

MSPACE Knowledge Sharing and Future Planning Workshop: Orkney

Report

Draft version: 29 August 2023



MSPACE

This report has been prepared by the University of Essex with materials and evidence supplied via the cooperation of the SMMR MSPACE project partnership. We thank these partners for their participation and collaboration in compiling and sharing information for this report, as well as in the MSPACE Project in general.

Team members contributing to this report:

Pat Danahey Janin, PhD, University of Essex

Océane Marcone, PhD, Plymouth Marine Laboratories

Gina Yannitell Reinhardt, PhD, University of Essex

Alberto Roca Florido, PhD, York University

Luz Rodríguez-Vargas, Plymouth Marine Laboratories

Please direct questions or comments to:

MSPACE Team, University of Essex

evaluation@essex.ac.uk

Background.....	4
Workshop Presentation Feedback	5
WP1 Feedback.....	5
Responses.....	5
WP2 Feedback.....	5
Responses – governance maps	6
Responses – values and preferences.....	6
WP3 Feedback.....	6
Afternoon Workshop Analysis (WP2 and WP4).....	9
Fears.....	9
Preferences and tradeoffs	10
Broader Elements (Assumptions, Willingness to Collaborate, Underlying Antagonisms).....	14
Workshop Achievements and Outcomes	18
Strengths	18
Challenges.....	18
Potential Improvements.....	18
Logistical Considerations	18
Pre- and Post-session Survey Results	19
How well do the participants understand the likely impacts of climate change for Orkney in terms of 3 issues of key interest to MSPACE?	19
How well do the participants understand the likely impacts of climate change by sector?.....	20
How have the participants’ perceptions of the importance of 4 key considerations for marine planning changed as a result of the workshop?	21
How concerned are participants about the future of 3 sectors key to MSPACE?	23
Additional Comments from Participants	23
Conclusions.....	24

Background

The Orkney Islands Workshop took place in Stromness at the Heriot-Watt University on June 14, 2023. Professor Joanne Porter, the case lead, welcomed the workshop organizers and participants to the Lecture Theatre, which was equipped to allow virtual participants on a Teams connection and in-person attendance. The workshop took place from 10:30 to 15:30. The workshop was comprised of 1 virtual and 8 in-person participants as well as 3 virtual and 6 in-person presenters/organisers.

Presentations took place in the morning (WPs1-3) and presenters solicited feedback from the participants before lunch. This feedback was gathered by each WP presenter.

An interactive discussion took place in the afternoon over approximately 2 hours. Participants were divided into 2 groups (Circles – Group 1 and Triangles – Group 2). Three scenarios were presented asking participants to express what they believed would be fears, sacrifices and tradeoffs by sector (fisheries, conservation, aquaculture). Group members were asked to assume the viewpoint of a particular actor within each sector – local/small business, large business, regulator, consumer, or user. Each group was facilitated by 1 MSPACE researcher accompanied by a second researcher who took notes.

The workshop sought to accomplish the following:

- Find out attendees' perceptions of the fears for each stakeholder group.
- Find out attendees' perceptions of what each stakeholder group is willing to trade off (preferences) for the sake of climate smart MSP.
- Find out attendees' perceptions of how each stakeholder group thinks about and measures tradeoffs.
- Encourage attendees from across sectors to acknowledge the variety of perspectives and validity of frustrations and complaints across each sector – our objective was not to exacerbate disagreements or power differentials.

We wanted to know how and where barriers arise in this group interaction. The broader (meta) elements to be examined include underlying antagonisms, assumptions about other stakeholder questions, willingness to work together, and belief that working together is possible.

Workshop Presentation Feedback

WP1 Feedback

Following the WP1 presentation on how the MSPACE project seeks to deliver a decision support system to enable climate-smart marine spatial planning, participants were asked to respond to the following questions:

- Is this information useful?
- Is there interest in regional products?
- What do you think of the focal sectors?
- What timeline is best for visualization, and when would it be needed?

Responses

One participant in the group pointed to how this information affects the policies and what data would be useful to inform those policies. He observed that the process of governance on how MSP is developed is long winded and attention needs to be paid to the statutory process of the plan making which is not reactive to this new data. New data could be added to one section for assessment on fishing which is done at the beginning of the process to identify key issues. In reality, however, the actual formal review is over a 5-year cycle for Marine Atlas in Scotland, and they do the equivalent on a regional level over approximately 5 years for the updating process. There is an issue around the ambition and complexity of what they do and the resources they have around it. The expectation of more resources has not transpired – there is a need of alignment of expectations with resources in marine planning to obtain an accurate baseline assessment.

As for the licensing stage, the Orkney Island Council – a regulator in those sectors – is a consultee in marine licenses. Marine Scotland will consult them as part of the statutory processes. This data will inform mitigation processes. There is a lot of work to be done in making those complex assessments available and accessible for wider public consultation.

A second participant commented on the benefits of this information for Aquaculture, noting it is beneficial to understand climate change effects, temperature and acidity of the ocean for strategy since the industry invests millions.

WP2 Feedback

The presentation of WP2 came in two halves, focusing on governance maps and values and preferences.

Following the portion focused on governance maps of Conservation, Fisheries, and Aquaculture in Orkney, participants were asked:

- What is missing?
- Does the map convey anything of interest?
- Is it helpful?

Responses – governance maps

One participant found the Orkney maps by sector useful to help understand who is in the area – providing a list of actors. The map would help prioritize who to be in contact with.

Another participant suggested putting a heat map on top, not just scoring, to indicate how much vested interest the actors have in certain topics. Nature Scot has done strategic mapping oriented around who, who needs to know, who wants to know.

Suggestions for good ways to share this information include interactive spreadsheets, with the role by sector. For example, if one does a search for the fishing sector and one hopes to interact with conservation actors, the governance map would pop up with agencies and organizations, stakeholder sector and function, role and field (topic).

The second part of the presentation addressed the question of values and preferences of the different stakeholders with the objective of recommending untapped avenues for interaction to pursue most important and shared values.

Responses – values and preferences

One participant felt the governance maps could help decide who to talk to in light of trying to influence them or to find a way to meet in the middle and understand their position.

Several participants felt the maps needed to be adaptive and updated to reflect change over time (ie 5 years). Otherwise, they have the potential to be misleading the longer the information is out there and more dated the maps become.

WP3 Feedback

WP3 researchers handed out a feedback form for participants to fill out after the presentation on input/output economic analysis of ocean related activity. The following six questions were asked:

Q1: How could you use this analysis to help your decision making?

Q2: What would make this analysis more useful to you?

Q3: What are the things that limit the usefulness of this analysis for you?

Q4: Do you think we are making any major errors because of the assumptions we have made?

Q5: Looking at the figures, are these what you would roughly expect to see?

Q6: Is there anything else you would like to share with us?

Nine participants responded. Only two respondents answered all six questions.

Q1: Respondents indicated that the input/output economic analysis could help in their decision making in the following ways:

- to select casework or projects to invest limited resources.
- to advise, guide and devise strategy in wider decarbonization, policies on Climate Change towards most impactful sectors relative to output, local biodiversity preservation and may lead to more time limited consents.
- to understand best environmental methods of fishing and forecast where potential supply chain issues may occur within sectors with GAG emissions.

- to assess (longer term) impact(s) of development, how impacts on sectors will impact the wider community considering indirect effects and how they will inform social/econ impact assessments.
- to compare new developments across different sectors considering CC/carbon emissions as part of that process and to identify at sector level how much support is needed to help sectors and economy to transition to a greener economy to meet climate targets.
- to provide utility for knowledge sharing.

Q2: Respondents indicated the analysis would be more useful if:

- there was clear communication in reports of the uncertainty/risks of utilizing these advisories.
- they understood the data sources better.
- there was more detail on revenue vs effort.
- they understood the meaning of and what is included in the 'low activity' category.
- the lifeline services eg. ferry/passenger transport for islands were accounted for in some way.
- they had an indication of how various industries are defined.
- they could understand the true size of each sector by seeing the number of people employed and valuation/output as a total alongside the workers/£million.
- GHG data was improved in Aquaculture (statistics.)
- they had a better understanding of receptors used in model (ex. connectivity to impacts on birds foraging grounds).
- there was a wider range of industries, wider view for comparison as well as a focus on specific geographic areas.
- they understood if data sources provided an accurate picture of the economy in Orkney.

Q3: Respondents found the usefulness of this analysis was limited by:

- the uncertainty of predictions to ensure a complete understanding of species requirements and good web interactions alongside climate predictions. One respondent found it risky to base management on future predictions given lack of in-depth understanding of how ecosystems share and of species knowledge.
- the lack of indication of caveats and limitations alongside findings especially with delivering local products.
- the assumption of a linear relationship between reducing carbon emissions and employment.
- the lack of considering innovation in each sector ie. small fishing boats in Orkney run on hydrogen would reduce employment in the sector.
- the breakdown in relation to Aquaculture sector, finfish and shellfish.
- the validation of data sources.
- the different level of breakdown of sectors.

Q4: Respondents indicated the following errors and comments due to assumptions made:

- assumption of capturing a system's complexity.
- useful to be able to split between finfish, aquaculture and other types of aquacultures (shellfish/seaweed).

Q5: When looking at the figures, respondents indicated if they were roughly what they expected to see and commented:

- The figures are interesting in identifying areas to potentially target intervention.
- Not surprised that beam trawling and scallop dredging is both high GHG and low value (GVA) - a lot of fuel is used for travelling and for actual fishing.

- Roughly yes, carbon heavy industries are what we need to target, particularly in the fishing sector. They have high emissions and relatively low economic value.
- Figures look broadly correct though predict there is some degree of underestimation.
- Not for Orkney.
- Thought sea transport - freight + passenger might have been higher value/employment + greater AHA.

Q6: Respondents shared following additional comments:

- Explanations informative, interesting and relevant.
- Useful and interesting. Need to take time to get local economic data where available to make the tradeoffs justifiable at the local/regional level.
- Pleasure boat building shows outcome for the industry but does not reflect the longer-term impact on the environment. The use of a small leisure boat produces damaging effects on the marine environment.
- Provide event participants a list of key reading/citations used during presentations.

Afternoon Workshop Analysis (WP2 and WP4)

Each facilitator/researcher group produced workshop notes which were harmonized in format and then analyzed in Dedoose¹ for common themes. Harmonization required some subjective assessment regarding what could be considered fears, tradeoffs, measurement of tradeoffs, and additional categories. Multiple themes were extracted using the following method:

1. A first round of coding of each researcher group separately according to workshop objectives
2. A regrouping of comments from all sets of notes according to workshop objectives
3. A second round of coding according to dominant themes

Below we discuss themes that arose in the qualitative analysis of fears and tradeoffs.

Fears

Common fears among all three sectors (Fishing, Conservation, Aquaculture) are in respect to Marine Spatial Planning.

1) Anticipation of future scenarios and change

Anticipation was primarily focused on negative outcomes: facing the reality of scenarios, government interference, environmental regulations, heritage and culture loss, marine plan implementation, rigidity of marine plans, and uncertainty of how to render marine plans dynamic.

Change was also part of this anticipation: change of physical location of activities, increased regulations and bureaucratic requirements, decrease in conservation.

Encompassing both these forms of fears was the anticipation of future scenarios and the necessity for forward thinking.

2) Limitations

Participants also expressed fears due to (additional and numerous) regulations, including those placing limitations on the way an activity is carried out, limitations from use of technology to types of species harvested or fished, limitations on economic output, and limitations of movement on the sea space in terms of where one may or may not go.

We also note adjacent fears around a lack of recognition of an actor; a lack of available resources; a lack of an overall vision; and actors missing an opportunity that presents itself.

3) Ocean health

A fear for the health of the ocean was either expressed generally, in terms of the marine ecosystem or cumulative impacts, or specifically, in terms of disease and carrying capacity of a body of water.

4) Economic considerations

¹ Dedoose Version 9.0. 17, cloud application for managing, analyzing, and presenting qualitative and mixed method research data (2021).

Participants expressed fears regarding outputs and how to balance them, as well as how to handle negative outcomes due to regulations, and how to assure viability of an activity due to changes in regulation.

Accompanying these concerns, participants mentioned what they see as competition among the industries of aquaculture, energy, and seaweed.

5) Viewpoints

Participants mentioned fears that some viewpoints would be either neglected or allowed to dominate. These fears include not having a voice or not being heard in the decision-making process or having a viewpoint diluted and “watered down”.

Participants also expressed fears over participation – fears of missing out in key opportunities and fears of disengagement due to being unable to participate in multiple competing or overlapping initiatives.

6) Data and knowledge

Fears surrounding data and knowledge were expressed, though to a lesser extent than the above 5 fears. These fears included whether data was adequate, whether there was a common baseline and most importantly how to manage uncertainty.

7) Local vs global question

A final fear, also expressed to a lesser extent than 1) through 5) above, was fear that either local or global concerns would dominate decision making processes.

Preferences and tradeoffs

Table 1 lays out common preferences among sectors. We list them in terms of the tradeoffs indicated by stakeholders. The table presents dominant themes that emerged from the comments, with the themes listed in descending order of frequency.

A number of the tradeoffs were inferred by the analyst. For example, with respect to Marine Spatial Planning, for a specific trade like fishing, if the marine plan regulations are seen as a positive outcome, the negative sacrifice is fishing grounds, knowledge, and expertise.

We note that none of stakeholders were recorded as indicating a willingness to make a particular sacrifice, or what sort of tradeoff would make them willing to make the sacrifice. They simply indicated the sacrifice they feared they would be asked or forced to make.

Table 1. Preferences of Stakeholders Listed by Dominant Theme and Theme Frequency, separated into positive and negative tradeoffs mentioned

Theme	Positive Gain	Negative Sacrifice
Regulatory	Time allowed for MSP process, including political hold-ups	Loss of confidence and interest in process
	Decisions/decision making needs	Lack of availability of valuable information Lack of a clear timeline
	Regulated activity	Loss of trade-specific knowledge and expertise
	Designated methods	Loss of freedom in activity methods
	Flexible Marine Plan (a level of uncertainty)	Loss of certainty that would come from a fixed marine plan
	Marine Planning Process	Loss in economic viability Costly change in industry location Neglect of certain stakeholders
	National vision/approach	Neglect of local concerns
	Regulations/Restrictions established	Loss of freedom of activity Neglect of market needs (ex: product range) Neglect of customer impact
Economic	Economic Development/Growth	Neglect of local/community benefit Restricted seascape
	Viable/Sustainable Economic Activities	Reduction in variety of economic activities
	Economic Activity/ Employment/Income Generation	Reduction in natural environment preservation Reduction in undamaged/unimpacted natural environment Neglect in low food miles emissions
	Industrial Activity	Loss in conservation of natural places
	Marine Planning Process	Renunciation of premise of mutual gain in economic activity
Industrial	Upcoming or new/renewable/high revenue generating industries	Displacement of fishery activities Change in priority of other traditional trades
	Government Interest	Loss in freedom of industrial activity
	Investments	Loss of sustainability of certain activities not receiving investments Development of additional regulations
	Development in size and number	Negative effect on the environment and lack of certainty in capacity for natural environmental recovery
Trade-specific	Stakeholder Consultation	Lack of participation due to trade activity requirements
	Certainty via Marine Planning	Freedom of activity and developments with no Marine Planning
	Dedicated areas for types of fishing activity	Loss of open sea space

	Synergies with Seaweed development	Missed opportunity to develop seaweed sector
Theme	Positive Gain	Negative Sacrifice
Trade-specific cont.	Regulations (Safety)	Loss of traditional industry/trade identity
	Valued and Supported Industries	Loss of status of certain industries
	Marine Plan	Loss of freedom of industrial activity
	Other Industries in Sea space	Reduction of sea space for certain industries
Marine Environment	Use of Marine Environment	Degradation in ocean health Loss of marine life
	Biodiversity	Reduction in marine activity
	Ocean Health	Forego economic gain, profitability
	Future Conditions (CC)	Forego current baselines
	Windfarm Activities	Loss of unimpacted marine ecosystem
Policy	Policy Compromises	Neglect climate and biodiversity concerns
	Multiple Initiatives	Loss of stakeholder engagement
	Immediate Action with Enough Information	Forego exact information
	New Initiatives	Unresolved existing processes
	Government Processes	Neglect urgent conservation needs
Social	Address Climate Change	Deny Climate Change
	More demanding individual environmental responsibility	Neglect demanding more industrial environmental responsibility
Geography	Marine Plan	Reduction in large spatial spread of activities Reduce access to natural places
	Inclusion of multiple activities in designated areas - spatial squeeze	Loss of freedom of movement
Local Focus	Outside Company	Neglect local company development
	Production Destined for Export	Neglect food production for local community
	Production Site	Disregard place of consumption
Technology	Development of new Technologies	Costly change of technology currently deployed

Measures of tradeoffs (metrics)

Table 2 displays the information we were able to collect regarding participants’ views of the metrics or units in which they expected tradeoffs to be cast. The team was hoping to get concrete guidance on how people conceptualize tradeoffs – in terms of miles, number of livelihoods, number of families, quantity of GBP, etc. While we did not glean exactly this information from the discussions, we were able to determine the information given in Table 2.

Table 2 indicates for each sector the metrics inferred by the description of the tradeoff participants believed they would be asked to make. The metric was determined a logical form of measurement given the references indicated in the comments. For example, a reference to optimal environmental conditions for fish species led to an inferred metric of marine environment indices. The subcategories are listed according to their frequency (most to least). The most frequent references are bolded.

Table 2. Indicators of Tradeoff Metrics by Sector

Sector and Metric Subcategory	Inferred Metrics		
Fisheries			
Physical area	Physical space available for fishing activity	Numbers of access routes	Amount of sea space specifically dedicated to fishing
	Amount of sea space dedicated to specific kinds of fishing	Amount of free movement areas	
Economic indicators	Employment and wages/industry	Amount of preserved natural environment (area, %)	Product range, quality
	Lifecycles of trades: developing, mature, disappearing	Hierarchy of industries: prioritized to less prioritized	
Regulatory activity	Regulations per industry	Number of regulations	Number of environmental regulations
	Restrictions of freedoms vs list of current freedoms		
Trade related activity	Types of fishing methods	Trade specific knowledge	Heritage and Culture markers
Other	Awareness of climate change effects (literacy levels)		
Conservation			

Physical area	Occupation of sea surface area (% surface)	Conservation areas in surface	Conservation areas in number
	Presence or absence of conservation areas	Scale of area in question	
Regulatory activity	Timeline	Turnaround time for action	Baseline indicators of deterioration of marine environment
	Baseline indicators of health of marine environment	Indices for Ocean Health	Species biodiversity in area
	Number of concurrent initiatives		
Community involvement	Number of engaged stakeholders	Information availability	Levels of confidence or interest in process outcomes
Aquaculture			
Physical area	Occupation of sea surface area		
Economic indicators	Employment (rate, median household income, percentage of local population)	Industry employment numbers	Growth of industry
	Level of Economic Activity (productivity)	Ownership of company (local, outside)	Number and size of aquaculture sites
	% or quantity of food produced and consumed locally		
Regulatory activity	Frequency of Activity Relocation	Qualification of complementarity of activities	Marine environment indices
	Carbon emissions of activity	Indicators of environmental responsibility (individuals, industrial)	Environmental impact indices
Trade related activity	Accessibility to sites	Food miles for product	

Broader Elements (Assumptions, Willingness to Collaborate, Underlying Antagonisms)

The broader elements examined during the workshop sought to discern the presence or absence of barriers in group interactions. Overall, the exchanges between participants during the workshop were frank seeking to explain the sector's positioning and not to exacerbate tensions. Nonetheless, certain assumptions, indicators of the willingness to collaborate and underlying antagonisms transpired in the discussions. Tables 3, 4, 5 seek to highlight these elements explicitly.

Assumptions

Table 3 displays assumptions participants hold in terms of the members of each sector. In other words, regardless of the sector the participant represents, they have assumptions about what their own and the other sectors believe, value, and prefer.

Table 3 indicates by sector the assumptions inferred by the reoccurring mention of topics important to the stakeholder participant. The assumption was determined by capturing overarching statements and inferring the logical assumption behind the statement. For example, statements by stakeholders in the conservation sector referring to the importance of future scenarios and needs led to an inferred assumption that stakeholders are willing and able to think about future scenarios and needs. Assumptions by sector are listed as statements.

Table 3. Inferred Assumption Statements by Sector

Fisheries	Everyone should believe in climate change.	Everyone values trade heritage.
	Customers will not understand activity constraints.	Stakeholders should have a voice in the decision-making process.
	Freedom of movement on the sea is important.	
Conservation	Stakeholders are willing and able to think about future scenarios and needs.	
Aquaculture	None	

Willingness to Collaborate

Table 4 displays the conditions desired in order to join or attempt collaboration. Actual willingness to collaborate was not discernable in the statements made during the workshop. The researchers did not directly ask participants whether they were willing to collaborate. The question was not asked directly. The conditions indicated by sector were inferred from statements reflecting the conditions of participation. For example, in the aquaculture sector, a participant indicated that learning from regulators was an interest. Therefore, the inferred conditions of a willingness to collaborate is linked to working with regulators to learn.

Table 4. Conditions Desired to Join Collaboration by Sector

Fisheries	Willing to collaborate if organized in a way that allows the stakeholder's physical presence
Conservation	Willing to collaborate to involve more sectors in conservation
Aquaculture	Willing to collaborate to work with regulators and learn

Underlying Antagonisms

Table 5 displays underlying antagonisms by sector. Underlying antagonisms refer to the reoccurring tensions that are expressed by each sector participant in reference to specific elements. For example in the fisheries sector tension was repetitively expressed around the restrictions on the freedom of

choice for the trade as well as the freedom of movement on the sea of fisheries professionals. These antagonisms are expressed in phrases that complete the sentence “In this sector, there are underlying antagonisms around...”

Table 5. Underlying Antagonisms

Fisheries	In this sector there are underlying antagonisms around...	
	The freedom of choice	The freedom of movement
	Whose knowledge is valued	Losing out in process due to other favored industries
	More regulations for activity	Nonparticipation of stakeholders
	One activity displacing another	Regulating activities involving the natural environment
	Regulations modifying the identity of the trade	The demise of the trade
	The impact of wind farms on the marine environment	
Conservation	In this sector there are underlying antagonisms around...	
	The differing timelines and sense of urgency	The differing values between sectors
	The dilution of stakeholder contributions in process	Facing the reality of scenarios including climate diversity crisis
	Global Consumption	How much a stakeholder can participate given the multiple initiatives
	How much information is needed	How current baselines prevail when we know about future scenarios and places that will not be affected by climate change
Conservation cont.	Lack of support (funds) and policy	New initiatives and unresolved and related existing processes
	Participation efforts and confidence in process	Scale of needs from local to global
Underlying antagonisms cont.		
Conservation cont.	Seizing the opportunities in time	Lack of involvement of certain sectors
	Who is listened to	If and who will have access to natural sites
Aquaculture	In this sector there are underlying antagonisms around...	
	Dominant or priority industries like windfarms	How technology affects employment
	Local vs outside ownership	The community's view of negative esthetics of industry compared to natural environment
	The sustainability of the activity	Upcoming industries and their prioritization by government

	Balancing economic activity and environmental damage	Differing expectations of individual and industrial environmental responsibilities
	Local activity and targeted consumers, who benefits and who suffers	

Workshop Achievements and Outcomes

Strengths

The workshop went smoothly, with participants actively engaged. The scenarios were clear to the participants. Participants appeared to speak freely, and no open antagonisms were present.

Challenges

Getting specific metrics from the discussions was difficult. The harmonization of notes for analysis required subjective assessments on what the analysts considered to be fears, tradeoffs, measurements of tradeoffs, and any other categories. A pre-workshop design and plan, including definitions of these concepts, would have been helpful to assuring objective assessments.

Potential Improvements

Suggested changes for the morning session:

- Change allotment of time for each WP. The MSPACE general description and WP1 took double the time allotted, so we must allocate more time for them in the future. We suggest at least 30 minutes each (60 minutes total).
- Have the research team assess how helpful and pertinent the feedback was for each WP presentation by evaluating key points made by participants and determining actionable elements relevant for subsequent workshops

Suggested changes for the afternoon session, if we keep the same general framework and discussion questions:

- Determine how important it is for participants to adopt a specific role. If so, ask each participant which role they adopt.
- Ask clearly: is this a fear? What would be the sacrifice (or repeat it back to group during the discussion) and ask clearly: what would be the tradeoff?
- Discuss strategies for facilitators to manage dominant speakers.

Logistical Considerations

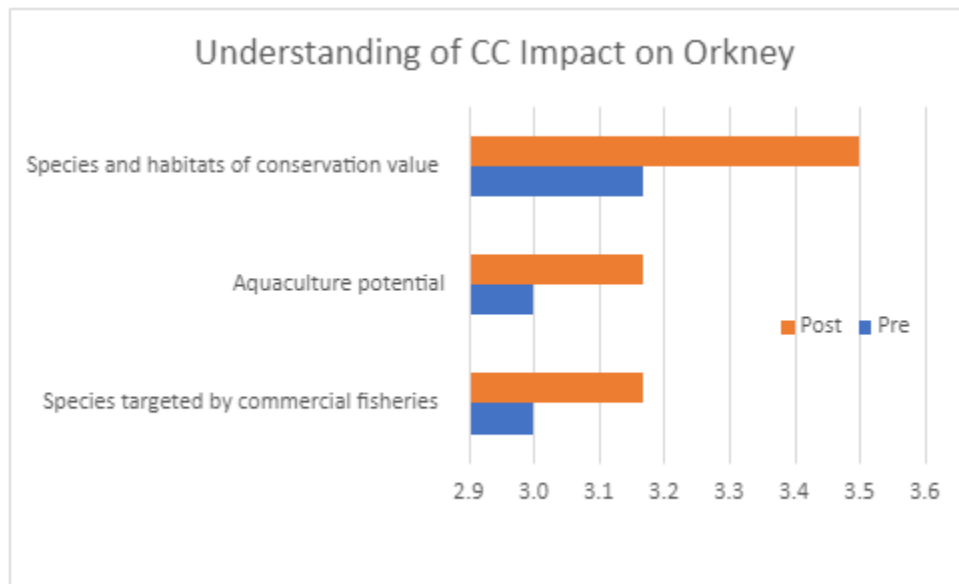
- Consider recording conversation of each group for future workshops, particularly if there are more than 2 groups. Must consider whether recording the discussions will modify participation. Will the participants agree to a recording and speak freely?
- If set-up allows, standardize use of materials (post-its and paperboards) across groups.

Harmonize note-taking by offering a template and discussing how notes will be taken before facilitators split up to separate groups.

Pre- and Post-session Survey Results

To help track impact, the team asked participants to complete a survey twice – once at the end of the morning session, and again at the end of the afternoon session. Six of the ten participants filled out both the pre- and post-session surveys, thus generating 12 completed surveys for six matched pairs. The following figures display results from these responses.

How well do the participants understand the likely impacts of climate change for Orkney in terms of 3 issues of key interest to MSPACE?



**Responses on a scale of 1-5 (1 not at all – 5 completely)*

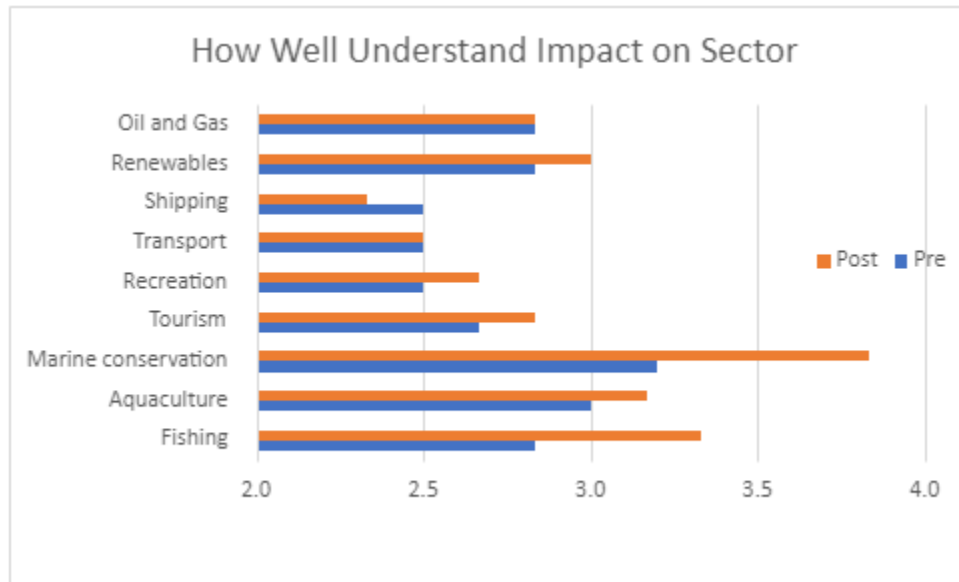
Figure 1. Pre- and post-session average understanding of the likely impacts of climate change for Orkney in terms of 3 issues of key interest to MSPACE

Figure 1 reflects the fact that the average perceived understanding of the group improved after the workshop, compared to before the workshop, in terms of the likely impact of climate change for Orkney on species and habitats of conservation value, aquaculture potential, and species targeted by commercial fisheries.

Statistical analysis reveals that the average per-person change in self-estimation of understanding was not statistically significant for aquaculture potential or species targeted by commercial fisheries. For species and habitats of conservation value, the average change was an improvement of 0.33 (one-third of a point improvement on a 5-point scale), a change which is statistically significant in a one-tailed test ($p < 0.10$).

Despite the lack of any statistically significant change in individual pre- and post-session responses, 4 of the 6 participants felt that their understanding of the likely impacts of climate change for Orkney improved.

How well do the participants understand the likely impacts of climate change by sector?



Note. Responses on a scale of 1-5 (1 not at all – 5 completely)

Figure 2. Pre- and post-session average of how well participants understand likely impacts for climate change by sector

Figure 2 shows that the average perceived understanding of the group improved after the workshop, compared to before the workshop, in terms of the likely impact of climate change on the following sectors: renewables, recreation, tourism, marine conservation, aquaculture, and fisheries.

We see no improvement for the average perceived understanding of the group of the likely impact of climate change on the shipping, oil and gas, and transport sectors.

Statistical analysis reveals that the average per-person change in self-estimation of understanding was statistically significant for the marine conservation sector. The average change was an improvement of 0.40 (one-fifth of a point improvement on a 5-point scale), a change which is statistically significant in a one-tailed test ($p < 0.10$). There was no statistically significant change for any other sector.

A majority of respondents agreed strongly with the statement 'management decisions that consider Climate Change can have different implications for different sectors', both pre- and post-session.

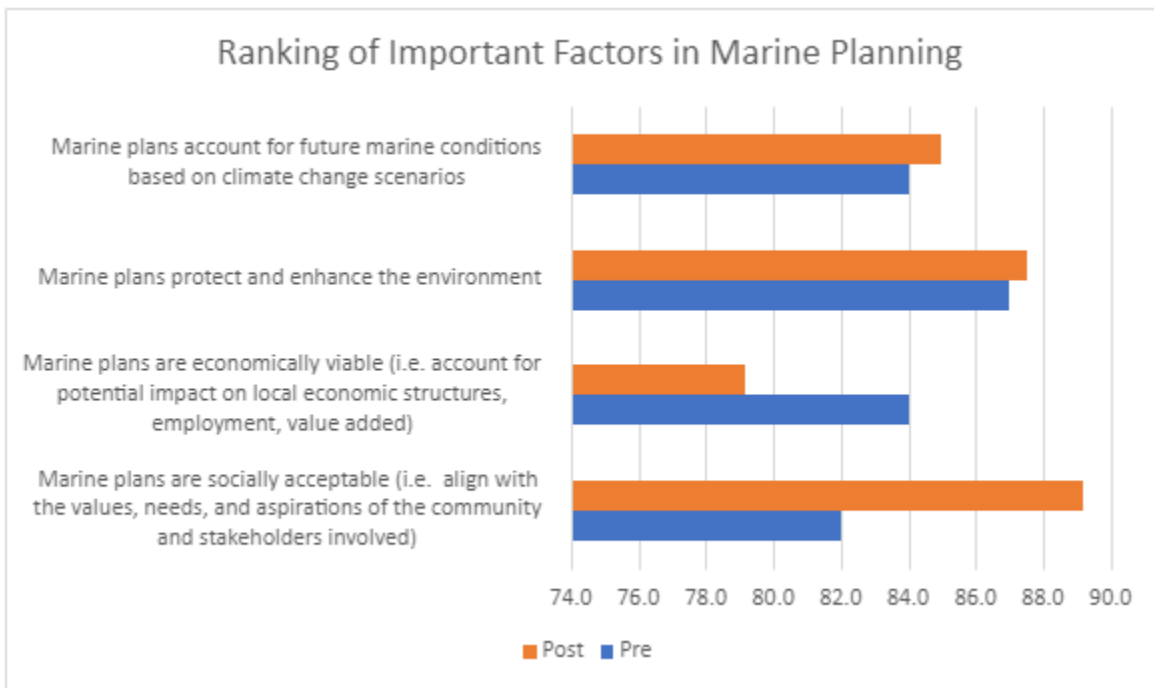
Despite the lack of statistically significant differences at the individual level, several participants felt that their understanding was improved after the workshop. Table 6 below reflects participants self-assessment of improvement.

Table 6. Participant Self-Assessment of Level of Understanding for each Sector

Sector	Number (of 6) who felt their understanding of the likely impacts of climate

	change improved for the sector
Fisheries	4
Aquaculture	3
Marine Conservation	4
Tourism	1
Recreation	0
Transport	0
Shipping	1
Renewables	1
Oil and gas	0

How have the participants' perceptions of the importance of 4 key considerations for marine planning changed as a result of the workshop?



Note. Responses on a scale of 100 (100 indicating highest importance)

Figure 3. Pre- and post-session average ratings given to key considerations of marine planning

Figure 3 shows the average pre- and post-session ratings of four considerations that are relevant to marine planning. Each participant was asked to rate each consideration from 0 to 100. The average rating of climate change scenarios, environmental enhancement, and social acceptability increased, while the rating of economic viability decreased.

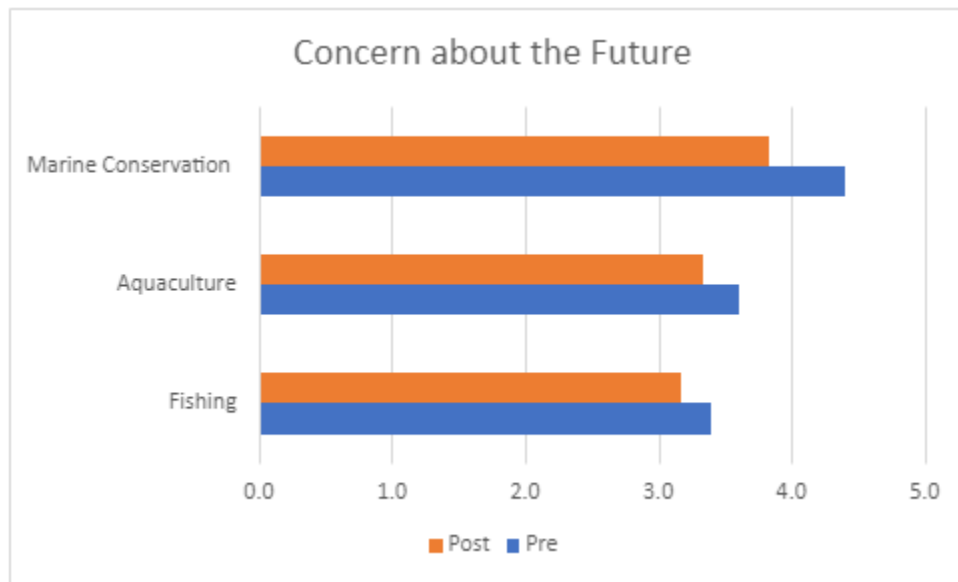
Further, the average range of ratings, which stretched from 82 to 84 (2 points) before the session, became more dramatic (greater in range), stretching from 79 to 89 (10 points) after the session.

Statistical analysis reveals that change in only one of the considerations, social acceptability, is statistically significant at the per-person level. The average per-person change was an increase of 9 points on the rating scale, a change which is statistically significant in a one-tailed test ($p < 0.10$). There was no statistically significant change for any other consideration.

A majority of respondents agreed strongly with the statement 'management decisions that consider Climate Change can have different implications for different sectors', both pre- and post-session.

Consistent with the lack of statistically significant differences at the individual level, most participants felt that their ratings of each consideration stayed the same.

How concerned are participants about the future of 3 sectors key to MSPACE?



Note. Responses on a scale of 1-5 (1 not at all – 5 completely)

Figure 4. Pre- and post-session on concern for the future of 3 sectors Fishing, Aquaculture and Marine Conservation

Figure 4 shows that the average group concern about the future of each sector decreased after the workshop, compared to before the workshop, in all 3 sectors of key interest to MSPACE.

Statistical analysis reveals no statistically significant differences in the average per-person change in concern about the future for any sector.

Consistent with the lack of statistically significant differences at the individual level, only a few participants felt that their concern was lessened after the workshop. The table below reflects participants self-assessment of a lessening of their concerns.

Table 7. Participant Self-Assessment of Level of Concern about Future for each Sector

Sector	Number (of 6) who felt their concern about the future was lessened
Fisheries	2
Aquaculture	2
Marine Conservation	3

Additional Comments from Participants

Pre-Session

Any further comments?	I personally feel that having a marine plan in place is really useful tool for stakeholders to discuss and understand sustainable use of the coastal waters, and the ecosystem services they provide. The scale of the plan should be appropriate to the users of the plan. It should feel relevant to them in terms of their community and livelihoods. Climate change impacts is a key part of the planning and knowledge sharing.
	Would be interested to find out whether predictive models will account for the adaptations and mitigation strategies employed by industries aimed at limiting impacts to species and habitats, when operating in areas that are more susceptible to climate change.
Post-Session	
What did you find most useful about workshop?	It was useful to focus on trying to understand how to incorporate climate change impacts more explicitly into the planning process for Orkney region. Thank you
	It was useful to see all of the work that has been taken. It was also useful to be able to share the concerns between the different sectors in the workshop. I personally wasn't able to attend, but having heard the discussions following this workshop, it's clear to see that meaningful conversations were carried out to share both the concerns and work already taking place within each of the industries (Fisheries, Conservation, Aquaculture) to alleviate climate effects.

Conclusions

The Orkney workshop was the first of a series of four programmed workshops seeking to first present Climate Smart MSP Work Package progress to date and receive feedback on the outcomes and second to capture through an afternoon participatory session the participant perceptions of the fears, tradeoffs (preferences) and the metrics for these tradeoffs. Broader elements examined include underlying antagonisms, assumptions about other stakeholder questions, and the willingness to work together.

Each WP received constructive feedback after the WP presentation indicating participant engagement with the material and the usefulness of the information presented. Participants provided numerous suggestions to clarify and improve the proposed information documents, maps and scenarios.

The afternoon participatory session yielded concrete information around the fears, tradeoffs and metrics for tradeoffs although not as precise as hoped for.

The top 5 fears are focused on the negative outcomes and changes related to the anticipation of future scenarios and change, the limitations due to (additional and numerous) regulations, ocean health both in general and specifically for a sector activity such as fishing and aquaculture, the balancing of economic outputs and competition and neglected or dominant viewpoints.

Preferences and tradeoffs were concentrated around the themes of regulations, economic, industrial, specific trade and the marine environment.

Possible metrics derived inductively from participant comments ranged from elements linked to the sea space (amount dedicated to activity, freedom of movement, occupation of areas) to numbers of regulations, and the hierarchy of industries.

Broader considerations revealed the numerous underlying antagonisms between industries and linked to the governance process.

It is worth noting that this analysis does not (yet) take into consideration the notion of climate smart marine planning and how that was approached during the discussions. The discussions centered around marine planning in general and did not fully integrate the notion of climate smart elements that would enrich the planning process.

A number of suggested improvements for the morning WP presentations, the afternoon workshop session and logistics seek to build upon this experience for the following three workshops to come.

Pre and post survey responses indicate that the average perceived understanding of the group improved after the workshop, compared to before the workshop, in terms of the likely impact of climate change for Orkney on species and habitats of conservation value, aquaculture potential, and species targeted by commercial fisheries. The average perceived understanding of the group improved after the workshop, compared to before the workshop, in terms of the likely impact of climate change on the following sectors: renewables, recreation, tourism, marine conservation, aquaculture, and fisheries. The average pre- and post-session ratings of four considerations that are relevant to marine planning indicate that climate change scenarios, environmental enhancement, and social acceptability increased, while the rating of economic viability decreased. Finally, the average group concern about the future of each sector decreased after the workshop, compared to before the workshop, in all 3 sectors of key interest to MSPACE.

Overall, the outcome is constructive with engaged and interested participants.