

Fisheries and marine renewable energy interactions

A summary report on a scoping workshop for the
Marine Renewable Energy Knowledge Exchange Programme (MREKEP)



by

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Introduction

The first international conference on the Environmental Interactions of Marine Renewable Energy (EIMR) took place in Kirkwall, Orkney from 30th April- 5th May 2012, with approximately 200 delegates from over 15 countries in attendance. The event was co-ordinated by Heriot-Watt University, University of the Highlands and Islands, University of Aberdeen, Environmental Research Institute (ERI), the European Marine Energy Centre (EMEC), the International Centre for Island Technology (ICIT), Highlands and Islands Enterprise, NAFC Marine Centre, Europe and Scotland Regional Development Fund and the Scottish Association of Marine Science.

The Fisheries and Marine Renewable Energy Working Group (funded by MREKEP a Natural Environment Research Council (NERC) Knowledge Exchange programme), and co-ordinated by the Centre for Marine and Coastal Policy (MarCoPol), at Plymouth University, carried out an initial scoping exercise on the interactions of fisheries and marine renewable energy.

Through discussion and closer liaison, this working group aims to promote better understanding of the challenges in resolving interactions between fisheries and marine renewable energy focussing on measures to improve co-existence of the two sectors.

The key objectives of the group are:

- To facilitate engagement between scientists, energy companies and fishing organisations and promote sharing of knowledge focussing on issues of common concern.
- To develop best practice for quantifying ecological, social and economic impacts of displacement and design of mitigation measures for the whole life cycle of energy projects.
- To reduce lead times for integration of novel science into best practice and ensure future research is appropriately scoped and focussed on resolving challenges faced by marine space users.

The working group's activities will include:

- A scoping survey to summarise recent and current research activity and identify key issues and research topics in the fields of fisheries and marine renewable energy interactions.
- Stakeholder workshops to facilitate knowledge exchange between the areas of fisheries and marine renewable energy development, to identify priority research issues, knowledge gaps and collaboration needs.

This report focuses on the emerging themes, research questions and conclusions regarding mitigation drawn from the scoping workshop held in Orkney, May 2012. We end with an update of actions that have taken place since the workshop and others actions planned.

The scoping workshop at the EIMR conference

A total of 29 participants attended the scoping workshop on May 6th 2012 (See Appendix). The participants consisted of an internationally diverse group of academics, regulators, policy makers, and industry including representatives from both the fishery and marine renewable energy sectors. Some workshop participants did not attend the EIMR conference and came solely for the purpose of the workshop, e.g. Marine Scotland Compliance, Orkney Fisheries Association and Orkney Sustainable Fisheries and Mackay Energy. During the initial discussion with workshop participants, most made it clear that this workshop was

an important step by NERC and that the process must remain dynamic and progressive. There was a general level of frustration at numerous discussions taking place on previous occasions, resulting in neither best practice being developed nor positive steps toward mitigation of displacement. Another important issue discussed was the perception of some participants that fisheries and marine renewable energy development research was being southern UK dominated. Participants agreed that the issues were nationwide and that this workshop and its aims and objectives needed to address the potential imbalance.

Workshop design

Participants were divided into 4 groups consisting of 7-8 people with a facilitator attached to each group. Each of the 4 groups was asked to address 4 questions and brainstorm their ideas, creating a mind map or list highlighting key ideas. The groups worked on each question for between 5 and 10 minutes. After that, the groups moved to the next question where they read what the previous group had written and added their group's ideas. After all groups had considered each question, the group's facilitator summarised the key points on the mind map developed of their last question. An open discussion followed. Participants were also asked to use post-it notes to add any questions or points that were not covered in this workshop but should be covered in later workshops.

Workshop questions

To stimulate discussion the following four questions were given to the groups:

1. What are the **priority issues** to focus on with regard to the interaction of marine renewable and fisheries?
2. What are the **barriers to progress** with regard to the interaction of marine renewable and fisheries?
3. How can we **mitigate problems** associated with the interaction of marine renewable and fisheries?
4. What are your thoughts on the **consultation process** with regard to new marine renewable developments?

Emerging themes

The detailed discussion of the primary questions led to four broad common themes emerging: culture, community and economy; legislation and rights; data and information; and collaboration and communication. The issues raised in each of these themes are discussed below.

Culture, community and economy

This theme covered social, cultural and economic issues and had a strong focus on the cultural and social dimension of fisheries in the community.

One of the key issues that arose under the cultural heading was the way of life that is valued by the fishers. Fishers want to continue to fish. The lack of clarity surrounding the issue of socio-cultural rights was highlighted. The importance of the cultural aspects of fishing not only related to the fishing industry itself, but also to associated industries (such as tourism) that feed the cultural aspects of fishing. Participants highlighted the importance of the necessary research into the value, and better understanding from academics, consultants and the renewable industry of fishers' lifestyle, culture and sense of place. One group considered that there is a lack of value of peripheral communities, despite the larger benefits these communities can bring.

Participants of two of the groups discussed researching case studies where, despite expectations of conflicts, little conflict between users of the marine space exists. The lessons learned in these cases should be applied to the fisheries and marine renewable energy interactions issue.

In economic terms, the potential of the fishing industry as a viable long term industry was highlighted. Coordination between different fishers' organisations was discussed by participants. They indicated the importance of understanding the information flow between the different fisheries groups. Efficient information flows may lead to a better grasp on why some in the fishing industry are more successful than others when it comes to solving issues between fisheries and other marine activities. Examples of best practice could help both industries move forward. The use of fishers' knowledge, which is defined as a combination of tacit knowledge, local/ fishers' ecological knowledge (LEK/FEK) and its use in this process was considered very important. Fishers' knowledge was also deemed important in other aspects of fisheries and marine renewable energy interactions. Most fishers, having fished for generations, possess a detailed knowledge about the marine environment, their catch species and are experts on their fishing grounds. This information could be of crucial importance for both the fisheries industry and marine renewable energy development, in terms of displacement. Therefore, fishers need to be included throughout the process.

This inclusion of fishers closely relates to issues of community ownership. Participants indicated that under a community ownership scheme the balance of benefits with marine renewable energy profits can go back into the community, supporting projects that deal with fisheries and sustainability.

Legislation (and rights)

Linked to the culture, community and economy theme, participants pointed toward community ownership to secure rights to the profit of the marine renewable energy industry, and balance the benefits of this industry with its negative consequences of displacement of fishing activity. The importance of more localised management of local resources, which should feed directly into local communities, was raised.

Within the legalisation theme, power issues were deemed important. Participants agreed that issues surrounding fisheries and marine renewable energy interactions should be focused on benefits to the industry in general rather than individuals, i.e. instead of purely benefitting individuals within the fisheries industry, this could contribute to securing the future of the entire industry. The issue of the right of fishers to compensation was raised in terms of the potential of monetary days at sea or flexible quotas systems for fishermen involved in consultation exercises and/or working in areas containing marine renewable energy developments. The details of how these systems could work needs further clarification.

Finally, participants came up with practical issues surrounding legislation. Issues were raised regarding co-habitation of the marine space, which included the liability issues related to potentially operating in the same marine space, e.g. shellfish farming within wind turbine arrays. Marine safety and liability for damage was discussed under this heading.

Data and information

Specific data and information issues, primarily data gaps or failures in the information gathering process during site selection and development were identified by workshop participants. Many of these appear at the root of informing or misinforming mitigation strategies.

Data and information identified as lacking included spatial activity data for fishing boats below 15m and in particular, vessels below 10m. Vessels over 15m carry vessel monitoring systems (VMS), a standardised system for all vessels required to directly identify spatial and temporal fishing activity and subsequently, important fishing grounds. The data access issues for fishing activity data need attention and a policy needs to be defined that suits research, planning and fishers economic confidentiality requirements. Evidence was also seen to be lacking on cumulative impacts of the competing uses of sea areas and multiple renewable energy developments in regions as impact assessments are currently site based.

To address the information and evidence requirements on which to base mitigation strategies on, there was clear recognition of the need to prioritise knowledge and data. Improved availability, openness and sharing of data was also called for, researchers mentioned being unable to obtain fishers data while there was also a lack of availability of data and information available to fishers at a local level. A solution identified was developing forums for appropriate sharing of data such as a *Fishermen & Scientists Society* similar to the example of the Society developed in Halifax, Nova Scotia, Canada.

Participants stated that there should be a start to finish participation process and not just a short consultation period that fails to provide accessible relevant information to local fishers and the fishing industry. It was also identified that spatial planning for marine regions needs to be in place in advance of any development to assess the effects of sectors' activities and the sustainability of co-location of activities. To produce this final spatial plan would require appropriate evidence gaps and data and information issues to be addressed.

Collaboration and communication

One of the emerging themes during the workshop related to collaboration and communication between the different actors involved. Working together was considered a crucial part for overcoming fisheries displacement issues. Clarity of plans (from developers) and openness from industry on fishing activity were approaches highlighted in order to overcome some of the issues. This 'working together' requires collaboration and communication at different levels, and between different stakeholders. The marine renewable energy industry, the fishing sector and spatial planners must work together based on trust and respect. A lack of trust needs to be addressed early in the processes and the importance of trust and respect was prevalent in all themes. Approaches for overcoming displacement issues need to be tailored to each stakeholder group.

Another important point in communication and collaboration was the sharing of data with fishers. To overcome issues related to inaccessibility of data, there needs to be appropriate sharing of this data. As in the case of the *Fishermen & Scientists Society*, in Halifax, Nova Scotia, participants indicated that research collaborations between energy companies and fishers should be promoted, such as Billia Croo wave test site (Orkney). This also included (revisiting) schemes to support collaborative science, such as the sharing of boats and other resources.

Finally in terms of research, the time lag of research was considered important. Research takes too much time to translate from data into advice and policy. Any measures that can speed up the process should be considered.

The participants also raised issues related to consultation. Multiple definitions and different uses (also abuses) make consultation a challenge. The difference between legal requirements and moral responsibilities was raised in regard to this. In the past, consultation has been too *ad hoc*, and not focused on the issues at hand. For example a Crown Estate consultation with fishers had taken place two years

after 11 sites had been announced. Consultation as a process was questioned by several participants. They indicated that it is down to individuals to search for the consultation, because the process is not well publicised, and the process has unrealistic time scales and targets. It is important to make each consultation count (also to avoid consultation fatigue). Therefore, consultation should be strategic, cooperative and collaborative.

Research questions

One of the central aims of the MREKE programme includes developing collaborative research with industry. Research questions and gaps emerged within each of the themes. A need for research and evidence to identify a longer term view for the co-existence of both fishing and marine renewable energy industries was identified. The over-arching vision requires a plan where both sectors prosper and a win-win situation ensues. However evidence required for a strategic plan that provided a joined up approach with all sectors working towards common goals was identified as lacking.

Specific research topics were identified within this broader vision. Firstly research and planning applied to establishing which fishing techniques/ gear types and alternative activities could take place within the footprint of different marine renewable energy installations is required. To achieve this, the sub topic for research was identified which would address the following research questions: which fishing gears can be used within device arrays? Additionally, what accessibility for fishing gears could be built into the device infrastructure?

The inshore and offshore areas of existing and planned marine renewable energy developments present different sets of problems. The spatial specific issues relating to either inshore or offshore zones need to be identified, and then applied research projects developed to understand the effects and mitigate the potential problems. The issue of spatial scales and the combination of activities in the offshore and inshore zones was raised. There is a clear need to understand the cumulative effects of the multiple sectors operating in marine and coastal areas.

Relevant to all themes is the question of how to best organise and benefit from collaborative research, incorporating the inherent ecological and historical knowledge of fishing communities. Furthermore we must determine how to use the information obtained meaningfully. As research questions, these require both the development of effective methods for translating knowledge into evidence, and developing best practice guidelines to achieve close collaboration on research projects between academics, professionals, fishers and marine renewable energy industry personnel from planning to application phases.

One important item of discussion was that of compensation. Fishers want to fish and they do not want a single cash lump sum in place of the ability to continue fishing. In reference to fisher's involvement with consultation and research exercises it was suggested that participants should be allowed either monetary compensation for lost days at sea, or allowed some flexibility in allocation of quotas.

Conclusions – Towards a mitigation agenda?

Mitigation, and specifically the research and design required to provide mitigation for the life cycle of marine renewable energy projects, is at the centre of the MREKE process and was approached as a central question in the workshop process, 'How to mitigate the problems?'. The participants' views and experiences revealed that mitigation will result from better communication and direct collaboration and cooperation between the marine renewable industry, planning bodies, researchers, the fishing industry and

fishing communities. It was also identified that there needed to be a rebalancing of power between the marine renewables industry and fishing communities. Finally, participants identified key research areas and planning requirements to successfully tackle the mitigation of fisheries displacement from marine renewable developments.

Better Communication and collaboration

One suggestion to improve communication and trust between different sectors was to develop fisher led initiatives through collaboration and discussion with individual communities. A second suggestion was to utilise fishers' knowledge in research and planning. This was extended in further points suggesting a need for developers, planners and researchers to maintain a greater empathy and understanding of the cultural and historical role of fishing in many of the coastal communities witnessing rapid marine renewable energy development.

Some fishers need to have direct involvement in collaborative projects with developers and researchers. A suggestion made was for fishers to work with developers and researchers to develop technologies, methods and plans to maximise fishing opportunities within and around energy sites. Such projects would utilise fishers' knowledge whilst requiring inherent better coordination between fishers and science funders. Mitigation measures may even be taken as a means to provide funding or facilitate the fishing industry to employ researchers to co-develop projects. Examples of fishing industry led projects already exist such as: the Seafish funded research into alarm systems to warn boats of restricted areas; the use of fishers in the practical at sea monitoring work such as at Billia Croo wave test site (Orkney) and the *Fishermen & Scientists Society* in Halifax, Nova Scotia, Canada. The development of fishing industry led initiatives involving developers and researchers was identified by workshop participants not only as a means of opening up constructive communication but also of addressing the central trust and power balance issues that have been identified as key drawbacks in the interaction between the fishing and marine renewable energy industries.

Distribution of power in decision making and management '*thinking in the long term*'

To mitigate the problem associated with power distribution, participants suggested that decision making required a longer term approach that took responsibility for sustainability of resources and social and economic benefit to local communities. The view emerged that decision making power should rest with local communities and, in fishery terms, plans should ensure local resources feed into local communities. Developments plans should ensure that direct funds from renewable energy developments reach the community as well as more localised management of resources. For example these funds could directly support projects into fisheries research and sustainability.

Research design and management approaches to aid mitigation

Alternative means of data collection, which are both fast and cost-effective, were called for to enable a greater understanding of the effects of developments. Utilising the ecological and historical knowledge of fishing communities (fishers' knowledge) and collaborations with fishers as the data collectors were discussed as key means of facilitating rapid evidence and data collection.

The nature of the design of mitigation strategies, from the perspective of the renewable energy devices and arrays themselves, was highlighted as a key issue. Examples include the choice of location of devices or

arrays and even the possibility of adapting the design of the devices themselves. These applications of simple practical solutions have been demonstrated for example at Lysekil wave power test site, Sweden, where adding habitat complexity to devices benefits commercial species. It was agreed that this kind of research should be given priority.

A need for greater understanding of spatial scale issues and cumulative impacts of developments was identified alongside understanding regional differences from effects of developments on ecology (habitats, species and stocks) through to fisheries. Both these areas require the best possible spatial data for both habitats and fishing activity. However, access constraints were recognised to be preventing timely evidence gathering and obstacles such as these need to be overcome.

Planning requirements were also identified as important means of delivering mitigation strategies. Essentially these called on both research and plans to concentrate on the bigger picture, with long term visions potentially beyond the life cycle of developments. Specifically long term planning needs to acknowledge the effects of marine renewable energy projects on fishing industries in a region. Compensation in some form could be provided to encourage local fishers' engagement with consultation and collaborative research. This may help achieve the goal of win-win scenarios for multiple industries and environments.

Actions Update

There was concern at the workshop that there was a danger of it simply being another talking shop after which nothing would be done. We felt therefore that it was worth highlighting actions that have taken place since the workshop and others are planned. We would also like to encourage participants to inform us of other related activities.

1. The Centre for Marine and Coastal Policy Research (MarCoPol) is undertaking a literature review for NFFO and Seafish. The main aim of this review is to inform an expert workshop to assess the current state of knowledge on fisheries displacement as a result of developing a UK network of MPAs and offshore energy development. The review will then support the facilitation of the expert workshop. The review should be completed by the end of September 2012. The related expert workshop is planned for October 2012. The outputs of the review and workshop will then be used to produce recommendations towards developing a best practice approach to assessing fisheries displacement as result of developing a UK network of MPAs and offshore energy development.
2. An active search is underway for case study material to write up for the MREKE portal. Examples case studies so far include: Billia Croo lobster enhancement project; the Wave Hub story; Seafish mussel experiment; fishermen involved in research project at Swansea University and the development of a mechanism to deliver these to promote 'knowledge sharing'.
3. MarCoPol and NERC (MREKE) have linked up with the Marine Conservation Zone team at DEFRA and input into the fisheries displacement strategy in the development of MCZs. The aim is to promote lateral thinking and consistent approaches in the development process.
4. Knowledge gaps are to be included in MREKE 'knowledge needs inventory'. NERC will be actively seeking ways to take them forward.
5. MarCoPol members are currently analysing the responses to the scoping questionnaire carried out at the EIMR conference in May. The findings presented in this report will later be combined with the findings of the questionnaire and subsequent workshops.

Appendix

Delegate list for scoping workshop at EIMR conference

Participant name	Affiliation
Lynda Rodwell (Chair)	Marine Institute, University of Plymouth
Annie Linley (Facilitator)	Natural Environment Research Council
Matthew Ashley (Facilitator)	Marine Institute, University of Plymouth/Plymouth Marine Lab.
Maria Campbell (Facilitator)	Marine Institute, University of Plymouth
Jiska de Groot (Facilitator)	Marine Institute, University of Plymouth
Garrett Staines	University of Maine
Duncan Mackay	Mackay Energy
Anne McLay	Marine Scotland
Gareth Jones	Marine Scotland
Peter Kershaw	Centre for Environment, Fisheries and Aquaculture Science (Cefas)
Melanie Newdick	The Co-op
Karen-Christine Oehninger-Strovall	Norwegian University of Science and Technology (NTNU)
Kate Walker	Orkney Sustainable Fisheries
Fiona Matheson	Orkney Fisheries Association
Billy Harris	Marine Scotland Compliance (Fishery Office)
Fraser MacDonald	Heriot-Watt University
Anne Marie O'Haeen	University College Cork
Alistair Lyndon	Heriot-Watt University
Beth Scott	University of Aberdeen
Colin Risbridger	Scottish Power Renewables
Andronikos Kafas	University of Aberdeen
Marybeth Gray	Cranfield University
Toyonobu Fujii	University of Aberdeen
Natalie Campbell	Natural Environment Research Council
James Mair	Heriot-Watt University
Kate Johnson	Heriot-Watt University
Karen Alexander	Scottish Association for Marine Science
Dan Wilhelmsson	Swedish Secretariat for Environmental Earth System Sciences
Olivia Langhamer	Norwegian University of Science and Technology (NTNU)