



MERIKA

MARINE ENERGY RESEARCH INNOVATION AND KNOWLEDGE ACCELERATOR

FP7-REGPOT-2012-2013-1

Project Number: 315925

PROJECT FINAL REPORT

Grant Agreement number: 315925

Project acronym: MERIKA

Project title: Marine Energy Research Innovation and Knowledge Accelerator

Funding Scheme: REGPOT

Period covered: from 1st February 2014 to 31st July 2017

Name, title and organisation of the scientific representative of the project's coordinator:

Professor Neil Simco

Assistant Principal for Curriculum Growth and Acting Vice-Principal Research
The University of the Highlands and Islands

Tel: 01862 889627

E-mail: neil.simco@uhi.ac.uk

Project website address: www.merikafp7.eu

Abbreviations

CENSIS	Centre of Excellence for Sensor and Imaging Systems Technologies
CRM	Customer Relationship Management
EC	European Commission
EIMR	Environmental Interactions of Marine Renewable Energy Technologies
EISO	Energy Innovation Support Office
ESEE	European Society for Ecological Economics
ESF	European Social Fund
ESIF	European Structural and Investment Funds
ETP	Energy Technology Partnership
EU	European Union
EWTEC	European Wave and Tidal Energy Conference
H&I's	Highlands and Islands
HIE	Highlands and Islands Enterprise
ICOE	International Conference on Ocean Energy
INTERREG	Inter-region Territorial Co-operation
IP	Intellectual Property
MASTS	Marine Alliance for Science and Technology for Scotland
MERIKA	Marine Energy Research Innovation and Knowledge Accelerator Project
OEE	Ocean Energy Europe
OEF	Ocean Energy Forum
OES	Ocean Energy Systems
ORE	Offshore Renewable Energy (Catapult)
ORJIP	Offshore Renewables Joint Industry Programme
PKEIM	MERIKA Project, Knowledge Exchange, and Innovation Manager
R&D	Research and Development
REF	Research Excellence Framework
REGPOT	Regions of Potential
SET-Plan	Strategic Energy Technology Plan
SFC	Scottish Funding Council
UHI	University of the Highlands and Islands
UK	United Kingdom
WES	Wave Energy Scotland
WOC	World Ocean Council

Contents

1. Final publishable summary report..... 4

 1.1. Executive Summary 4

 1.2. Project Context and Objectives 5

 1.3. Description of Project Results 6

 1.4. Potential Impacts..... 11

 1.5. Project Website 14

Contact information 14

MERIKA Project Office 14

2. Use and Dissemination of Foreground 15

3. Report on Societal Implications..... 29

1. Final publishable summary report

1.1. Executive Summary

The aim of MERIKA has been to enable the University of the Highlands and Islands (UHI), located in the North of Scotland, to realise its ambition to become a European marine renewable energy Research and Innovation Hub. To achieve this, MERIKA has delivered a combination of capacity improvements and capability enhancements, combined with a resource and research exchange programme with leading European research institutions, supported by a programme of marine renewable energy related networking, knowledge exchange and industry engagement activities. The component parts of this have been;

1. **People and skills;** the recruitment of new researchers, drawn from different disciplines, reflecting both the range of development challenges faced by the emerging marine energy sector, and the need for multi-disciplinary research groups to address complex development issues. Recruitment was supported by a coaching initiative to upskill existing and new staff on H2020 and related programmes, as well as training modules on project research skills, grant management and European networking.
2. **Infrastructure and equipment;** investment in improved physical capacity at key locations, so creating the conditions for research projects and technical operations, fundamental in establishing a marine renewable energy research and innovation hub.
3. **Researcher exchanges;** bi-lateral researcher exchanges with seven leading EU research institutions (mobility partners) that have variously; developed research skills, fostered research co-operation and knowledge exchange, raised awareness and disseminated the activities of marine renewable energy related work at UHI.
4. **Networking and knowledge exchange;** engagement with academic and industry groups, as well as government and other institutional stakeholders, involved in the policy development around marine renewable energy. Including participation at conferences, seminars and symposiums addressing marine renewable energy science and industry research questions, and joining/building research consortia with scientific and industrial partners.
5. **Innovation;** a series of innovation support initiatives to channel marine renewable energy science and industry relationships. In particular, an enhanced IP and commercialisation policy framework, incorporating an Energy Innovation Support Office (EISO), to realise potential industrial and academic research and innovation collaborations beyond MERIKA.

As a result, the university has a healthy pipeline of marine renewable energy research and collaboration activities, supported by solid governance models, strong international links, and state of the art infrastructure, representing the most extensive package of marine renewable energy initiatives engaged in by the UHI partnership.

The breadth of these initiatives has meant that the institution has been able to retain and integrate 79% of the MERIKA scientist cohort into post-MERIKA research positions, so ensuring that the marine renewable energy research strategy focus at UHI is sustained and enhanced.

1.2. Project Context and Objectives

1.2.1 Context

The FP7 “Research Potential” (REGPOT) Programme aims to unlock and develop existing or emerging research excellence in the EU’s Convergence and Outermost regions.

This makes the programme well suited to realising the research opportunities of The University of the Highlands and Islands (UHI), an institution located in the Highlands and Islands (H&I’s) of Scotland, a peripheral region too much of Europe, remote and rural, with challenges building and maintaining links in to the wider EU research community and other stakeholders.

The H&I’s is home to abundant natural energy resources, in particular marine renewable energy derived from the waves, tides and offshore wind of the coastal waters. There are however many research challenges and development questions that need to be addressed before marine renewable energy can be seen as a viable energy source.

UHI aspires to play an active role in meeting these challenges, however regional isolation and distance to the mainstream European research and innovation communities makes this difficult, which in turn impacts the research agenda at the university and wider sector development across the region.

The Marine Energy Research Innovation and Knowledge Accelerator (MERIKA) project was set up to help address these deficits, with investments and initiatives aimed at accelerating links with EU research institutions and wider stakeholders, to consolidate and improve UHI’s research profile and international position, by establishing a European marine renewable energy research and innovation hub.

The marine energy research focus of MERIKA aligns the strategic REGPOT aim to unlock regional potential, as well as the economic development priorities established for the H&I’s by the local regional development agency – Highlands and Islands Enterprise (HIE). It is their stated ambition to support the development of a sustainable renewable energy industry across the H&I’s, and MERIKA contributes to the knowledge economy dynamic within this; where academia, government and industry work together, driving economic development through innovation. In turn, this also “reinforces” the position of UHI as a locally based university, rooted in the research opportunities of its natural environment and communities, but with a national and international research reach.

Finally, it also aligns with the EU’s Energy Union strategy. In particular, the priorities of the Research, Innovation and Competitiveness policy area, and how it is looking at accelerating the transformation of Europe’s energy system, as articulated in the Strategic Energy Technology Plan (SET-Plan) approach.

1.2.2 Objectives

The overall goal of the MERIKA project has been to turn UHI into a hub for marine renewable energy research; attracting research teams, establishing scientific collaborations, and building links with industry players that raise the research profile of the university. To achieve this a series of specific project objectives were set;

1. Increase the knowledge generation potential of UHI research in marine renewable energy by hiring a multi-disciplinary cohort of researchers, linking different research strands.
2. Establish and/or consolidate linkages and cooperation with EU and international research organisations, and step up UHI's ability to contribute to the international research agenda on marine renewable energy.
3. Increase UHI's capacity to manage relations and partnerships with the marine renewable energy industry and other sector stakeholders, building on the results of its research activities and developing them in a sustainable manner.
4. Align with UHI's long-term research strategy and improve the overall positioning of UHI within the European and international scientific community.
5. Implement a comprehensive mobility plan (researcher exchange) promoting secondments of researchers from UHI to key European research organisations.
6. Undertake a programme for infrastructure (equipment) upgrade, improving the physical capacity at key UHI marine renewable energy research locations.
7. Deliver a programme to improve UHI's capacity for international research partnerships, research project collaboration and management of research and innovation projects.
8. Deliver a networking programme to ensure regular participation, visibility and exposure to further research cooperation of UHI researchers at European and international marine renewable energy events (conferences, workshops, consultations etc).

1.3. Description of Project Results

MERIKA has delivered a wide range of project results tied to the objectives set out above. The project capacity improvements and capability enhancements, supported by a range of different networking initiatives, have seen the emergence of more multi-disciplinary research group(s) at UHI, realising the following set of project results.

1. The knowledge generation potential of UHI has been increased with the recruitment of fourteen scientists and three support staff through the MERIKA project. They have come from a range of discipline backgrounds that include; Marine Biology and Ecology, Engineering (civil and mechanical), Coastal and Marine Resource Management, Mathematical Physics, Ecological Economics and Computer Science.

The research interests that have emerged from these discipline backgrounds reflects the different development challenges faced by the emerging marine renewable energy sector, and have provided UHI with breadth in its skills base to engage across a number of issues. They include; numerical modelling of coastal processes, marine spatial planning, wave climate and wave processes, the economics of marine and coastal resources, renewable energy and community engagement, ecological impacts of marine renewable energy devices and arrays, renewable energy policy and marine governance, the social and cultural impacts of renewable energy.

Recruiting scientists from a range of backgrounds into the H&I's region "where the resource is" has been a significant achievement of the project. It has enhanced diversity across the university and enabled UHI to partake in innovative research and industry collaborations.

Eleven of these scientists and two support staff have remained with UHI beyond the end of the MERIKA to work on other initiatives relating to the marine renewable energy research themes of resource and risk, as well as environmental and socio-economic impacts pertaining to the deployment of marine renewable energy devices and arrays. This reflects an effective staff integration programme, with scientists deployed on research projects emerging from the MERIKA imprint that are consistent with the universities strategic research themes.

2. Links have been established with a number of EU and international research organisations, with UHI currently collaborating on ten funded projects/proposal submissions, as well as a series of EU foundation environmental research projects that draw on the wider skills and research interests of our science cohort. These projects/proposals are contained and tracked in a sustainability database and reflect interactions with a range of research organisations, addressing a number of H2020 Societal Challenges across different funding call topics that include; Cultural Co-operation, INTERREG VA, Low Carbon Energy, Atlantic Area, Coastal-Rural Interactions and Blue Growth. MERIKA scientists have also contributed to the wider research agenda through a range of forums and assemblies that have included; the Ocean Energy Forum (OEF), Offshore Renewables Joint Industry Programme (ORJIP), World Ocean Council (WOC) and European Society for Ecological Economics (ESEE).
3. MERIKA has participated in sixteen targeted marine renewable energy events that have positioned UHI within the sector and promoted its research capability. Examples include; Scottish Renewables Marine Energy series, Ocean Energy Europe (OEE), International Conference on Ocean Energy (ICOE) and the European Wave and Tidal Energy Conference (EWTEC).
At the same time, MERIKA led a series of innovation support initiatives at UHI to channel marine renewable energy science and industry relationships. The development at UHI of a business engagement strategy, and enhancements to the IP and Commercialisation policy, have been important building blocks in this regard. They have helped to frame industry relations and foster partnerships, resulting in UHI scientists being more engaged in the challenges of an emerging industry, which in turn has led to a series of collaborative initiatives and innovation agreements (two) with industry. The creation of an Energy Innovation Support Office (EISO) to co-ordinate industry engagement and collaboration across UHI is a key output of this work, and an important component of the innovation model. It provides, for the first time, a focal point for the management and delivery of research opportunities, with dedicated resources employed to pursue; Collaborative business R&D, Commercial Research and Knowledge Exchange opportunities. This means leading the commercialisation process, identifying and pursuing funding options e.g. research grants, investors, and communicating/training the policies and guidelines associated with the innovation model.
4. UHI's long-term research strategy is grounded in the natural, cultural, social and economic assets of the H&I's region. MERIKA's focus on marine renewable energy is contributing to this research strategy primarily through the Marine and Environmental Science and Engineering research theme – one of four core research themes at UHI. The project does also extend into another of the research themes (Society, Identity, Landscape and Knowledge) by incorporating social science topics to addressing the development challenges of marine renewable energy e.g. ecosystem services, resilient communities, policy and governance.

This feeds back into the long-term research strategy by linking natural and social sciences at UHI to provide a holistic perspective to sector development challenges that will directly affect the H&I's region.

This alignment with the UHI research strategy ensures that MERIKA derived research science will contribute to the UK Research Excellence Framework – the primary mechanism used to assess (and rank) the impact of research at UK higher education institutions. This is important in terms of post-MERIKA sustainability as the Research Excellence Framework is a benchmark indicator of research activity that can drive future investment and establish/build reputations.

The MERIKA coaching and networking activities have “upskilled” the UHI research community and support staff to engage effectively with EC Innovation and Research development processes, as well as influencers and decision-makers in EU research programmes. A package of training modules were delivered focusing specifically on gaps in H2020 knowledge at UHI, and identifying and consolidating European Research Area networking opportunities. This was supported by a networking events schedule aimed at improving the overall position of UHI within the European and International science community.

Two MERIKA supported initiatives that illustrate the effectiveness of these coaching and networking outcomes are;

- the EU INTERREG VA “**Bryden Centre for Advanced Marine and Bio-energy Research**”; a €9.3m 5yr cross-border PhD research programme, funding 34 PhD students and post-doctoral roles to address industry informed renewable energy research challenges
- the **UHI Marine Renewable Energy Research Day** held at the EU Parliament, Brussels; a major UHI dissemination event, derived from networking activities, that attracted 259 delegate registrations, of which 22% were from the international scientific community

5. MERIKA has delivered a comprehensive mobility programme (bi-lateral researcher exchanges) with seven leading European research institutes. Known as the “mobility partners” they are; Technical University Hamburg (Germany), National University Galway (Ireland), Wave Energy Centre (Portugal), Wageningen University and Research (Netherlands), Norwegian University of Science and Technology (Norway), Helmholtz-Zentrum Geesthacht (Germany), University of Nordland (Norway).

Over the course of the mobility programme, 56 researcher exchange visits were undertaken between UHI and the mobility partners, with mobility partners visiting UHI marine renewable energy research locations and vice versa. This equated to a total of 599 visitor days. The primary focus for these visits has been to foster research co-operation and knowledge exchange through activities such as research work and associated data exchanges, joint networking events and presentations (including papers) sharing research interests and insights, workshops/symposia to explore collaborative research opportunities based on mutual research interests.

The mobility visits have also been an opportunity to develop researcher skills and techniques, train and learn on how to use equipment (particularly new MERIKA derived kit), promote professional networks and support career development, raise awareness and disseminate marine renewable energy related work across the UHI partnership.

The links and relationships that have developed with mobility partners out of the mobility programme have led to a number of collaborative research funding proposal submissions to the H2020 and

INTERREG programmes e.g. H2020 Blue Growth and Cultural Co-operation calls and the Atlantic Area calls. There has also been collaboration with mobility partners on industry projects and government consultations, as well as some collaborative research and conference papers.

6. An infrastructure (equipment) upgrade has been completed through the MERIKA project to improve the physical capacity at the three strategic UHI marine renewable energy locations. It has ensured that UHI are able to carry out research work and technical operations, fundamental to UHI's wider development plans of establishing a marine energy research and innovation hub. Without the infrastructure upgrade, it would have been difficult for UHI to deliver on its broader capacity building activities, and realise any of the research collaborations that flow from that.

A technical audit was completed early in the project lifecycle (2014) to confirm the existing equipment portfolio and identify new equipment requirements. The new requirements were established by recognising equipment gaps at the three UHI locations, understanding the marine renewable energy research plans of each location, and considering the opportunities afforded by advances in technology. They were also aligned with UHI's research themes, MERIKA staff skills and research interests, and the perceived emerging needs of the marine renewable energy sector.

Equipment upgrade highlights include; detection systems (radar and sonar), sensor and measurement systems (underwater noise, wind and wave characterisation), tracking systems (fish and seabirds), oceanographic control systems, survey equipment (unmanned aerial vehicle), laboratory equipment and enhanced computing capability.

The equipment has been, and is being, used in a range of applications and settings. They include; tidal energy resource assessment and the effects of tidal turbines on water flow, the impact of marine renewable energy devices on ecology (seabirds, marine mammals and migrating salmon) and biofouling risk for marine renewables. The equipment has also realised the establishment of a unique Wave Radar Station, on the Isle of Lewis, to capture and measure North Atlantic wave data.

The upgraded infrastructure has enhanced the position of UHI as a collaborative research partner on funding proposals, with UHI equipment capability included in marine renewable energy related submissions to various H2020 Blue Growth and Low Carbon calls.

Total spend on new equipment over the lifetime of the project has been around €828k.

7. A programme to improve UHI's capacity for international research partnerships, research project collaborations and the management of research and innovation projects has been completed. The additional science resources brought in through MERIKA allowed UHI to look strategically at how we connect with the marine renewable energy research community; matching skills and capabilities to emerging sector development issues, identifying groups, collaborators and forums involved in addressing such issues, then getting our scientists directly involved with them.

Five different categories of international research partnerships and project collaborators have been identified; Conferences and Congresses, Research Working Groups, Consultative Bodies, Research Clusters, Competitive Programmes.

Through MERIKA, UHI has participated in a series of conferences and congresses. They included hosting the Environmental Interactions of Marine Renewable Energy Technologies (EIMR) conference series, papers and posters at the International Conference on Ocean Energy (ICOE), papers at the European

Wave and Tidal Conference (EWTEC), and holding a symposium on the environmental interactions of marine renewables at the International Marine Conservation Congress (IMCC).

UHI has contributed subject matter expertise and knowledge to a whole series of research working groups looking at marine renewable energy related issues. They include; the Marine Alliance for Science and Technology for Scotland (MASTS), IEA Ocean Energy Systems (OES), World Ocean Council (WOC), European Society for Ecological Economics (ESEE) and Wave Energy Scotland (WES).

UHI has lobbied to joined consultative bodies active in marine renewable energy. The university is a member of Ocean Energy Europe (OEE), contributing to the Ocean Energy Forum (TP Ocean) strategic roadmap, and is a member of Offshore Renewable Joint Industry Programme (ORJIP) network, collaborating with the secretariat on a number of programme initiatives. Other targeted bodies operate on a subscription model basis that proved to be prohibitive for UHI e.g. the European Energy Research Alliance (EERA). In such cases, contacts and links have been made on a bi-lateral basis with individual members.

Research clusters that UHI are involved in include the Energy Technology Partnership (ETP) and INTERREG VA Bryden Centre PhD programme. Competitive programmes, through which UHI has been engaged, include SUPERGEN (the Marine Energy Research Consortium), the Innovation Centre for Sensor and Imaging Systems (CENSIS), and the Offshore Renewable Energy Catapult (ORE).

Research and innovation projects have been co-ordinated and managed primarily by the Project Knowledge Exchange and Innovation Manager (PKEIM), with MERIKA scientists leading research project input based on their own specialisms. Whilst this is has operated effectively within the context of the project, there was a strategic imperative within UHI to deliver a more structured approach to project collaboration opportunities. To this end, MERIKA undertook a stakeholder consultation that led to an action plan for establishing industry links, the central recommendation of which was the need to create an Innovation and Industry Engagement Office at UHI.

The creation of an Energy Innovation Support Office (EISO) at UHI to manage energy research and innovation projects is a key output of this, and an important component of the UHI innovation model. It provides, for the first time, a focal point for the management of collaborative business R&D, commercial research, research projects and knowledge exchange opportunities.

8. Building networks and fostering research links across the European and international marine renewable energy sector has been a key project activity of MERIKA. The project has delivered a comprehensive networking programme of events, conferences, workshops, symposiums, initiatives etc. to ensure that MERIKA staff deepen links, foster relationships and liaise with potential collaborators and international research partners.

The networking programme delivered by MERIKA was structured around a series of five themes. Each of these themes, though related, contained distinct elements and characteristics that helped define it in terms of the networking objective and outcome. The themes were;

- Knowledge exchange; networking activities that brought together groups and communities to exchange ideas, evidence and expertise – where knowledge exchange represented a flow of information that facilitated mutual learning.

- Developing skills; networking activities that developed or enhanced professional skills and knowledge - through attendance/participation in workshop sessions, or through observation and instruction derived from conference presentations, posters etc.
- Fostering co-operation; Networking activities that promoted or enacted co-operation. Activities of this nature included briefings, meetings, workshops, presentations and exploring prospects for collaborative projects e.g. funding and research opportunities, as well as advisory reports, opinions and recommendations for technology development.
- Promoting networks; Networking activities focused on network groups – communities/alliances established around common interest(s) that use their links, knowledge and solidarity to promote a programme or set of priorities. They were typically, though not exclusively, formed around a technology, science or project theme, policy agenda, industry cluster, community/social/geography group, or funding network.
- Raising awareness and dissemination; Networking activities that focused on raising awareness of MERIKA and marine renewable energy related activities at UHI. This also included raising awareness of wider marine renewable energy initiatives that could benefit the institution, its partners and the Highlands and Islands region. Typically, this involved communicating through presentations, distributing/displaying literature, exhibitions, and conferences, hosting workshops and chairing discussion sessions.

A total of 62 networking events were undertaken through the MERIKA project.

They were spread across the range of networking themes, with the most effort applied to events promoting networks. This reflects a particular focus placed on engaging with network groups (communities/alliances established around common interest(s)), that use their links, knowledge and solidarity to promote a programme or set of priorities. It also reflected the targeting of networks tied to the emerging marine renewable energy sector, and the range of different science disciplines can contribute to addressing sector development challenges.

As a result, UHI scientists are now much more directly engaged in addressing the challenges of an emerging industry sector; contributing information, expertise, knowledge and opinions, as well as influencing solutions and pathways on the marine renewable energy development roadmap. This is evidenced through UHI contributions that help inform policy and the EC research agenda, as well as UHI involvement in a series of marine renewable energy related research funding collaborations.

1.4. Potential Impacts

Eleven scientists and two support staff have remained with UHI beyond MERIKA. The impact of this investment and retention of “high skill” science resources has been to;

- Provide a springboard for ongoing research funding to consolidate the marine renewable energy hub; MERIKA scientists have/are engaged in project funding initiatives to a value in excess of €43million, and there is a healthy pipeline of new research proposals and collaboration ideas in preparation. A particular success to highlight is the INTERREG VA award of €9.8m for The Bryden Centre PhD programme in Renewable Energy - expected to be “live” from September 2017
- Broaden UHI’s marine renewable energy Industry links and the potential for commercial income; MERIKA scientists have contributed to a series of influential industry forums that have helped inform

commercial decision-making. They include; “Ocean Energy Strategic Roadmap” led by Ocean Energy Europe (OEE), and the “look forward; an Ocean Energy Environmental Research Strategy for the UK”, developed by the UK Offshore Renewables Joint Industry Programme (ORJIP). The investment in science resources, combined with a project Work Package focus on business and industrial relations, has led to a number of (new) commercial engagements with project developers for the provision of consultancy services to address specific challenges.

- Consolidate marine renewable energy as a research strength at UHI that can contribute to the next Research Excellence Framework (REF); REF is a key measure of research quality and impact, and informs the long-term research strategy of UHI. In time, these research strengths can be embedded in the university’s curriculum, deepening the research and innovation hub offering of UHI.
- Boost local employment and the economy; All the science resources are located at remote UHI locations across the H&I’s. These are fragile, often isolated communities, and the locating of high skill UHI employees represents both a contribution to the local economy, and an investment in the local infrastructure.

UHI is currently enacting an extensive and wide-ranging PhD studentship programme, funded by the European Social Fund (ESF) and Scottish Funding Council (SFC), as part of Developing Scotland’s Workforce in Scotland 2014-2020, European Structural and Investment Fund Programme (ESIF). The retention of a core marine renewable energy science cohort at UHI will impact this investment initiative by ensuring that science disciplines linked with marine renewable energy will be a beneficiary of this programme.

The impact of the equipment upgrade has been to attract scientists to join the UHI marine renewable energy research community. A number of the scientists recruited to UHI through the MERIKA project commented that the opportunity to work using technology leading equipment was a key consideration to them joining. This impact is expected to continue with future scientist recruitments to new programmes and initiatives.

In addition, the opportunity to work with an institution that has technology that can contribute to research outcomes is an incentive to external research institutions and consortia to pursue potential collaborations with UHI. Already there have been equipment sets included in research proposal submissions e.g. in resource and risk assessment analysis for wave and tidal energy projects.

The MERIKA capacity has enabled UHI to establish important new research competencies and physical infrastructure. In particular, the project has realised the creation of the Centre for Society and the Sea (science.sams.ac.uk/lmc), a unit specialising in the emerging social-ecological field of inquiry. The impact of this has been to expand the UHI research portfolio into new progressive fields of analysis emerging around global environmental challenges. It also links social sciences to the broad range of marine natural sciences, enabling UHI to present multi-disciplinary research groups to address complex development issues.

An enhanced Innovation model at UHI, supported by an improved commercialisation policy framework, and incorporating a new Energy Innovation Support Office (EISO) function, will have the potential impact of delivering more industry collaboration across UHI. By providing a focal point for the management of collaborative business R&D, commercial research and knowledge exchange opportunities, UHI is creating

the means to both grow its funded research pipeline and deliver new (alternative) industry derived revenue streams.

MERIKA dissemination activities have greatly contributed to raising the research and innovation profile of UHI in the field of marine renewable energy. The MERIKA website analytics, extent and range of event participation, as well as media coverage, have affirmed the university's new research capacity, and the opportunity to sustain a research and innovation hub that flows from this.

The dissemination activities undertaken to achieve this have included;

- Marketing material; a range of project promotional tools were printed. They included a range of branded leaflets, brochures etc. to advertise the aims and deliverables of MERIKA. In addition there was a MERIKA video and presentation templates to project consistent messages
- Website and social media; the MERIKA project website (www.merikafp7.eu) has been an essential tool for dissemination. It has signposted project/staff information, news and events information, publications from MERIKA scientists and hosted project marketing material. Twitter has also proven to be an effective dissemination tool, and within the project life cycle we have used it extensively. Through to March 2017 the @merikafp7 twitter account had counted 1,248 tweets, with 629 followers. This dissemination channel has been enhanced further by the individual twitter accounts of MERIKA scientists, and vice-versa.
- Dissemination events; the MERIKA project has directly organised five dissemination events (three breakfast event series at the annual Scottish Renewables Marine Conference, EIMR 2016 and the UHI Marine Renewable Energy Research Day in Brussels). MERIKA staff have also delivered oral presentations or posters, or chaired and facilitated sessions at 73 national and international events. Details on these dissemination events can be accessed through Template A1 linked to this Final Project Report.
- Articles; the MERIKA project has featured in a number of articles published in specialised and popular online and printed press.
- Research publications; MERIKA scientists have published a range of scientific papers across publications that include; Energy Research and Social Science, Ecosystem Services, Ocean Engineering, Energies and Renewable Energy. Details on these research publications can be accessed through Template A1 linked to this Final Project Report.

UHI is in a position to exploit the results of these potential impacts by realising industrial and academic research and innovation collaborations that will maintain the research and innovation hub. This is enabled by enhanced governance models, supported by strong international links, state of the art infrastructure, and a retained MERIKA science cohort that will ensure marine renewable energy continues to be a strategic research theme at UHI.

The overall impact of MERIKA has been to raise the profile of UHI across the mainstream European Research Area, and position the university as a credible institution within the marine renewable energy community; an institution actively engaged in addressing key research and innovation questions, participating in the flow of knowledge and information across different academic and industry players, consulting with government(s) and other institutional stakeholders.

1.5. Project Website

www.merikafp7.eu

Contact information

merikafp7@uhi.ac.uk

MERIKA Project Office

Damian Collins

Project, Knowledge Exchange, and Innovation Manager

University of the Highlands and Islands

Centre for Health Science

Old Perth Road

Inverness IV2 3JH

Email: damian.collins@uhi.ac.uk

Tel: +44 (0)1463 279586

Mob: +44 (0)7920 703898

Morgane Artacho

Project Administration Officer

University of the Highlands and Islands

Centre for Health Science

Old Perth Road

Inverness IV2 3JH

Email: morgane.artacho@uhi.ac.uk

Tel: +44 (0)1463 279567

2. Use and Dissemination of Foreground

The project dissemination measures described here are available in the public domain, helping to inform on the activities of MERIKA delivered across the European Union, but also to illustrate the outputs of a REGPOT programme funded project.

The aim is to add to the science scholarship and collective knowledge associated with the emerging marine renewable energy sector, but also to advance the name and repute of UHI as a research and innovation hub within the field.

Peer-reviewed scientific papers

No	Title	Main author(s)	Title in the periodical or the series	Number, date or frequency	Publisher	Place of publication	Year of publication	Relevant pages	Permanent identifiers (if available)
1	A transformational paradigm for marine renewable energy development	Suzi Billing, Jasper Kenter, Lucy Greenhill	Energy Research & Social Science	Monthly	Elsevier	Amsterdam	2016	136-147	https://doi.org/10.1016/j.erss.2016.10.008
2	Deliberative Democratic Monetary Valuation to implement the Ecosystem Approach	Jasper Kenter	Ecosystem Services	6 issues per year	Elsevier	Amsterdam	2016	308-316	http://dx.doi.org/10.1016/j.ecoser.2016.09.005
3	Ecosystem services and the idea of shared values	Jasper Kenter	Ecosystem Services	6 issues per year	Elsevier	Amsterdam	2016	184-193	http://dx.doi.org/10.1016/j.ecoser.2016.07.001
4	Forming shared values in conservation management: An interpretive-deliberative-democratic approach to including community voices	Jasper Kenter	Ecosystem Services	6 issues per year	Elsevier	Amsterdam	2016	344-357	http://dx.doi.org/10.1016/j.ecoser.2016.09.016

No	Title	Main author(s)	Title in the periodical or the series	Number, date or frequency	Publisher	Place of publication	Year of publication	Relevant pages	Permanent identifiers (if available)
5	Integrating deliberative monetary valuation, systems modelling and participatory mapping to assess shared values of ecosystem services	Jasper Kenter	Ecosystem Services	6 issues per year	Elsevier	Amsterdam	2016	291-307	http://dx.doi.org/10.1016/j.ecoser.2016.06.010
6	Shared values and deliberative valuation: Future directions	Jasper Kenter	Ecosystem Services	6 issues per year	Elsevier	Amsterdam	2016	358-371	http://dx.doi.org/10.1016/j.ecoser.2016.10.006
7	Subjective well-being indicators for large-scale assessment of cultural ecosystem services	Jasper Kenter	Ecosystem Services	6 issues per year	Elsevier	Amsterdam	2016	258-269	http://dx.doi.org/10.1016/j.ecoser.2016.07.015
8	The Deliberative Value Formation model	Jasper Kenter	Ecosystem Services	6 issues per year	Elsevier	Amsterdam	2016	208-217	http://dx.doi.org/10.1016/j.ecoser.2016.09.015
9	The impact of information, value-deliberation and group-based decision-making on values for ecosystem services: Integrating deliberative monetary valuation and storytelling	Jasper Kenter	Ecosystem Services	6 issues per year	Elsevier	Amsterdam	2016	270-290	http://dx.doi.org/10.1016/j.ecoser.2016.06.006
10	The ripple effect: Institutionalising pro-environmental values to shift societal norms and behaviours	Jasper Kenter	Ecosystem Services	6 issues per year	Elsevier	Amsterdam	2016	230-240	http://dx.doi.org/10.1016/j.ecoser.2016.08.001

No	Title	Main author(s)	Title in the periodical or the series	Number, date or frequency	Publisher	Place of publication	Year of publication	Relevant pages	Permanent identifiers (if available)
11	Numerical simulations of the effects of a tidal turbine array on near-bed velocity and local bed shear stress	Philip Gillibrand	Energies (Special issue on Numerical Modelling of Wave and Tidal Energy)	Varies; 5-12 issues per year	MPDI	Basel	2016	852; 22 pages	http://dx.doi.org/10.3390/en9100852
12	The wave and tidal resource of Scotland	Arne Vögler, Philip Gillibrand	Renewable Energy	10 issues a year	Elsevier	Amsterdam	2017	1-15	http://dx.doi.org/10.1016/j.renene.2017.03.027
13	Wave data analysis for a semi-sheltered site in the Inner Hebrides of Scotland suitable for small scale WEC development	Arne Vögler	Ocean Engineering	10 issues a year	Elsevier	Amsterdam	2016	374-383	http://dx.doi.org/10.1016/j.oceaneng.2016.09.028
14	Distribution of the invasive bryozoan <i>Schizoporella japonica</i> in Great Britain and Ireland and a review of its European distribution	Jennifer Loxton, Christopher Nall	Biological Invasions	Monthly	Springer International Publishing		2017		https://doi.org/10.1007/s10530-017-1440-2

Conference papers and presentations

No	Title	Main contributor	Conference	Year	Type of audience
1	Conference paper at C24 session on Marine Renewable and non-renewable energy – titled “Impact hypothesis for offshore	M-L Schläppy	International Marine Conservation Congress (IMCC)	2014	Scientific community (higher education, Research)

No	Title	Main contributor	Conference	Year	Type of audience
	wind farms: explanatory models for species distribution at extremely exposed rocky reefs”.				
2	Conference papers at SY12 session on Environmental Effects of Marine Renewable Energy - titled Biofouling of marine renewable energy devices; the good, the bad and the ugly. Also C37 session on Participation in Marine Conservation Science - titled Making Waves; building the legitimacy of marine citizen science for data applications	M-L Schläppy, Jennifer Loxton	International Marine Conservation Congress (IMCC)	2016	Scientific community (higher education, Research)
3	Poster on “Geomorphic variables that are likely to determine the presence or absence of key invertebrates at an offshore renewable site”	Jennifer Loxton	The Challenger Society for Marine Science Annual Conference	2014	Scientific community (higher education, Research)
4	Conference papers at the Ocean Engineering symposium on Ocean measurement and data interpretation – titled “Observations on shallow water wave distributions at an ocean energy site”, “software analysis tools for wave sensors”	Arne Vögler, James Morrison	International Conference on Ocean, Offshore and Arctic Engineering (OMAE)	2015	Scientific community (higher education, Research)
5	Conference papers; Wave resource characterisation “Wave sensor observations during a severe storm event at a marine energy development site”, and “wave-current interaction in the Pentland Firth and Orkney waters”	Arne Vögler, David Christie	European Wave and Tidal Energy Conference (EWTEC)	2015	Scientific community (higher education, Research), Industry
6	Conference paper and presentation at the Noise habitat session on mapping and modelling titled “variations in ambient noise levels and acoustic propagation across a tidal flow	Denise Risch	Oceanoise	2015	Scientific community (higher education, Research)

No	Title	Main contributor	Conference	Year	Type of audience
7	Conference paper at the sustainable futures session titled “What future for the energy rich Scottish north? Changes in the economic landscape of the Highlands and Islands, and the rest of Scotland.	Marcello Graziano	Regional Studies Association	2014	Scientific community (higher education, Research), Policy makers
8	Conference papers (x3) on ecosystem services	Jasper Kenter	European Society for Ecological Economics	2015	Scientific community (higher education, Research), Policy makers

9	Conference paper on “Eddy generation and shedding in a tidally energetic channel”	Philip Gillibrand	American Geophysical Union Ocean Sciences	2016	Scientific community (higher education, Research)
10	Conference paper titled “The SeaWEED energy converter: an introduction”	Arne Vögler	Conference on Offshore Renewable Energy (CORE)	2016	Scientific community (higher education, Research), Industry
11	Conference presentation titled “Recognising community voices in marine management”	Jasper Kenter	Sea Scotland	2016	Scientific community (higher education, Research), Policy makers
12	Numerical Simulations of the Effects of a Tidal Turbine Array on Local Bed Shear Stress	Philip Gillibrand	MASTS Annual Science Meeting	2016	Scientific community (higher education, Research), Policy makers
13	Driving Wave Models from Sensor Data: How Much Information do we Need?	Christie, D., Morrison, J. and Vögler, A.	Proceedings of EWTEC 12th European Wave and Tidal Energy Conference	2015	Scientific community (higher education, Research), Policy makers

Articles and Publications

No	Title	Media Name	Date
1	Stornoway conference highlights potential of marine energy	University of the Highlands and Islands website	April 2014
2	MERIKA initiative to create European hub	Energy North (supplement to The Courier)	May 2014
3	Marine energy research goes to new depths	The Executive (supplement to The Courier)	June 2014
4	Research where the research is	The Executive (supplement to The Courier)	Sept 2014
5	Academic Expertise as Part of the Supply Chain (MERIKA Case Study)	Holyrood Renewables (Holyrood Magazine supplement)	Spring 2015
6	Drones launched for mapping work across Caithness	John O'Groats Journal	February 2016
7	Wave Data	Northern Lighthouse Board Journal	Summer 2016
8	Measuring tidal currents using radar	ERI newsletter	Summer 2016
9	Fife tech firm's app for Scottish marine surveys	The Courier	July 2016
10	Planys Mobile Develops Environmental Software	Business Gateway website	July 2016
11	ERI, LCC assess Orkney tidal currents with radar	Tidal Energy Today	August 2016

No	Title	Media Name	Date
12	Tidal research aims to weed out hurdles of green energy	The Press and Journal	Sept 2016
13	Scottish universities will not lose touch with Europe after Brexit, says principal	The National	December 2016
14	MERIKA: Universities to foster collaboration regardless of Brexit	Tidal Energy Today	December 2016
15	Universities will find a way to continue collaborations and build new ones	Hebrides News Today	December 2016
16	Universities will find a way to continue collaborations and build new ones whatever the Article 50 outcome	University of the Highlands and Islands website	December 2016
17	Making and Measuring Waves with MERIKA	Nortek UK website	December 2016
18	Principal tells of worries over Brexit	Energy North - supplement to the Courier	December 2016

Dissemination events

No	Type of activities	Title	Date/period	Place	Type of audience	Size of audience	Countries addressed
1	Oral presentation to a scientific event	India-UK Scientific Seminar 2014	27/03/2014	Edinburgh, Scotland	Scientific community (higher education, Research)	25	UK, India
2	Oral presentation to a scientific event	Ocean Energy Forum 2014	04/04/2014	Schuman Building, Brussels	Scientific community (higher education, Research), Industry, Civil society, Policy makers	70	EU member states
3	Posters	EIMR 2014	28/04/2014	Stornoway, Scotland	Scientific community (higher education, Research), Civil society, Policy makers, Media	250	International
4	Oral presentation to a scientific event	EIMR 2014	28/04/2014	Stornoway, Scotland	Scientific community (higher education, Research), Policy makers	100	International
5	Posters	INORE European Symposium 2014	12/05/2014	Cantabria, Spain	Scientific community (higher education, Research), Industry	70	Spain, EU
6	Exhibitions	All Energy 2014	21/05/2014	Aberdeen, Scotland	Industry, Civil society, Policy makers, Media	2500	International
7	Oral presentation to a scientific event	Larwood Symposium 2014	12/06/2014	Sopot, Poland	Scientific community (higher education, Research)	45	Poland, Russia, Brazil, New Zealand, USA, Switzerland, Austria, Germany, UK, Chile, Ireland, Norway
8	Oral presentation to a scientific event	EIMR 2014	01/05/2014	Stornoway, Scotland	Scientific community (higher education, Research), Industry	100	International

No	Type of activities	Title	Date/period	Place	Type of audience	Size of audience	Countries addressed
9	Oral presentation to a wider public	EIMR 2014	28/04/2014	Stornoway, Scotland	Scientific community (higher education, Research), Industry	50	International
10	Oral presentation to a scientific event	Terawatt and EcoWatt2050	17/06/2014	Stromness, Orkney	Scientific community (higher education, Research), Industry	25	United Kingdom
11	Oral presentation to a scientific event	IMCC 2014	14/08/2014	Glasgow, Scotland	Scientific community (higher education, Research)	100	UK, Norway
12	Posters	MASTS 2014	03/09/2014	HWU, Edinburgh	Scientific community (higher education, Research)	200	UK
13	Oral presentation to a wider public	Edinburgh Earth and Environment DTP PGR	29/09/2014	Oban, Scotland	Scientific community (higher education, Research), Civil society	20	UK
14	Organisation of Conference	MERIKA Kick-off meeting	22/09/2014	Inverness, Scotland	Scientific community (higher education, Research), Civil society	25	UK
15	Oral presentation to a scientific event	SR Marine Conference 2014	24/09/2014	Inverness, Scotland	Scientific community (higher education, Research), Industry, Civil society, Policy makers, Media	75	International
16	Posters	MASTS 2014	03/09/2014	HWU, Edinburgh	Scientific community (higher education, Research)	350	UK
17	Posters	Challenger Society 2014	08/09/2014	Plymouth University	Scientific community (higher education, Research)	350	UK
18	Exhibitions	SR Marine Conference 2014	23/09/2014	Inverness, Scotland	Scientific community (higher education, Research), Industry, Civil society, Policy makers, Media	300	International
19	Exhibitions	ICOE 2014	03/11/2014	Halifax, Canada	Scientific community (higher education, Research), Industry, Civil society Policy makers, Media	200	Canada
20	Oral presentation to a scientific event	MASTS 2014	03/09/2014	Edinburgh, Scotland	Industry, Policy makers	350	UK
21	Oral presentation to a wider public	ERI Public Seminar	18/12/2014	ERI, Thurso	Scientific community (higher education, Research), Industry, Civil society	25	United Kingdom

No	Type of activities	Title	Date/period	Place	Type of audience	Size of audience	Countries addressed
22	Oral presentation to a scientific event	Heriot-Watt University Seminar	28/01/2015	ICIT, Stromness, Scotland	Scientific community (higher education, Research)	15	United Kingdom
23	Oral presentation to a wider public	Public Seminar	02/12/2014	St P'burg University, Russia	Scientific community (higher education, Research)	40	Russia
24	Posters	MASTS 2014	03/09/2014	Edinburgh, Scotland	Scientific community (higher education, Research), Industry, Policy makers	350	UK
25	Oral presentation to a scientific event	Challenger Society 2014	10/09/2014	Plymouth, UK	Scientific community (higher education, Research), Industry	250	UK
26	Oral presentation to a scientific event	Regional Studies Association Winter Conference 2014	27/11/2014	London, UK	Scientific community (higher education, Research), Policy makers	15	UK, USA, Germany, Italy, Sweden, Chile
27	Oral presentation to a wider public	Seminar	20/03/2015	Reykjavik, Iceland	Scientific community (higher education, Research) Industry, Policy makers, Media	150	Iceland, Denmark, Norway
28	Oral presentation to a scientific event	Oceanoise 2015	11/05/2015	Barcelona, Spain	Scientific community (higher education, Research)	500	EU, USA, Australia, Japan, China
29	Oral presentation to a scientific event	ESEE Conference 2015	07/06/2015	Leeds, UK	Scientific community (higher education, Research), Civil society	500	UK, France, Germany, Italy, Spain, Portugal, Ireland
30	Oral presentation to a wider public	Larwood Symposium 2015	17/06/2015	Thurso, Scotland	Scientific community (higher education, Research)	25	UK, New Zealand, Mexico, France, Germany, Portugal
31	Exhibitions	EWTEC 2015	07/09/2015	Nantes, France	Scientific community (higher education, Research), Industry, Civil society, Policy makers, Media	250	France, UK, Belgium, Germany, Spain, EU
32	Organisation of Workshops	MASTS 2015	29/08/2015	Glasgow, Scotland	Scientific community (higher education, Research)	10	UK, Denmark, Norway, Germany, France, USA
33	Organisation of Workshops	MASTS 2015	24/08/2015	Oban, Scotland	Scientific community (higher education, Research), Industry	11	UK, Norway
34	Organisation of Conference	ESEE Conference 2015	07/07/2015	Leeds, UK	Scientific community (higher education, Research), Policy makers	500	EU countries
35	Oral presentation to a wider public	SR Marine Conference 2015	16/09/2015	Inverness, Scotland	Scientific community (higher education, Research) - Industry	40	United Kingdom, France, Germany

No	Type of activities	Title	Date/period	Place	Type of audience	Size of audience	Countries addressed
36	Oral presentation to a scientific event	MASTS 2015	30/09/2015	Edinburgh, Scotland	Scientific community (higher education, Research)	100	UK
37	Posters	MASTS Numerical Hydrodynamics Workshop	11/03/2016	Edinburgh, Scotland	Scientific community (higher education, Research)	25	United Kingdom
38	Posters	American Geophysical Union Ocean Sciences Meeting	22/02/2016	New Orleans, USA	Scientific community (higher education, Research)	3000	International
39	Oral presentation to a wider public	West Harris Trust event	22/10/2015	Isle of Harris, Scotland	Civil society	35	United Kingdom
40	Exhibitions	ICOE 2016	23/02/2016	Edinburgh, UK	Scientific community (higher education, Research), Industry, Policy makers	800	UK, Ireland, Sweden, France, Spain, Portugal, Canada, USA, China
41	Exhibitions	All Energy Conference 2016	05/05/2016	Glasgow, UK	Scientific community (higher education, Research), Industry, Civil society, Policy makers, Media	6726	International
42	Organisation of Workshops	European Maritime Day 2016	18/05/2016	Turku, Finland	Scientific community (higher education, Research), Industry, Civil society, Policy makers, Media	80	EU countries
43	Oral presentation to a scientific event	Sea Scotland Conference 2016	16/06/2016	Dundee, Scotland	Scientific community (higher education, Research), Industry, Civil society, Policy makers	60	United Kingdom
44	Oral presentation to a scientific event	Valuing Nature Programme 2016	19/07/2016	Canterbury, United Kingdom	Scientific community (higher education, Research)	60	United Kingdom, USA, Canada, Germany, Netherlands, Italy, Spain
45	Organisation of Workshops	Blue New Deal Scotland Workshop	26/07/2016	Aberdeen, Scotland	Scientific community (higher education, Research), Industry, Civil society, Policy makers	50	United Kingdom
46	Posters	European Ecosystem Services 2016	19/09/2016	Antwerp, Belgium	Scientific community (higher education, Research), Civil society, Policy makers	500	European countries
47	Exhibitions	Bioecon XVIII	14/09/2016	Cambridge, United Kingdom	Scientific community (higher education, Research)	300	International

No	Type of activities	Title	Date/period	Place	Type of audience	Size of audience	Countries addressed
48	Organisation of Conference	SR Marine Conference 2016	13/09/2016	Inverness, Scotland	Scientific community (higher education, Research), Industry	26	United Kingdom
49	Oral presentation to a scientific event	MASTS 2016	30/09/2016	United Kingdom	Scientific community (higher education, Research), Policy makers	50	United Kingdom
50	Oral presentation to a scientific event	MASTS 2016	18/10/2016	United Kingdom	Scientific community (higher education, Research), Industry, Civil society, Policy makers	200	United Kingdom and some other European countries
51	Oral presentation to a scientific event	IMCC 2016	01/08/2016	Canada	Scientific community (higher education, Research), Policy makers	40	International
52	Organisation of Conference	Marine Renewable Energy Research Day	30/11/2016	Belgium	Scientific community (higher education, Research), Industry, Civil society, Policy makers, Media	135	EU countries
53	Posters	MASTS 2016	19/10/2016	United Kingdom	Scientific community (higher education, Research), Policy makers	100	United Kingdom
54	Oral presentation to a scientific event	CORE 2016	14/09/2016	United Kingdom	Scientific community (higher education, Research), Industry	25	United Kingdom
55	Posters	Stormy Geomorphology	11/05/2015	Royal Geographical Society, London	Scientific community (higher education, Research), Policy makers	80	UK, US, Netherlands, France, Sweden, Australia
56	Organisation of Workshops	EIMR 2016	22/02/2016	Edinburgh	Scientific community (higher education, Research), Industry, Policy makers	73	UK, Ireland, Italy, Portugal, Sweden, Netherlands, USA, Canada, China
57	Oral presentation to a wider public	REGPOT and ROK Workshop	07/12/2015	Brussels	Scientific community (higher education, Research), Policy makers	46	EU countries
58	Organisation of Workshops	EIMR 2016	22/02/2016	Edinburgh, Scotland	Scientific community (higher education, Research), Industry, Policy makers	90	United Kingdom, Portugal
59	Oral presentation to a scientific event	EIMR 2016	22/01/2016	Edinburgh, Scotland	Scientific community (higher education, Research), Industry, Policy makers	90	International
60	Oral presentation to a scientific event	MASTS Retreat	09/03/2016	Aviemore, Scotland	Scientific community (higher education, Research)	12	International
61	Oral presentation to a scientific event	IMCC 2016	01/08/2016	St Johns, Canada	Scientific community (higher education, Research), Industry, Policy makers	35	International

No	Type of activities	Title	Date/period	Place	Type of audience	Size of audience	Countries addressed
62	Oral presentation to a scientific event	Annex IV Environmental Webinar Series	12/07/2016	Online	Scientific community (higher education, Research), Industry, Civil society, Policy makers, Media	50	International
63	Exhibitions	MASTS 2016	21/10/2016	Glasgow, Scotland	Scientific community (higher education, Research), Industry, Civil society, Policy makers	100	United Kingdom
64	Oral presentation to a scientific event	Productivity, ecosystem function, ecosystem services of marine artificial structures	30/05/2016	Flekkefjord, Norway	Scientific community (higher education, Research), Industry	12	Australia, Norway, Sweden
65	Oral presentation to a scientific event	IMET 2014	29/10/2014	IMET, Baltimore, USA	Scientific community (higher education, Research), Civil society	35	USA
66	Oral presentation to a scientific event	ICES Annual Science Conference 2016	19/09/2016	Riga, Latvia	Scientific community (higher education, Research), Policy makers	60	EU countries
67	Organisation of Workshops	MASTS 2016	21/10/2016	Glasgow, Scotland	Scientific community (higher education, Research), Industry, Civil society, Policy makers	40	United Kingdom
68	Oral presentation to a scientific event	MASTS 2016	20/10/2016	Glasgow, Scotland	Scientific community (higher education, Research), Policy makers	25	EU countries
69	Organisation of Workshops	Nortek UK Coastal, Lab and Turbulence Study	01/06/2015	Edinburgh, Scotland	Scientific community (higher education, research)	50	United Kingdom, Norway
70	Oral presentation to a scientific event	UHI Research Conference 2016	09/11/2016	Inverness, Scotland	Scientific community (higher education, Research)	110	United Kingdom
71	Oral presentation to a scientific event	Sustainable Ocean Summit 2016	01/12/2016	Rotterdam, Netherlands	Scientific community (higher education, Research)	215	Netherlands, EU (seas and oceans)

The foreground IP that has emerged from MERIKA has been created around a series of core marine energy science themes. These themes are;

- Resource and Risk
- Understanding the effects of marine renewable energy devices on the environment and ecology
- Understanding the social, economic and policy dimensions of marine renewable energy

These marine energy science themes form the basis of project research and innovation. The foreground associated with these themes is focused on the provision of services and expert knowledge that, in turn helps to facilitate the realisation of innovation and IP. This means;

institutional structures to manage and deliver on foreground opportunities; in particular an IP policy embedded within a broader innovation policy, the creation of an Innovation Support Office to manage the provision of services and knowledge, and the MERIKA “brand” to market marine energy science at UHI
contextual data and analysis capability; skills and information accrued through MERIKA human and physical resource capacity building, to give expert advice within a particular marine renewable energy field.

These core marine energy science themes have not led to the creation of patented inventions, trademarks or formally registered designs. Rather, they have provided an “applied” foreground science knowledge capability that has/is being used to gather information and data, to then explain and inform on marine energy development questions and issues. In particular, this capability has;

- realised exploitable opportunities around the provision of consultancy services, contract research, and the pursuit of collaborative research projects; managed through an innovation office function, where UHI science is commissioned to undertake a specific piece of work for a client, or where collaborative research project proposals are developed.

Peer-reviewed scientific papers and conference papers/presentations, that inform our contextual data and analysis capability, are an important source of foreground. They validate knowledge that can be applied to consultancy services and contract research, and represent a science core for developing specialist expertise (and credibility), which in turn provides the means for further collaborations with the science community (particularly mobility partners), industry, civil society and policy makers.

As published documents, they also contributed to wider science scholarship and demonstrate the benefit and positive impact of MERIKA on the EU, by adding to the greater collective knowledge in the field of marine renewable energy.

The plan for exploitation is derived from the “applied” foreground science knowledge capability summarised in the table below.

Type of exploitable foreground	Description of exploitable foreground	Confidential Y/N	Foresee n embargo date	Exploitable products or measures	Sector(s) of application ¹	Timetable, commercial or any other use	Patents, other IPR exploitation (licences)	Owner and other beneficiary(s) involved
Commercial exploitation of R&D results	MERIKA brand	N	NA	Marketing of UHI services	Professional, scientific and technical activities	Commercial use for 2017 onwards	No patent or trademark planned. No registered design	Beneficiary UHI (Owner), ERI, SAMS and LCC (collaborators)
Commercial exploitation of R&D results	MERIKA Marketing paraphernalia; literature, video	N	NA	Marketing of UHI services	Professional, scientific and technical activities	Commercial use for 2017 onwards	No patent or trademark planned. No registered design	Beneficiary UHI (Owner), ERI, SAMS and LCC (collaborators)
General advancement of knowledge	Peer-reviewed scientific papers	N	NA	Marine Renewable Energy Research at UHI	Professional, scientific and technical activities	2017 onwards	No patent or trademark planned	Beneficiary UHI, (Owner)
Exploitation of results through (social) innovation	MERIKA Social media	N	NA	Marine Renewable Energy research networking and business engagement	Professional, scientific and technical activities	2017 onwards	No patent or trademark planned	Beneficiary UHI (Owner), ERI, SAMS and LCC (collaborator)
General advancement of knowledge	Conference papers and presentations	N	NA	Marine Renewable Energy Research at UHI	Professional, scientific and technical activities	2017 onwards	No patent or trademark planned	Beneficiary UHI, (Owner)
General advancement of knowledge	EIMR ² Conference series	N	NA	Marine Renewable Energy Research at UHI	Professional, scientific and technical activities	2018	No patent or trademark planned	Beneficiary UHI (Owner), ERI, SAMS and LCC (collaborators)

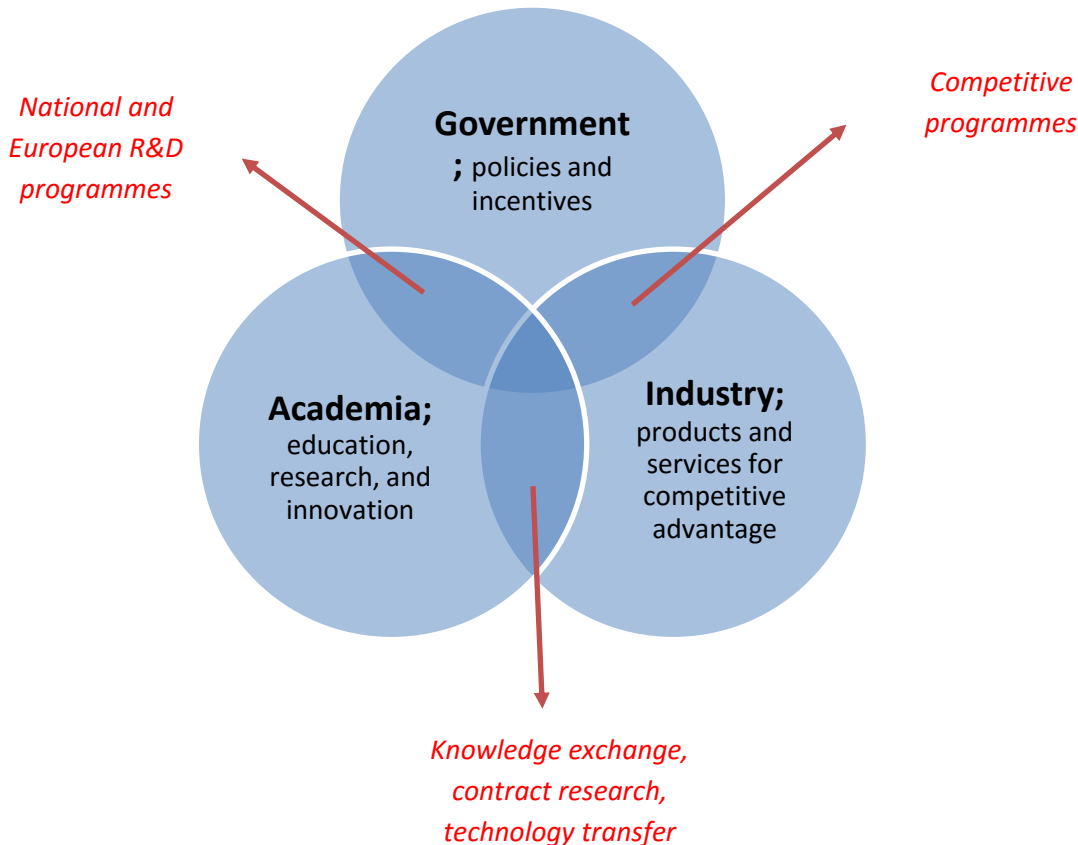
The key component to achieving this is the full realisation of the Energy Innovations Support Office (EISO). This initiative creates the paths to commercialisation by co-ordinating opportunities emerging from marine renewable energy foreground science, providing a focal point for MERIKA marketing developments, and enacting wider MERIKA derived innovation initiatives i.e. IP policy, business engagement action plan, Customer Relationship Management (CRM) deployment.

¹ Sector using (NACE nomenclature)

² Environmental Interactions of Marine Renewable Energy Technologies

The EISO also stimulates further research collaborations from MERIKA scientists by proactively mining and matching research funding opportunities, providing proposal development support, and co-ordinating knowledge exchange interactions across the various networks, programmes and initiatives.

The plan aligns well with the development objectives of Regional Development Agency to create a sustainable renewable energy industry across the H&I's. In particular, it contributes to the creation of a knowledge economy, where academia, government and industry work together, driving economic development through innovation – as illustrated in the Venn model below;



The societal implications of the exploitation plan, and its contribution to the marine renewable energy knowledge economy, are that it “reinforces” the position of UHI as a locally based university, rooted in the research opportunities of its natural environment and communities, but with a national and international research reach.

It also integrates UHI research science with the local economy and business base, and helps to sustain science jobs at UHI research centres operating across local communities in the H&I's.

The overall impact of this exploitation plan is the generation of more research science and commercial R&D projects in the field of marine renewable energy. These in turn these will realise more foreground IP (with the potential for IP derived revenue), and increase the amount of commercially derived revenue for UHI from the exploitation of research science outputs.

3. Report on Societal Implications

A. General information	
Grant Agreement number	315925
Title of Project	MERIKA – Marine Energy Research Innovation and Knowledge Accelerator
Name and Title of Coordinator	Damian Collins, Project Knowledge Exchange and Innovation Manager
B. Ethics	
1. Did your project undergo an Ethics Review (and/or Screening?) If yes, have you described the progress of compliance with the relevant Ethics Review/Screening requirements in the frame of the periodic/final project reports <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	
2. Please indicate whether your project involved any of the following issues - tick if yes No	
Research on humans	
Did the project involve children?	<input type="checkbox"/>
Did the project involve patients?	<input type="checkbox"/>
Did the project involve persons not able to give consent?	<input type="checkbox"/>
Did the project involve adult healthy volunteers?	<input type="checkbox"/>
Did the project involve human genetic material?	<input type="checkbox"/>
Did the project involve human biological samples?	<input type="checkbox"/>
Did the project involve Human data collection?	<input type="checkbox"/>
Research on human embryo/foetus	
Did the project involve human embryos?	<input type="checkbox"/>
Did the project involve human foetal tissue / cells?	<input type="checkbox"/>
Did the project involve Human Embryonic Stem Cells (HESCs)	<input type="checkbox"/>
Did the project on HESCs involve cells in culture?	<input type="checkbox"/>
Did the project on HESCs involve the derivation of cells from embryos?	<input type="checkbox"/>
Privacy	
Did the project involve processing of genetic information or personal data (e.g. health, sexual lifestyle, ethnicity, political opinion, religious or philosophical conviction)?	<input type="checkbox"/>
Did the project involve tracking the location or observation of people?	<input type="checkbox"/>
Research on animals	
Did the project involve research on animals?	<input type="checkbox"/>
Were those animals transgenic small laboratory animals?	<input type="checkbox"/>
Were those animals transgenic farm animals?	<input type="checkbox"/>
Were those animals cloned farm animals?	<input type="checkbox"/>
Were those animals non-human primates?	<input type="checkbox"/>
Research involving developing countries	
Did the project involve the use of local resources (genetic, animal, plant etc.)?	<input type="checkbox"/>
Was the project of benefit to local community (capacity building, access to healthcare, education etc.)	<input type="checkbox"/>
Dual use	
Research having direct military use	<input type="checkbox"/>
Research having the potential for terrorist abuse	<input type="checkbox"/>
C. Workforce statistics	

3. Workforce statistics for the project: Please indicate in the table below the number of people who worked on the project (on a headcount basis).					
Type of position	Number of women		Number of men		
Scientific coordinator			2		
Work Package Leaders	0		1		
Experienced researchers (i.e. PhD holders)	5		9		
PhD students	0		0		
Other	2		3		
4. How many additional researchers (in companies and universities) were recruited specifically for this project?					
Please indicate number per gender		5		6	
D. Gender aspects					
5. Did you carry out specific Gender Equality Actions under the project? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No					
6. Which of the following actions did you carry out and how effective were they? None carried out					
	Not effective at all				Very effective
Design and implement an equal opportunity policy	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Set targets to achieve a gender balance in the workforce	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Organise conferences and workshops on gender	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Actions to improve work-life balance	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Other:	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
7. Was there a gender dimension associated with the research content? – i.e. wherever people were the focus of the research as, for example, consumers, users, patients or in trials, was the issue of gender considered and addressed? <input type="checkbox"/> Yes - please specify: <input checked="" type="checkbox"/> No					
E. Synergies with science education					
8. Did your project involve working with students and/or school pupils (e.g. open days, participation in science festival and events, prizes/competitions or joint projects?) <input type="checkbox"/> Yes - please specify: <input checked="" type="checkbox"/> No					
9. Did the project generate any science education material (e.g. kits, websites, explanatory booklets, DVDs)? <input type="checkbox"/> Yes - please specify: <input checked="" type="checkbox"/> No					
F. Interdisciplinarity					
10. Which disciplines (see list below) are involved in your project?	Main discipline (Frascati Manual #): 1.4	Associated discipline (Frascati Manual #): 1.5	Associated discipline (Frascati Manual #): 5.4		
G. Engaging with civil society and policy makers					
11. A. Did your project engage with societal actors beyond the research community? If no, go to question 14	<input type="checkbox"/> No	<input checked="" type="checkbox"/> Yes			

<p>18. Please indicate whether your project has a potential impact on employment, in comparison with the situation before your project:</p> <p><input checked="" type="checkbox"/> increase in employment <input type="checkbox"/> in SMEs</p> <p><input checked="" type="checkbox"/> safeguard employment <input type="checkbox"/> in large companies</p> <p><input type="checkbox"/> decrease in employment <input checked="" type="checkbox"/> none of the above / not relevant</p> <p><input type="checkbox"/> difficult to estimate / not possible to quantify</p>			
<p>19. For your project partnership please estimate the employment effect resulting directly from your participation in Full Time Equivalent (<i>FTE = one person working full-time for a year</i>) jobs: 14.5</p>			
<p>I. Media and communication to the general public</p>			
<p>20. As part of the project, were any of the beneficiaries professionals in communication or media relations? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No</p>			
<p>21. As part of the project, have any beneficiaries received professional media / communication training / advice to improve communication with the general public? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No</p>			
<p>22. Which of the following have been used to communicate information about your project to the general public, or have resulted from your project?</p> <table border="0" style="width: 100%;"> <tr> <td style="vertical-align: top; width: 50%;"> <p><input checked="" type="checkbox"/> Press release</p> <p><input type="checkbox"/> Media briefing</p> <p><input type="checkbox"/> TV coverage / report</p> <p><input type="checkbox"/> Radio coverage / report</p> <p><input checked="" type="checkbox"/> Brochures / posters / flyers</p> <p><input checked="" type="checkbox"/> DVD / film / multimedia</p> </td> <td style="vertical-align: top; width: 50%;"> <p><input checked="" type="checkbox"/> Coverage in specialist press</p> <p><input checked="" type="checkbox"/> Coverage in general (non-specialist) press</p> <p><input checked="" type="checkbox"/> Coverage in national press</p> <p><input type="checkbox"/> Coverage in international press</p> <p><input type="checkbox"/> Website for the general public / internet</p> <p><input type="checkbox"/> Event targeting general public (festival, conference, exhibition, science café)</p> </td> </tr> </table>		<p><input checked="" type="checkbox"/> Press release</p> <p><input type="checkbox"/> Media briefing</p> <p><input type="checkbox"/> TV coverage / report</p> <p><input type="checkbox"/> Radio coverage / report</p> <p><input checked="" type="checkbox"/> Brochures / posters / flyers</p> <p><input checked="" type="checkbox"/> DVD / film / multimedia</p>	<p><input checked="" type="checkbox"/> Coverage in specialist press</p> <p><input checked="" type="checkbox"/> Coverage in general (non-specialist) press</p> <p><input checked="" type="checkbox"/> Coverage in national press</p> <p><input type="checkbox"/> Coverage in international press</p> <p><input type="checkbox"/> Website for the general public / internet</p> <p><input type="checkbox"/> Event targeting general public (festival, conference, exhibition, science café)</p>
<p><input checked="" type="checkbox"/> Press release</p> <p><input type="checkbox"/> Media briefing</p> <p><input type="checkbox"/> TV coverage / report</p> <p><input type="checkbox"/> Radio coverage / report</p> <p><input checked="" type="checkbox"/> Brochures / posters / flyers</p> <p><input checked="" type="checkbox"/> DVD / film / multimedia</p>	<p><input checked="" type="checkbox"/> Coverage in specialist press</p> <p><input checked="" type="checkbox"/> Coverage in general (non-specialist) press</p> <p><input checked="" type="checkbox"/> Coverage in national press</p> <p><input type="checkbox"/> Coverage in international press</p> <p><input type="checkbox"/> Website for the general public / internet</p> <p><input type="checkbox"/> Event targeting general public (festival, conference, exhibition, science café)</p>		
<p>23. In which languages are the information products for the general public produced?</p> <table border="0" style="width: 100%;"> <tr> <td style="vertical-align: top; width: 50%;"> <p><input checked="" type="checkbox"/> Language of the coordinator: English</p> <p><input type="checkbox"/> Other languages</p> </td> <td style="vertical-align: top; width: 50%;"> <p><input checked="" type="checkbox"/> English</p> </td> </tr> </table>		<p><input checked="" type="checkbox"/> Language of the coordinator: English</p> <p><input type="checkbox"/> Other languages</p>	<p><input checked="" type="checkbox"/> English</p>
<p><input checked="" type="checkbox"/> Language of the coordinator: English</p> <p><input type="checkbox"/> Other languages</p>	<p><input checked="" type="checkbox"/> English</p>		