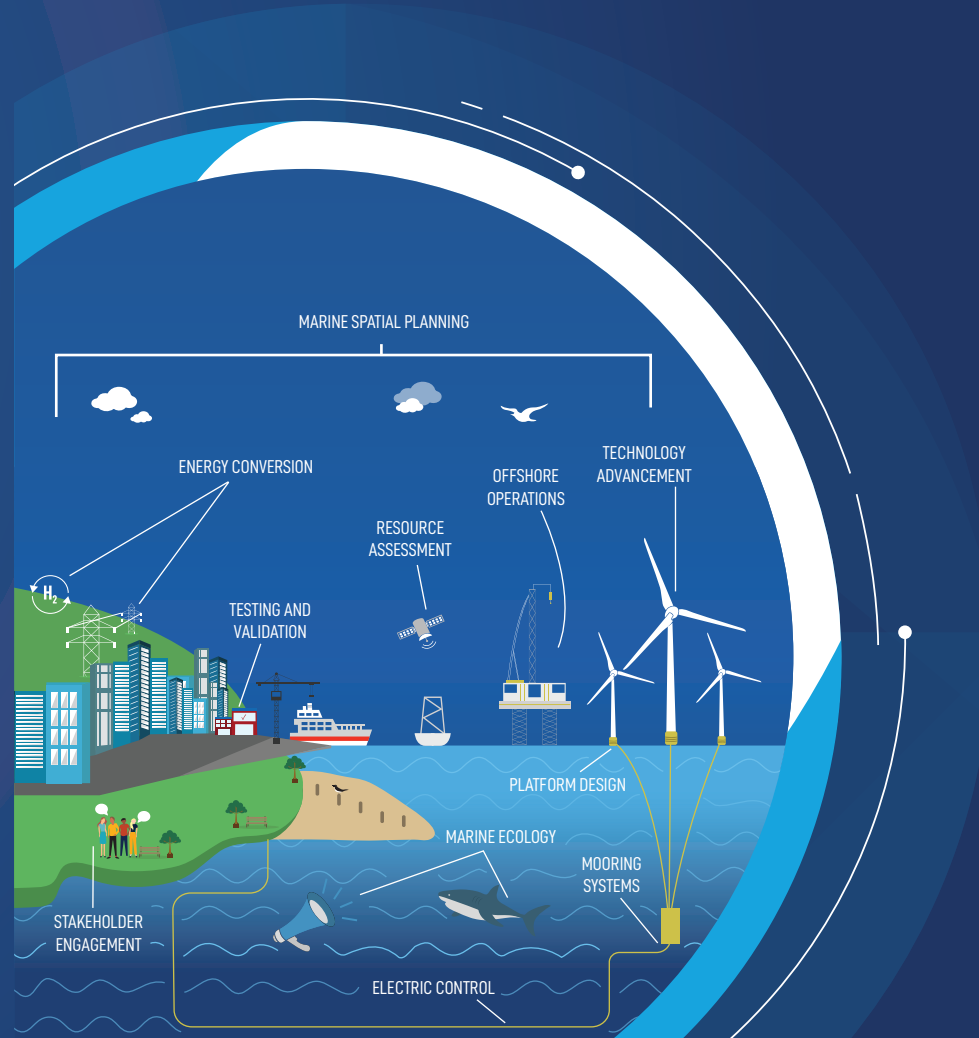
Offshore Wind Energy Queries:
Jimmy Murphy (jimmy.murphy@ucc.ie)
Fiona Devoy McAuliffe (f.devoy@ucc.ie)
Email: orere@ucc.ie

MaREI, the SFI Research Centre for Energy, Climate and Marine
Beaufort Building,
Environmental Research Institute,
University College Cork,
Ringaskiddy, Co. Cork
Tel: (021) 486 4300

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OFFSHORE WIND ENERGY UNIVERSITY COLLEGE CORK



OFFSHORE WIND ENERGY RESEARCH AT UCC

University College Cork (UCC) provides expertise across multiple disciplines to respond to key scientific and industry challenges in the offshore wind sector. Researchers are connected through the Environmental Research Institute (ERI) and MaREI SFI Research Centre for Energy, Climate and Marine research and innovation, which is co-ordinated at UCC. We deliver excellent science through research projects, consultation services, industry collaborations and training programmes, creating social impact by supporting industry, informing policy, and empowering society. Our success is underpinned by the development of deep, long term strategic partnerships in industry and other research institutions.

KEY RESEARCH AREAS:



SAMPLE PROJECTS

TECHNOLOGY ADVANCEMENT AND OFFSHORE OPERATIONS

IDEA-IRL: Developing reference Floating Offshore Wind (FLOW) Array designs and a long-term in Ireland for the sustainable deployment of FLOW in Ireland

STEP4WIND: Novel design, production and operation approaches for FLOW farms

FLOAWER: Training researchers in the required multi-disciplinary engineering fields to better develop FLOW technologies under the constraint of LCOE minimization

Wet Storage: Examining the requirements and identify potential sites for wet storage, of FLOW foundations and structures prior to installation

TESTING AND VALIDATION

MARINERG-i: The Marine Renewable Energy Research Infrastructure is a distributed Research Infrastructure (RI) of European test facilities to accelerate the deployment of ORE

RISEENERGY: Identifying and promoting ways to scale up renewable energy technologies including providing access to testing facilities

AFLOWT: Accelerating market uptake of Floating Offshore Wind technology

X-ROTOR: Developing an innovative wind turbine design to target cost of energy reduction and scalability of wind turbines

AVAILABLE FACILITIES

MaREI at University College Cork offers unique world-class infrastructure and testing facilities that allow the systematic identification and reduction of offshore wind energy development risks through a structured 'Technology Readiness Level' (TRL) development cycle.

Lir National Ocean Test Facility (Lir NOTF): Includes state of the art wave tanks and electrical rigs that allow for scaled testing in a controlled environment; a 2,600m³ tank hall which houses four different wave tanks; deep ocean wave basin (circa 1:15 scale testing) capable of producing waves of up to 1.2m high, an ocean wave basin (circa 1:50 scale testing); a wave and current flume with coastal/tidal testing capabilities (circa 1:50 scale testing). Lir mechanical/electrical workshops offering a range of electrical and energy storage infrastructure.

MARINE ECOLOGY

PureWind: Impact of sound on marine ecosystems from offshore wind energy generation

OBSERVE II: Surveys for marine megafauna in Irish offshore waters

Tintreach: Investigating the influence of artificial reefs and EMF from buried cables on sensitive shark species

CETUS: Gathering baseline data on sensitive marine species, including seabirds, cetaceans and sharks

SATURN: Development of standards for terminology and methodology to be used across all disciplines working on underwater radiated noise

MARINE PLANNING AND GOVERNANCE

EirWind: Co-designing opportunities towards the development of Irish offshore wind

REGINA-MSP: Regions to boost marine spatial planning

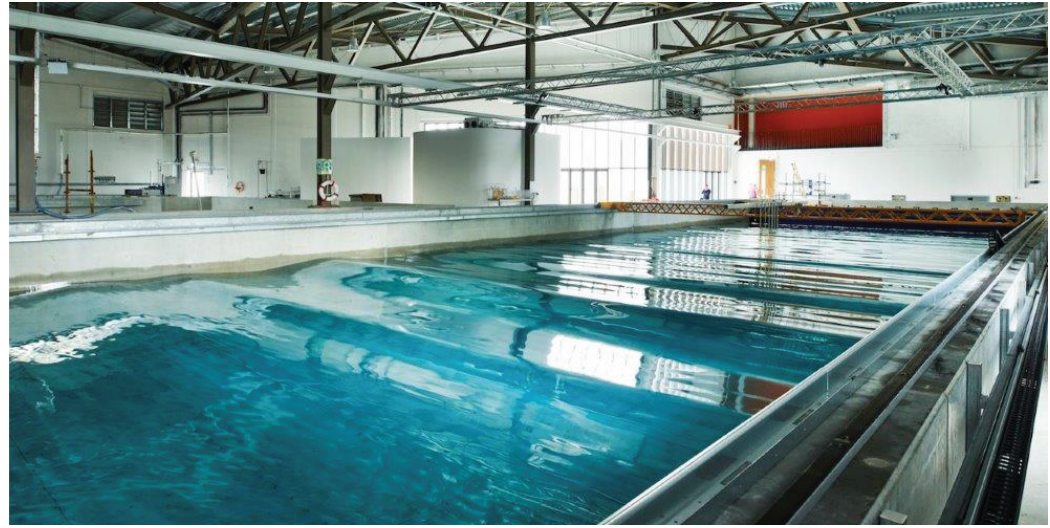
CCAT: Coastal Communities Adapting Together

RESOURCE ASSESSMENT

SELKIE: GIS Techno-economic Tool Development and Application

ENERGY CONVERSION

H-WIND: Hydrogen from Offshore Wind



Pictured: Lir National Ocean Test Facility (Lir NOTF)

The Marine Renewable Energy Research Infrastructure (MARINERG-i): is a distributed Research Infrastructure on the 2021 ESFRI Roadmap. It is co-ordinated at UCC and composed of a network of European test facilities with the critical mass of expertise and world-class equipment to support the design and advancement of the Offshore Renewable Energy (ORE) systems. This involves interdisciplinary research in hydrodynamics, aerodynamics and fluid-structure interaction, material science, electro-technical engineering, ICT, naval architecture, sensors, oceanography, environmental and social sciences, business management, economics and legal sciences. It will accelerate the research development of wave, tidal, offshore wind and combined energy technologies to maintain Europe a global leader in constantly evolving industry.

WHY PARTNER WITH MAREI AT UNIVERSITY COLLEGE CORK?

- Access to world-class researchers and state-of-the-art facilities
- Provision of innovative solutions to defined industry partner questions
- Access to co-funding opportunities for collaborative research projects
- Access to licensing/technology transfer supports to facilitate exploitation of outputs
- Access to our national and international networks
- Access to National/European proposals consortia and supports
- Access to potential pipeline of talented future employees