

Fisheries and Marine Renewable Energy Interactions – Assessment and Mitigation

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



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1. Introduction

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 a workshop 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 Marine Renewable Energy Knowledge Exchange (MREKE) workshop on fishing effort displacement took place in York on 17-18 April 2013. The workshop brought together 33 representatives from academia, the fishing industry, the offshore renewable energy industry, those with involvement in marine conservation, and regulators/authorities. The workshop also had delegates from all devolved administrations.

The working group's activities included:

- 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.
- A stakeholder workshop 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 workshop held in York, April 2013.

2. The workshop

The workshop on April 17-18 was attended by 33 delegates (see Appendix). The participants consisted of a nationally diverse group of academics, regulators, policy makers and industry, including representatives from both the fishery and marine renewable energy sectors. Most participants attended the workshop for the full 1.5 days, but a small number could only attend for part of this time due to other commitments. York was chosen as the location for the workshop because it is centrally located, and therefore relatively easy to reach by all participants.

The main aim of the workshop was to agree on actions to help secure positive future interactions between the fishing and marine renewables industries and to find ways for addressing the issue of fishing effort displacement as a result of development of a marine renewable energy industry.

3. Workshop design

Session 1

The first part of the workshop focused on the consultation process and methods for assessing displacement. An introductory presentation was given by Dale Rodmell, Assistant Chief Executive of the National Federation of Fishermen's Organisations (NFFO). Following this, the key findings of a literature review funded by NFFO and Seafish entitled '*Assessing Fisheries Displacement Marine Planning as a result of developing a UK network of MPAs and offshore energy development*' were presented.

This review focused on three core areas:

- A review of policies and guiding documents relevant to fishing effort displacement. This includes marine spatial planning (MSP), Energy, and marine conservation zone (MCZ) overarching policy directions; how the International, England, Wales, Scotland and Northern Ireland differ; as well as where 'displacement' is considered in each of the overarching policies.
- A review of stakeholder engagement and stakeholder consultation, in particular related to fishing effort displacement. The review aimed to explore best practice and weaknesses related to stakeholder engagement.
- A literature review focussed on fishing effort displacement. The review includes evidence of fishing activity changes post intervention and subsequent ecological, socio-economic, safety and risk issues as well as several case studies outlining appropriate methodologies for assessing displacement.

The three core areas of the review were presented in 15 minutes each, followed by an open discussion.

Leading on from this first open discussion, participants were divided into four groups, with a facilitator attached to each group. Each of the four groups was asked to brainstorm as a small group, and talk about the key questions that arose from the presentations, and

whether we have any of the answers yet. The final part of the session centred around discussions on what resources, or actions for example are needed to answer these remaining questions. The groups worked on this for approximately 20 minutes, after which the group's facilitator summarized the key points, this then led into a second open discussion within this session.

Session 2

The second session focused on practical steps to aid interaction between the fisheries and marine renewables sector. First, three presentations were given:

- COWRIE/Crown Estates work, presented by Robert Blyth-Skyrme, Director Ichthys Marine
- FLOWW (Fishing Liaison with Offshore Wind and Wet Renewables), presented by Colin Warwick, National Fisheries Liaison Officer Crown Estate
- The Holderness experience, presented by Mike Cohen, Chief Executive Holderness Coast Fishing Industry Group

After these presentations, participants were placed together in four small discussion groups, each group consisting of representatives from the different sectors and a facilitator. Three topics for discussion were identified:

- Barriers that have prevented the initial COWRIE options and subsequent opportunities to be put into practice
- Opportunities that currently exist
- Solutions that can provide a means for opportunities to be put into practice

Two groups discussed these topics in relation to fishing effort displacement, and two groups in relation to mitigation.

Session 3

This session focused on 'moving forward', and 'recommendations for action'. Participants were placed together in four small discussion groups. Discussions focused on specific actions, such as mitigation, consultation and research.

Each discussion group addressed specific questions within this session:

- When? – Timescales of the actions
- How? – What is required to make the actions happen?
- Who? – Identify partners for action

Session 4

The aim of the final session of the workshop was to agree on the necessary steps forward. This consisted of an open discussion to agree on a final list of realistic agreed action points for each stakeholder group, but also to identify research gaps and possible collaborations that could be taken forward.

4. Emerging themes from workshop sessions

The questions that were posed to the group in this session were:

- What questions arise from the presentations?
- Do we have any answers to these questions yet?
- What is needed to answer the remaining questions?

Four broad common themes emerged from the first session: methods to assess displacement, data and sharing of data; communication; and learning.

4.1. Methods to assess displacement

One of the key issues that arose was to know what we want to assess displacement for, and what the level is that we want to gauge. It was generally agreed that there needs to be a standard methodology for assessing displacement in MCZs or MPAs across all administrations and Member States. *ScotMap*, a pilot project carried out by Marine Scotland, appears to be moving towards this ideal standard methodology. Existing answers and methods were discussed.

Fishermap may be of limited use due to the coarse resolution of the ICES rectangles. Data of a higher resolution are needed. *Fisher Plotterdata* and *Succorfish* may have the potential to provide “pretty much what you need”. Both were considered ideal for assessing displacement. However, participants agreed that current knowledge and experience is poor beyond broad relative generalisations of those fishing operations that are more likely to be incompatible.

Modelling was thought to have great potential. However, there are still questions over knowledge and multiple variables that may govern fishing location choice. Analysis may therefore be intensive. A spatial constraints mapping approach may provide a more fruitful endeavour, one that treats displacement as a risk factor.

Marine Spatial Planning (MSP) has been well received in practice, because the other options of mitigating and assessing displacement are limited: VMS data is not sufficiently

precise; *Fishermap* provides data that is too coarse. *Succorfish* stood out as the most precise method for assessing displacement.

Climate change - Questions arise over how much scientists are taking climate change into account when planning MPAs and assessing changes in fishing location choice. There is a need for much more research on climate change when dealing with future or predicted fishing effort displacement.

4.2. Data and Data Sharing

Data and data sharing were frequently highlighted as important issues for the assessment and mitigation of fishing effort displacement. This reemphasised concerns expressed at the scoping workshop in Orkney in May 2012, where participants indicated data gaps or failures in the information gathering process during site selection and development (Rodwell *et al.*, 2013).

Questions raised by the groups under this theme centred on the type of data required; the availability of data; data sharing and problems with data.

Type of data

Participants emphasized the importance of assessing cumulative displacement, and indicated that one dataset, Vessel Monitoring System (VMS) data, which is currently only available at a low resolution, will change in the future. Several groups indicated that there have been problems with data in the past, particularly around interpretation of data that only represents a partial view of what is actually going on, i.e. using VMS to assess activity vs. effort (e.g. Lee *et al.*, 2010; Jennings & Lee, 2012). Although the vessels have those data, and data are recorded; there are still data gaps. For example, VMS pings only every 2 hours, what a vessel does in the meantime is not recorded, and boundaries are not clear due to the inaccuracy of the monitoring system. In addition, IFCA data are generally only sighting data. A note of warning was made again by one of the participants that we should treat the data as it is, and not try to fit the data that is collected on the collection method chosen. Concern was raised about the lack of guidance on how to deal with cumulative displacement issues and data in general. This issue needs to be addressed with immediate effect.

Availability of data

It was indicated that values can be gained from landing sites, which can be used in assessments. Participants agreed that the fishing industry has the knowledge and individual vessels all have the high resolution data needed. Some of these data are available direct from a vessel in electronic format and some will be in paper format, such as information written on the back of a bit of card from a grandfather. An important question raised was whether fishers would share these data if they are commercially sensitive. Furthermore is it fair to expect the fishermen to share these data?

Data sharing

Participants were divided on this topic. Some pointed out the justifiable resistance from some in the industry to share data. Others indicated that it can be fair to ask fishermen for these data if this improves the quality of the assessment and so lead to a better outcome.

Data sharing is taking place in some cases. One participant indicated that he has access to the data and indicates that the reason is “because the fishermen give it to him”, including the exact locations of where they have been fishing. This, however, is only possible in a situation of great trust. This was agreed to be an important factor and led to several related discussions.

Firstly, it was indicated that in the past, the idea of asking fishermen for their data would not have happened (it would have been taken in the wrong merit). However, the fishing industry is changing and that in recent times there is more willingness to share. The willingness to share data will also be dependent on gear type with static gear to be happy to show data in general. Trawling and mobile gear types on the other hand are less happy to do this because their data is more commercially sensitive.

Participants agreed that when requesting data from fishermen, great care must be had with what data you are asking for: ask targeted questions, make sure that you are asking the right questions and use the data under the right auspices. For example, you cannot expect fishermen to give out very sensitive data if you will only use it out of curiosity. Thus, data must be dealt with in an appropriate manner that is applied on the ground. Academic curiosity in itself is not sufficient ground. Participants indicated that when asking for the data, it is important to explain the negative effects of not supplying the data (such as providing an evidence base for effort displacement). In addition, it must be explained how the models will be constructed as well as how they output the information that is made.

One group of participants indicated that when we speak of consultation with fishermen regarding data “we are speaking about the wrong thing” and those fishermen in general are not interested in the type of consultation that generally takes place in which they cannot have any influence. Instead, what we have to do when we want to assess fishing effort displacement, is to convince fishermen to release information, and explain to them in a form that they will understand (over and over) how releasing the data will benefit them; convince fishing federations to be responsible for the data; provide confidence that the data will be used and used for this purpose only (and thus not abused); do only what you have agreed to do and nothing further; and you need to convince them that you have a more credible or efficient way of using the data (e.g. that is different to current work).

Great care is required when using fishing industry data, particularly business essential data. In the past, organisations using the data have not understood the commercial confidentiality of data and used it inappropriately. This is damaging for fishing and marine energy industry liaison. This must be addressed and confidentiality must be safeguarded. An example of bad practice was considered the way in which organisations in the past dictated that fishermen give up their data. Participants proposed a potential ‘trusted middleman’ to hold the data but noted that you would still need fishermen to interpret the data. Also questioned was whether it is possible to obscure individual activity within commercially confidential data.

4.3. Communication, consultation and collaboration

Questions were raised about the best ways to communicate with the fishing industry; and consultation versus collaboration and engagement.

Communication

Central to the idea of efficient communication is to consider carefully what you ask for and how you ask it. It was indicated that at the moment, even within the industry the response rate is very low, also on requests conducted by the SWFPO. Effective communication with the industry must consider the particularities of the industry. It was noted that when communicating it is important to isolate the loudest members as they do not necessarily represent the voice of the majority. One organisation representative, for example, indicated that to balance opinions, they have to put particularly loud voices of members on different tables. A further point made was that the communication protocol must be two sided. In the past, organisations, and particularly environmental organisations during the MCZ process dictated the time and place of location, which was perceived by the fishermen as “if you want to have your say, you will have to give up your time to suit our meeting”. This was indicated to be a worst case scenario of communication, non-communication in other words.

Consultation

Consultation as a form of communication was widely discussed by the different groups. A primary point made in one of the groups during this discussion was that the distinction between consultation and providing information should be clear: fishermen are disenchanted when a process is called consultation but it is in fact a *fait accompli*. Fishermen are likely to become more willing to participate if there is a genuine belief that they are consulted, and that they think they can contribute to something.

Other participants indicated that when we speak of consultation “we are speaking about the wrong thing”, and that fishermen are not interested in consultation. Instead, what we have to do is: to convince fishermen to release information, and explain to them in a form that they will understand (over and over) how releasing the data will benefit them; convince fishing federations to be responsible for the data; provide confidence that the data will be used and used for this purpose only (and thus not abused); do only what you have agreed to do and nothing further; and you need to convince them that you have a more credible or efficient way of using the data (e.g. that is different to current work). It is important that fishermen understand why and how their information is being used, and the consulting body must deliver on promised outputs from the consultation. These outputs must be available and understandable. Materials must be kept simple at all stages. For example about 1% of fishermen would likely read a wordy report. If the material is condensed to a 1 page leaflet and in a language that portrays a simple and clear message, fishermen get much more out of it. Furthermore, consultation outputs only in paper format are not sufficient. Giving documentation to somebody who cannot read is NOT consultation. Whatever output or process, one group indicated that it is important to be short and succinct in what you do.

A participant indicated that the current consultation procedures at the moment do not bring forward the real issues. Therefore, proper consultation is required, and one group

indicated that consultation regarding fishing effort displacement must be framed in terms of: where fishermen go to when they are displaced; who will come in as a result of displacement; and increased pressure on stocks. Participants stated that we should be directing energy and resources to serve meaningful consultation that is aimed at problem solving.

A final issue discussed by participants was careful consideration on how consultation is initiated. Consultation should not start in a vacuum. It must also be inclusive and talk to everyone instead of just a few key figures or the loudest members. When consulting the fishing community, it is also important to try to make use of local representatives; these already have the knowledge and trust within the community to foster effective communication.

Collaboration and engagement

Collaboration instead of consultation was suggested by many as a way forward in assessing and mitigating fishing effort displacement. Another important point in communication and collaboration was how to engage the fishermen. Several participants indicated the importance of the right discourse for engaging with the fishing community, i.e. you must choose a proper discourse and repeat it over and over again

Participants indicated a clear difference between consultation and collaboration, and instead of consulting the fishermen, the fishing industry should collaborate with marine renewables. In this process, a prerequisite is that fishermen should only be invited to participate if they can impact on the process. If they can't, participants indicated that it is unfair to ask for their participation, and you should not ask people to take time out of their work to be 'consulted' if this will not have any impact. This relates closely to a point mentioned earlier about consultation which is that when trying to foster collaboration it is important for those that execute the consultation, that fishermen see the reason for it.

A variety of problems identified and experienced with communication and consultation in the past has been discussed by the groups. An example given was the problems the MCZ process had in the beginning. Nevertheless, the MCZ process was indicated to have focused the fishermen's' minds because they could not influence the process. Cornish fishers for example, refused to participate because of the lack of influence that could be exercised. This process lacked amongst other clarity of what an MCZ means, which is not necessarily a no-take zone. This process also emphasized the importance to talk to everybody because representatives might not represent everybody. An example to potential improvement to this process was that the fishermen could be asked where to put the MCZs instead of saying where they will be put. If you are conducting engagement, you must be interested in the result, and not practice tokenism engagement purely because it is required by the regulator. However, participants realised that there was the time and cost implication of exercising engagement correctly.

Participants also emphasized the importance of considering cross-boundary and cross-jurisdictional engagement. Jurisdictional issues were also identified as potential problems: who is responsible for what? There are boundary issues, particularly on trans-boundary projects such as the Dogger Bank, where not only devolved administration boundaries are to be integrated but also international jurisdictions. Before engaging, one must do their

initial research: one must know who is in the area, and it is important to talk to everybody, because sometimes the people you think represent the group do not represent it in reality. Furthermore, suitable methods for consultation must be better identified and used. This also related to the difference between spatial planning and licencing of developments. The question was raised whether people understand the difference between spatial planning of developments and licencing and the different degrees of influence that can be exercised during these processes.

4.4. Learning from past experiences

Participants emphasised the importance of learning from past experiences such as the MCZ process. Seasonal closures for example, can provide opportunities to better understand displacement. Real time closures will give us an idea of the effect of displacement in addition to fishing effort modelling. It is important to learn from best practice. Also, the wider implications of displacement of effort must be considered, for example that on local communities. These should be fed into Local Impact Assessments.

Respondents questioned whether there is a standard methodology for assessing displacement in MCZs/MPAs, and what could be learnt from this process. The importance of consistent methods and consideration of decision tree approach is necessary in all administrations due to emphasis on marine planning.

5. Sharing experiences (Session 2)

The first session began with invited presentations and a summary is described below:

- Rob Blyth-Skyrme presented on the initial (2008, 2009) Cowrie funded projects that used workshops with fishing and renewables industry to investigate mitigation options.
- Colin Warwick followed this with a presentation on the current state of play and issues arising from his position as national fisheries liaison officer at The Crown Estate and chairman of FLOWW.
- Mike Cohen, Chief Executive of Holderness Coast Fishing Industry Group. Mike provided a regional perspective on the experiences of the fishing industry and practical steps taken in relation to current offshore developments and marine planning.

This session focused on practical steps to aid interaction between the fisheries and marine renewables sector. Following presentations the delegates separated into four round table groups, two selected for mitigation, two for fishing effort displacement and focused on three topics:

- Barriers that have prevented the initial COWRIE options and subsequent opportunities to be put into practice
- Opportunities that currently exist

- Solutions that can provide a means for opportunities to be put into practice

For each of these topics discussed within the context of mitigation and fishing effort displacement, a number of themes were identified and described.

Barriers

Engagement

Specific barriers that had been encountered by developers, regulators and most often by fishing industry representatives provided some explanation for why mitigation opportunities had not been widely adopted across developments. Engagement and communication provided a main theme. Fishing industry members raised the issue that in certain areas there had been a lack of engagement from the renewables industry. In other cases where engagement had taken place fishing industry members felt promises and agreements had not been delivered and subsequently fishermen had given up engaging with developers. Fishing industry members also raised the lack of continuity in people working for the (renewables) industry which prevented decent rapports and communication developing. The need to acknowledge that fishermen's information is a valuable business asset to them and that trust needs to be developed for fishermen to share it was also raised. A point was also made in terms of using their knowledge in the right way, i.e. a lot of engagement work can attain insight fishermen's behaviour that can fill in the gaps that traditional quantitative methods, e.g. VMS cannot capture, therefore increasing the resolution of data that can aid in detailed studies of effort displacement. Fishermen also noted that individuals approaching developers with requests for disruption payments or mitigation were not as successful as negotiations from a group led by representatives and operating in a business to business arrangement.

Policy and law (rules and regulations)

Energy policies, marine conservation policies and marine planning policies require developers and planners to consider effects on fishing and mitigation requirements. Despite this the point was raised that many fishermen reported that they are unclear on protocol and rules for operating within a windfarm or potential MCZs. Examples given were the differences between access for potting and trawling and, if access possible then the times when it may be allowed and when it may not (due to maintenance or safety restrictions). In addition fishing industry members suggested they were unclear on what infrastructure may be present on the sea bed. Safety issues were also raised as a barrier preventing fishing within windfarms. An important question was raised on the risk encountered by fishermen working within an offshore windfarm due to limited rescue options in the event of accidents such as man overboard. Policy and law was also discussed as a means ensuring the renewables industry engages in fisheries mitigation. Dialogue, engagement and mitigation are required across energy, conservation and planning policies. As in the licensing system there is a lock in whereby developers must therefore show they have conducted dialogue and considered mitigation.

In relation to fishing effort displacement, policy emerged as one of the strongest contenders in this particular topic. It was felt that MSP was totally out of sync with the tools methods being developed to measure and manage displacement, in fact displacement was not even a consideration at the beginning of many planning processes, and this has far reaching complications, because what we are dealing with are the consequences of displacement which have societal implications. This was voiced by all participants across all UK regions, but particular references were made to planning decisions being made before SEAs were complete. This strongly relates to items that were raised in section 1, i.e. the immediate need for clearer guidance on how to deal with fishing effort displacement in order to effectively plan for the future.

Attention at the leasing stage

A key area that was brought up across groups which had created barriers to mitigation and effective analysis of effort displacement was the rapid development and the leasing of sites without considerable assessment of other resource users activity. Larger windfarm sites have encroached further onto valuable fishing grounds. Lack of attention to how much fishing activity actually went on at many sites was commonly raised by groups. A direct barrier related to assessing fishing effort was the inappropriate data available for the task, for example, a reliance on > 15 m vessel data, leading to inappropriate interpretation of the data. Successful mitigation would have been to develop less fished sites however two main barriers were identified which had prevented this. Firstly the fishing activity data available under estimated effort. Secondly the renewables industry, as a developing industry was viewed as requiring specific conditions to provide the financially best position for a development. As a new industry inexperience was also raised as a barrier within the renewables industry. The lack of experienced practitioners meant there was also no education system to provide highly skilled personnel. This was recognised to be typical of a new industry however this had created barriers throughout site selection and deployment.

Evidence of effects

Knowledge and available evidence on the effect of offshore windfarms on habitats and commercial stocks, especially at a timescale appropriate to separate effects from natural variation were viewed by groups as creating a barrier to designing mitigation practices. The use of data sets from just one year pre construction (baseline) was viewed as providing insufficient data as abundance and catches can change considerably between years and one year's data has little value over a fifteen year period. The timescales a manager and fisherman view problems such as mitigation were also raised as a barrier. It was raised that if a manager only looks at a shorter term, such as five years this will not be relevant to choices a fisherman may make if looking at the rest of their career. This was also a key point in relation to effort displacement; we need to be able to elucidate both the short-term and long-term strategies of fishermen in order to accurately assess fishing effort, therefore displacement and following that, be able to predict effort displacement. This theme, i.e. evidence of effects emerged as a very strong debate point amongst participants; within

strategic planning how do we take into account climate change effects? And how do we separate this from say, the heterogeneity we see in fishing effort? More effort was needed to be relayed into these areas of research

Finally, although the advent of marine planning was hoped by some participants to aid mitigation between industries it was also acknowledged planning could not change the existing placement of developments and previous decisions. As array layout, architecture and operational procedures influence levels of displacement a current barrier was mentioned to be the lack of evidence of mitigation at a design and development phase. This also related in one group to the lack of evidence to guide mitigation in the design and development phase.

Data and data availability

This theme has more relevance to the assessment of fishing effort displacement, however data remains a central theme when considering mitigation strategies. Key discussion points pointed towards data inconsistencies, unavailability of data at appropriate resolutions due to the changes in certain EU legislations, an over reliance on >15m VMS data and varying data resolutions used by the different Member States. This has consequences; underestimation of fishing effort and inappropriate data layer construction for example, thus causing inappropriate interpretation of data.

Opportunities

Engagement

The necessity early and effective communication was acknowledged as being recognised for some time now. Even so opportunities were identified to act on this awareness by both fishing and renewables industries as well as Crown Estates and marine planning authorities. Earliest possible engagement involving negotiation provided the greatest opportunity for amicable solutions. To maximise effectiveness consistent points of contacts are required from both developers and fishermen. In some instances a succession of different individuals operating as points of contact in fisheries liaison was raised as being a frustration to the fishing industry. Likewise dealing with individual fishermen's disruption claims and mitigation requirements were raised as being less likely to result in timely solutions. Solutions reached in the Thames Estuary were discussed by delegates as only being reached through the fishermen being joined up from the start. Mitigation opportunities were carried into practical solutions through fishermen utilising solicitors to negotiate and draw up agreements with developer's solicitors. The practice of employing solicitors to draw up mitigation agreements approached mitigation actions in a business to business manner. It also provided a common language and a clear record of the agreements to aid future disputes and requirements to adapt to future needs.

Mitigation strategies had already been worked up in the initial Crown Estate funded work and regional specific strategies are currently emerging. An opportunity was identified to promote these to ensure developers, fishermen and planning authorities were aware of the options available. Further to this, successful mitigation practices from oil and gas offshore industries could also be made available to the renewable energy sector. Opportunities were identified for communicating exactly what navigation and fishing opportunities are available in renewable energy sites. The Kingfisher chart updates were raised as providing an excellent opportunity for supplying fishermen information on what infrastructure hazards exist on the sea bed. This also provides the opportunity to ensure health and safety risks in association with renewable industry and fishing industry interactions are minimised. In another example from the Thames estuary developers had reportedly carried out trawls with fishermen before and after construction and if changes or obstructions were found in an area specific mitigation was discussed.

Policy and Law

It was raised that current marine planning and energy development policy contains obligations to the renewable energy industry to consider impacts on fishing and provide mitigation. As developers must show that they have engaged fishermen in dialogue the opportunity for fishermen to maximise the mitigation opportunities in this process is apparent. Essentially the licensing system was identified as providing the greatest opportunity for effective engagement and a means for the fishing industry to ensure mitigation options are put into practice.

Co-benefits (win-wins).

The majority of points that raised opportunities for mitigation applied to the theme of win-win scenarios. Mitigation practices that benefitted both industries were acknowledged as being the quickest and possibly most effective resolutions. On the broadest scale the co-benefit required is that fishermen maintain their livelihood and developers satisfy consenting requirements. The need to address impacts on a fishery however creates the central opportunity to address mitigation requirements. A broad opportunity was identified for the generation of mitigation strategies that enhance long term sustainability of existing fisheries. Opportunities to maximise the use of existing vessels and productivity of fisheries ranged from species specific augmentation such as lobster hatcheries to providing service and guard boat employment opportunities to existing boats. The co-benefit theme also applied to finding mitigation strategies that could be applied to renewables developments and regional MPAs with full no take zones or gear closures. Round one and two UK offshore windfarms were completed when marine planning systems were not developed. As marine planning develops the opportunity exists to incorporate the lessons learnt into this planning process. Finally financial value was identified as the greatest leverage point and central to win-win scenarios.

Financial – (Maximise employment and income)

Ensuring individuals can continue to go out to sea and make a living was raised as being central to mitigation efforts. Financial benefit was viewed as being required to counter the loss of ground and disruption from developments. Suggestions in this theme included making sure local boats were included in opportunities such as guard boat work. Such opportunities were reported as currently being overlooked in certain locations where contracts were given to the specialist service catamaran operators. Maintaining financially valuable fisheries in the event of effort displacement was also raised. This suggestion acknowledged the opportunity to improve fisheries in remaining grounds. To maintain remaining grounds the co-location of other industries utilising marine space such as aquaculture was raised. Co-location of aquaculture was also raised as providing opportunities or further employment and use of local vessels.

Solutions

Engagement

The prevalent theme through both the opportunities and barriers section was engagement and how best to approach dialogue. Across groups the messages were that earliest possible engagement is essential. Problems had arisen from lack of proper dialogue, discussion and negotiation around issues at all stages from designation of sites through construction and into operation. Delegates suggested firstly a need to move beyond 'how do we consult fishermen' to the renewables industry focusing on establishing negotiations. Fishermen meanwhile had established successful mitigation solutions in one region through joining together as a group and utilising business services such as solicitors to provide a written record of negotiations and agreements. In an example from a small island community, around the Sound of Islay, Scotland the need for early negotiation appears to have been put into practice. Delegates reported that valuation methods were applied to grounds to understand the importance to the local industry. Fishermen were then required to lead on the mitigation options they want to receive. This provided the opportunity for community collaboration leading to a bespoke plan for the region.

There was a consensus between some participants on how, here is some element of predictability in terms of effects of displacement but there is the effect of fishermen's personal choice on where they are displaced to or whether they change gear etc, hence certain questions arose in discussions, i.e. personal choice – to be displaced or not? How much is determined by the fisher? And the flexibility of the boat and the gear are determinants in this. This is relevant to this theme because effective engagement on this issue will allow planners to get a much better representation of overall fishing effort, by deeper insight into their behaviour and choices (this point is also emphasised in *Opportunities* theme).

Rules and regulations

Reluctance to fish in windfarms and the low number of practical mitigation options that had been taken forward were also linked by delegates to the lack of clarity on operating restrictions within windfarms. Solutions within this theme included the development of clear protocols on dealing with issues such as entanglement of fishing gear with windfarm infrastructure. Clear protocol was also suggested on what can and can't be done in terms of fishing practices within an offshore windfarm site made publically available and fishermen regularly updated. One issue that was raised was maintaining clear permanent access to the site and individual turbines for service boats. The solution suggested was to map corridors that must be kept clear of fishing equipment and vessels and provide these in chart updates for vessel operators. The Kingfisher service through Seafish was suggested as an ideal means for this as it had been providing chart and seabed obstruction updates for over 40 years. The Kingfisher service was also suggested as the solution to providing accurate updates of seabed infrastructure and obstacles such as cabling with windfarms. This provided a further solution for fishing industry representatives regarding the lack of confidence on what new obstructions existed post construction within a site.

Habitats and species

Mitigation solutions that relied on the effects on habitats and species were limited to suggestion on the use of rock armouring that was suitable for lobster and crab settlement. The seeding of juvenile lobsters from hatcheries was raised throughout the discussions and examples of use of this mitigation procedure exist in Sound of Islay and plans by the Holderness Coast Fishing Industry Group. In terms of developers assistance utilising suitable rock armouring and providing funding to establish hatcheries in development regions should be considered. In an example from The Sound of Islay it was suggested a PhD research project had been funded to study these and further enhancement options. In collaboration with V –notch schemes which mark female lobsters preventing their landing and sale a number of solutions were offered for enhancement of commercial crustacean fisheries. The need for knowledge and evidence of long term effects of renewable developments on habitats and species was regarded as holding back further direct mitigation solutions. The possibility of utilising resources such as the Holderness Fishing Industry Group's research vessel and local vessels in other regions however provides opportunities to address knowledge gaps.

In terms of the fishing effort displacement, some participants voiced concerns over the lack of critical fish habitat research, and in particular in reference to post installation and the changes to the habitat, e.g. Nephrops fishery. Along this line of debate, questions were raised repeatedly surrounding the robustness of pre monitoring, and if pre monitoring of sites and the surrounding areas were sufficient enough for us to measure change on habitats and thus the species they support. Hence, the groups felt that greater emphasis on this area could be considered part solution to the problems we face when trying to delineate the impact of displaced effort outside of selected sites and also the impact of cumulative displacement. Within this theme, it is appropriate to link to methodologies, and

a clear agreement on perhaps trying to come to some sort of standardisation of methodologies in order to compare similar areas, and gears across member states.

Industry and economic benefits

Mitigation solutions raised in this workshop session often fell into the theme of providing economic benefit to the regions fishing industry as well as disruption payments to individuals. Direct financial payments to individuals were regarded as being required in the event of disruption from construction or closing of areas and required strict negotiation and dealing in business to business manner ideally between groups of fishermen and developers. Direct financing of long term mitigation was the preferred option to mitigate for the life of developments. Suggestions such as developers aiding financing of lobster hatcheries fell into this theme. Providing financial aid to local vessels to adapt to new fisheries requiring new equipment was also suggested. The most successful mitigation solution presented at the workshop involved direct economic benefits in relation to fuel. A pre-existing compensation arrangement with a telecoms company had provided funds for Thanet area (Kent, UK) fishermen to build their own 24hour fuel depot. The windfarm developer concerned was provided access to this 24hour fuel resources provided harbour pontoon improvements were part funded. The extra fuel sales through the depot (run by local fishermen) provided reduced fuel costs for fishermen and for the depot to make a profit. Although utilising a pre-existing fuel depot the experience in Kent, UK displays the use of a common resource to provide economic savings for both parties. One of the key end points of mitigation was pointed about to be aiding fishermen to continue being able to work as they had done. Although not all mitigation solutions under this theme increase a biological resource they do provide a means to continue operating vessels by lowering running costs.

6. Practical case study experience

Thanet Fishermen's Association, Kent, UK

Workshop delegates discussed the benefit of recording the experience of the Thanet Fishermen's Association in reaching mitigation solutions with some of the windfarm developers in their region. Experience of negotiating with offshore developments was reported to have begun before offshore windfarm developments. A telecoms cable laying contractor had provided financial mitigation which was used by the fishermen to construct the 24hour fuel depot and pump discussed under the 'solutions' section. Fishermen held a share in the depot as long as they are active fishermen. Previous existence of this resource which was already held within the fishing community and approaching negotiations as a joined up group with the aid of a solicitor (to ensure negotiations were recorded and agreements were clearly defined) was suggested as providing success in this case.

The existing fuel depot provided a resource that was of interest to both parties and financial arrangements could be reached and recorded by independent solicitors. The negotiation instead of previous limited communication provided the means to arrange access through windfarms under construction to avoid wasted time travelling to fishing grounds. It was also reported that fishermen and developer/s in the region worked together to identify if the seabed was still clear post construction and fishing could continue. Trawls were conducted with local fishermen pre and post construction and where it was found fishing could not continue mitigation was sought to address the loss. The 24hour fuel depot was made available to windfarm contractors if harbour pontoon improvements were funded by developers. This arrangement provided a convenient 24hour fuel resource and the increased fuel sales meant fishermen could have reduced price fuel and receive a dividend from their share in the depot.

Sound of Islay, Hebrides, Scotland

This case study was communicated by Scottish Power Renewables and was discussed by the workshop delegates as being useful to future developments. Renewable energy developments in the Sound of Islay focus on wave and tidal energy technologies. Valuation methods were applied to the fishery within the Sound of Islay and the % value of the grounds taken by developments were calculated. Fishermen lead on the mitigation they wanted to receive so the developer would be able to provide a bespoke plan for this site. Although a lobster hatchery was amongst the possibilities fishermen suggested a V notch scheme to preserve breeding females and funding research (a PhD studentship) on enhancement options. It was agreed in the workshop group that to be successful approaches such as those in Sound of Islay need to be well communicated and ensure collaboration from all relevant parties.

Holderness coast, Yorkshire, UK

The Holderness Fishing Industry Group supports the fishing industry on East Yorkshire's Holderness Coast. The group represents fishermen and works to preserve a healthy and sustainable fishery. During a presentation within the workshop attention was given to the purchase of the research vessel *Huntress* as part of the research and survey work to be conducted by the vessel are extended monitoring projects of renewable development areas. The Holderness FIG provides an example of direct mitigation, using funds from disruption payments to support the work of the research vessel and the group.

Deep dock Ltd. and Seafish mussel culture trial, Liverpool Bay, UK

One of the opportunities for mitigation raised in the workshop was co-location of other industries within windfarms. The benefits were suggested to be aiding local economies, additional employment within windfarm developments and supporting infrastructure for industries such as aquaculture. Within an offshore windfarm cultured bivalves such as mussels would potentially grow at faster rates with greater access to nutrients and greater quantities could be cultivated due to the area available. The usual restriction on offshore aquaculture, risk of destruction from shipping and fishing activity would be reduced. Within increasing food requirements and the predicted increase in aquaculture co-location reduced the space outside the existing offshore windfarms being taken up by industry, benefitting shipping, recreation and fishing activity.

Deepdock Ltd. one of the UKs foremost mussel producers undertook an aquaculture trial at North Hoyle. The trial was conducted with support from Seafish, having come to appropriate agreement with the wind farm operators [RWE npower renewables](#) and with permission from CCW. This trial was raised within the workshop to display that mussel cultivation and harvesting was possible within an offshore windfarm. Although mussels grew to larger sizes faster than expected a mass mortality at the end of the trial has not prevented Deepdock Ltd. from interest in further trials and developing means of co-locating aquaculture industries in larger round two and three windfarms.

7. Moving forward /recommendations for action (Session 3)

Participants were asked to identify what exactly needs to be done to move forward, the kind of timescales needed for action and individuals or collaborations needed to take the actions forward.

Research & development of research tools

Evident among the groups was the strong opinion that before we even begin to discuss higher level issues, we need much more scientific clarity around monitoring and we need to try to ascertain what scientific questions we trying to address when dealing with siting issues. This point was raised on numerous occasions during these final sessions and participants felt that we need to address monitoring vs. outstanding scientific knowledge, begin the process of selecting what to monitor and decide upon targets with immediate effect. Participants felt that habitat resilience and vulnerability tools need to be developed, in fact vulnerability at the start of the mapping process should occur. This led to a discussion on the development of a mitigation toolkit, data and case study toolboxes (see 'data' for expansion on this topic), opening a way of sharing research and ideas and more efficient targeting of research.

Participants felt that, more R & D must go into understanding the dynamics of core fishing areas, after accurate identification of these areas. The development of models was widely discussed by participants, in order for correct site selection, participants felt that this baseline research is still lacking and if we get the siting right, there is less need for policy and regulations. Also, stated very strongly was the need for greater research on socio-economics, we need to build up a greater evidence base, but this will take more funding, who could provide extra research funding for this? (See 'funding' theme below). Participants felt that if we are talking about successful mitigation strategy development, then fishermen should be targeted about getting involved with research, there are current examples of this at Holderness and at Bangor and Lyme Bay for example, but this could be more widespread, and it makes sense from both an academic point of view and an economic one.

Some participants felt that within the research applications there needs to be a two partner process, and we need to be targeting thresholds, but is there a model to work from? Marine Scotland and ScotMap was offered as one. In less than two years, 80 % of their inshore area has been value mapped, and we need to streamline this experience. There were heavy industry engagement and analysis techniques. Also the Kent and Sussex IFCA, used this type of value data to understand the effects of closures in the future. Again, this information needs to be relayed to the 'toolkit' and 'toolboxes' development.

Identification of research gaps

Participants felt that there is difficulty with providing mitigation for developments in the consenting stage and that it cannot provide definite answers and promises to the fishing community on which ports will be used and how much employment and opportunity will be provided as will not decide and arrange these things until after the consenting process. There is the possibility of taking into account construction techniques, therefore research and development on evidence of scour protection and armouring benefits which would as evidence aid discussions around mitigation and fishery benefits following construction. There would be displacement of some fisheries but benefit to others, and as we are still in our infancy on displacement issues, there is a real need here.

There are still unknowns in the compatibility of fishermen sharing the same area and specific gear interactions e.g. scallopers, hence this comes back to issues of assessing the dynamics of fishing areas and this is a research area that participants felt needed to be exploited. With identification of research gaps comes data gaps, and it was felt by participants that *Plotterdata* should be used to first and foremost, and in order to correct VMS parameters to predict fishing grounds, this needs to be discussed in greater detail. Also, there was an expression of Scotland as a 'one stop shop' and cross boundary issues are not being investigated, research must be directed towards this issue, as both fishermen and developers will be sharing cross boundary space.

Finally, some participants felt that, there was a responsibility on design level mitigation by the developer, and research on engineering solutions is lacking, in fact one participant was quoted saying "there is nothing for that". Participants felt this needed to be addressed at the earliest opportunity.

Data issues

Participants felt that a co-ordinated approach to data is required and this has to include all bodies, MMO, Marine Scotland, Welsh Government, and Northern Ireland Assembly, the fishing industry and MRE industry. It was discussed that within the next year a data workshop could be organised to involve all.

There was discussion of a data case study repository, not replacing the dialogue that has been initiated during this workshop and MREKEP, but to enable access to data and information quickly helping to avoid repetition. This would require project funding and consent process/ protocols developed in order to share the data; this could be done at a national level by all governments. However, there were a few suggestions via bodies that could take on this responsibility: grey and white literature, could be held by MEDIN, this already functions as a data repository; RUK and Scottish Power offered to be responsible for case study toolbox/ repository and we could begin to populate this toolbox on case studies on mitigation used so far in Europe; Seafish as a fishing activity data repository, Sand allowing them to hold this data avoids criticism of agendas of POs and NUTFA. There was also the discussion of an obligation by all developers to submit all their data to a national database, and actual pressure from NFFO on the MMO and Northern Ireland DoE to lay rules for developers, i.e. there would be no licence granted unless they gave up their data to this national database. More discussion was needed on this subject, and the decision on who holds what needed to be decided soon.

A few participants offered a different approach to data repository issues for island communities; using Shetland as an example, data could be held with local Councils, thus maintaining that data at a community level, which links to the communication theme, i.e. building trust in local communities in order to be able to access commercially sensitive data. Participants then came back to the idea of an impartial, i.e. Seafish being the 'gate-keeper' of this data. An important example here regarding data issues and careful protocols needing to be put in place was the voluntary logbook scheme initiated by Seafish. A successful scheme, until the government used the data to prosecute, so a general agreement was reached by participants on how careful consideration on who holds what, and how we develop access consent/ protocols is needed, and if Seafish is chosen then a UK wide agreed approach to data utilisation is required. Another point voiced by participants, especially in the case of fisheries data was the reluctance in giving up the data for research stems from negative experiences with NGOs on fitting the data for their own purposes, and then creating public support against fisheries and this is a point that needs to be addressed and perhaps MOUs built up with the relevant bodies.

Learning from past experience

We have much to learn from past past experience, in particular the oil and gas and the aggregates industries was a prominent theme here. Participants felt that issues of commercial sensitivity had been dealt with effectively with the oil and gas industry, so is there scope for sharing their experience, protocols with the current fisheries/ renewables debate? Some researchers pointed to work carried by Cefas, this was aggregate extraction work, funded by the aggregate levy fund, and there was discussion on the potential of a

model here that could be pulled apart and used for this current debate. There was a sense of frustration at having to begin all over again and “reinvent the wheel”, when other industries have been through these discussions in the past and have been successful in finding solutions to the majority of themes being discussed here.

Other points raised were lessons learned from land conflict, can we apply them here within this realm of fisheries and MRE? In the past, pots of money generated by communities fed into plans and conflict resolution, and participants felt that ‘lessons learned’ should perhaps be inputted into the development of these ‘toolboxes’ as discussed above within the previous themes. The power of communities was again expressed here with reference to Shetland, and the avoidance of conflict, by using the Council as a mediator there was successful resolution to the conflict and the first test of *Pelamis* ensued, participants felt that we can learn from these ideas.

Finally from a learning perspective, it was really clear that, there needs to be more involvement within the fishing industry and local fishermen representation in MRE decisions/ development, can this take place through a unified body? A quote from one fishing representative summed up this theme “the MRE industry don’t know how much money we could save them if they just listened” and we can take a lot of lessons from the activities currently being carried out the Holderness region.

Communication and collaboration

It was clear from discussions across all groups and areas of expertise that we need to be realistic; there will always be displacement. Participants felt that there are clear differences between what fishermen see happening and what the developers see happening and through effective communication and these ideas of transferable information through the mitigation toolkit, data/ case study repositories for example can really aid moving this area forward. Participants felt that there needs to be a greater awareness of what is going on in the various areas of the UK, among research organisations, and currently this is not the case and it is unacceptable, and we can only do this by opening up communication channels. There was a direct call among participants for enhanced dialogue particularly in the early part of consent process, trust needs to be built and this needs to happen at local level but also needs consistency nationwide. There was a call for sharing best practice here and this could be built into the consent requirements, along with data sharing, and again the idea of inputting this into the ‘toolboxes’ is a positive step forward.

Guideline development

There was a lot of discussion on development of guidelines in a collaborative way, which are currently lacking, this in fact was a key issue brought out in session 1 and 2 also. We need guidance for improvement of selection process for zones, considering zone 3 is a given but what policies could the MMO put in place if we cannot alter the spatial extent of it? And this links directly to the policy below. The initial FLOWW guidelines need to be disseminated as widely as possible, and it was suggested that The Crown Estate set up links on other sites in order for it to be viewed as widely as possible, and this requires co-ordination on a national level. Other suggestions from participants were that perhaps FLOWW guidelines could be

written as industry guidelines, could we make a law that says it needs to happen? The MMO would like to see a nice clear document that becomes a material consideration, so responsibility remained with the Crown Estate.

Participants felt that better guidelines and procedures to quantify displacement are urgently needed. If assessed at an early stage the developer can then shape the development accordingly, by quantifying impact at earliest possible stage. This in turn leads to promotion and understanding the need for fishers to share data, addresses specific protocol on how not to encroach on commercial sensitivity and can aid developers to inform decisions and activity. But again, it was emphasised that this needs multiple partner support and should be initiated now.

Finally, the development 'decision trees', which was a point voiced by participants during session 1, was again brought up as an action point. Participants felt that this was important in the guideline development process. Expressed by some participants was the 'case by case' approach, however, participants felt that this could be achieved during the development of the 'toolkits' and 'toolboxes'.

Funding

Funding was a theme that was considered by participants often, mainly regarding data access, toolbox development, research development and support and continued dialogue. Participants voiced strong opinions on how funding from developers should be sought regarding these issues; the creation of a 'wind farm levy fund' as part of this idea of a *COWRIE 2* with round 3 developers providing research funds to develop research programs, addressing specific questions regarding EMF for example. It was voiced by some that in particular reference to wind farms, it is very site specific, so in many ways we need to develop these post monitoring programs (as highlighted in session 2), hence funds could be directed here also.

Policy

There was a very strong opinion on regulator responsibility. Participants felt that better action, i.e. pressure by the regulator, or the imposing of conditions upon industries would aid the issues that became apparent in sessions 1-3. It was agreed that there the power of the regulator was underused, and therefore could be used to better effect, i.e. setting up memorandum of understanding (MOUs) between industries. For instance, an example was offered, that of *Triton Knoll* and the 'statement of agreement', i.e. no discussion on renewable developments by the developers and it was felt that regulators could step in here. Other discussions centred on buy-in from local governments, but there needs to be greater political will, courage and commitment for this to occur.

Finally, timescale identification was a very simple task in this session; the general consensus was that action points needed to be addressed NOW, and we would readdress the steps

within the first 6 months to one year. It was agreed that this workshop was a significant step in the right direction in addressing assessment of effort displacement and mitigation strategies and in fact sets the bar high on subsequent meetings and workshops. Participants felt that and there needed to be a central data/ contact portal agreed on that would act as a general repository for all and NERC MREKEP was identified as this general repository, although as described above, individual participants/ bodies had been selected for specific duties also. It was also agreed that this 'wish list' of actions, as it had been described by participants be passed onto all developers and planners as soon as possible. It was also voiced by some participants that that a report outlining 'best practice' should be initiated immediately, taking into consideration what had been discussed here at this expert workshop, in combination with the report commissioned by NFFO and Seafish. Also, in this session, it was agreed that a flow diagram, detailing all the individual groups be prepared, to explore the chain of responsibility, research projects etc., in order to educate participants on what others are involved in, although details are shown below in session 4.

Session 4

The aim of the final session of the workshop was to agree on the necessary steps forward. This consisted of an open discussion to agree on a final list of realistic agreed action points for each stakeholder group, but also to identify research gaps and possible collaborations that could be taken forward.

Three main action points were highlighted:

1. The need for highlighted case studies and volunteers willing to write them up
2. Do we need a COWRIE 2?
3. How do we decide on the development of the data repository, mitigation toolkit and research toolboxes?

1 Case studies

The following lists particular individuals or groups who will lead on selected topics and will provide case studies:

- Marine Scotland: Andronikos Kafas and Gareth Jones leading on licencing operations and commercial fisheries data
 - Also Gareth Jones lead on Firth and Forth displacement of scallop effort
- NUTFA: Merlin Jackson and Tom brown to lead a Thanet case study
- NFFO: Dale Rodmell leading on all fisheries
- Mike Cohen: Holderness case study

- JNCC: Tom Blasdale JNCC Natura sites and MAAR Project MPAs in the Atlantic Arc. Joined up thinking with marine renewables
- Natural England: Robbie Fisher, MMO Lyme Bay trail on inshore VMS, and creation of links via NERC Portal
- Matthew Service: Northern Ireland lead (inshore VMS and planning are steps behind other parts of the UK)
- Alan Storer: Welsh Government
- Seafish: Mark Gray, North Wales
- Marine Energy Matters: Colin Cornish volunteer for Wave Hub
- SFF: Kenny Coull lead on gear trials, Moray Firth scallop dredging

2 Cowrie 2

This particular topic was discussed by the vast majority of individuals, mainly because there are still a lot of unresolved environmental and social issues, and stated quite strongly, participants felt that COWRIE 1 did not engage effectively with the fishing community. There was discussion of the current offshore renewable research steering group, and discussions of its termination, although some members were indecisive. Both the MMO and Marine Scotland are joint chairs of this group. Participants explored the possibility of launching into another, not dissimilar to the Marine Industry Liaison Group (MILG), but this would operate at a more strategic level and include all stakeholders effectively.

It was discussed that under the Marine Science Co-ordination Committee (MSCC), at a recent MILG workshop, fisheries need to be included, in the past it has not and this 'fisheries disconnect' is unacceptable. It was stated that the group would need a higher profile. An action was taken to draw up a schematic of what groups exist within the MSCC, the members and what their functions are. This not only serves to inform but allows a greater awareness of the chain of command within decisions being taken regarding renewables, and of the research teams involved.

3 Data Repository issues

As described above in the previous sessions, suggestions were presented to the discussion as to who would be responsible for data / case study repository and this topic of conversation continued at great length in this final session.

Questions were raised and comments made:

- Who ideally should be responsible? There were suggestions of using the MMO data portal on a national level, alongside MEDIN (metadata catalogue) and placing case studies within this set up. However, as was suggested, RUK and Scottish Power may be a store for case studies.

- Raised by Marine Scotland, should we set up the repository, by area (spatial context) and fine scale? This would require a lot of effort, however, this was an action highlighted for moving forward
- We need to make it easy and we have to make a requirement to make ALL data available
 - It was suggested that data provision should be part of the consents process for developers. However a developer did point out that if data is freely available, and one developer does not get consent, another can come along and take what data it needs, or can this data be sold on? This item needs attention, and it was suggested that an appropriate store must be identified and then the level of detail discussed.
- Again in this final session, the idea of a data ‘middleman’ when dealing with *Plotterdata* for example.
 - There are questions then arising, who can access the data, and for the Crown Estate, who will then get consent? What level of the data do you need? Do you need the raw data, or simply know that it is available? VMS and *Plotterdata* output investigations?
- We return to the ‘fisheries disconnect’ within MILG, there are all these organisations and no fishing industry representation. Without that it will be very difficult to ‘occupy the same patch’. Therefore, maybe it is time that the industry has at least observer status and fishing industry should be invited along. The fishing industry must press to ask to be invited along.

Actions:

- Matthew Service to talk to the fisheries groups
- Annie Linley: To initiate a MILG discussion and raise the issue there and provide schematic on the NERC portal
- Robbie Fisher: Suggested a detailed breakdown of the groups, data repository issues fishing industry can see what areas would be good for them
- MSCC weblink: Discussion with the communications group
- Funding issues need to be teased out

Conclusions

Mitigation and assessment of fishing effort displacement: Where to go from here?

The workshop brought together, 33 individuals from a nationally diverse group of academics, regulators, policy makers and industry, including representatives from both the fishery and marine renewable energy sectors. In each of the sessions, themes and action points within those themes have been teased out, solutions described and ways forward suggested. Overall, there was a clear agreement of the development of 'toolkits' and central data repository, however also raised were the development of effective guidelines and protocols that will allow us to move forward, for both mitigation and assessment of fishing effort displacement. Participants agreed that this 'fisheries disconnect' must be dealt with first and foremost. Presented below are a few of the conclusions for each of the two topics covered during this expert workshop.

Assessment

Accurate data needs to be collated

Getting the right data through proper assessment methodologies

Data must be made available and shared freely

Development of guidelines must be developed and distributed at a national level

Analysis of case studies must be analysed to inform behaviour rules of various gears, vessels, skippers.

Best practice must be shared.

Research and development of the dynamics of fishing areas needs to be funded.

Collaboration and communication between all stakeholders is essential

Mitigation

Better communication is needed in consultation and engagement processes and protocols should be developed

Lessons must be learnt from island communities on conflict resolution

Marine Industry Liaison Group (MILG) reform needs to operate at a more strategic level

Do we encourage involvement of fishing industry within MILG?

Analysis of case studies of marine renewable developments must be analysed to identify successes and failures of mitigation options

Future recommendations for mitigation options should be based on evidence of success and agreements with stakeholders and learn from these

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Appendix

Delegate list

Workshop conveners

Institute	Name
NERC KE	Annie Linley
Plymouth University	Lynda Rodwell
Plymouth University	Jiska de Groot
Plymouth University	Matthew Ashley
Plymouth University	Maria Campbell

Industry (developers)

Company	Name
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Scottish Power Renewables	Douglas Watson
RWE	Paul Carter
Vattenfall	Colin Stewart
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Industry (fishing)

Affiliation	Name
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Seafish	Mark Gray
MPA Fishing Coalition	Stephen Lockwood
Scottish Fishermen's Federation (SFF)	Kenny Coull
Holderness Coast Fishing Industry Group	Mike Cohen
Inshore Fishing & Conservation Authorities (IFCA)	Tim Robbins
National Under Ten's Fishing Authority (NUTFA)	Tom Brown
National Under Ten's Fishing Authority (NUTFA)	Merlin Jackson
Scottish White Fish Producers Association (SWPA)	Mike Park
Lowestoft Fish Producers' Organisation (PO)	Andries de Boer

Planning and management

Institute	Name
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Marine Renewable Energy Knowledge Exchange Programme (MREKEP)
Expert workshop, York April 2013

Crown Estate	Colin Warwick
Marine Scotland	Bruce Buchanan
Marine Scotland	Gareth Jones
Marine Scotland	Robert Main
Marine Scotland	Andronikos Kafas
Natural Resources Wales	Kirsty Lindenbaum
Joint Nature Conservation Committee (JNCC)	Tom Blasdale
Marine Management Organisation (MMO)	Ruth Barber
Agri-Food & Biosciences Institute (AFBI)	Matt Service
Welsh Government	Alan Storer

Academia

Institute/ Affiliation	Name
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