

Sectoral Interactions Matrix

Results of the Review Panel

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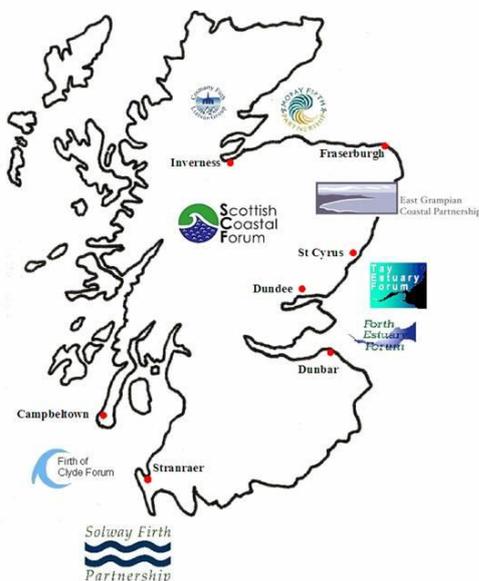
Acknowledgements

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1. Introduction

Over the next decade marine planning will be a cornerstone of Scottish coastal and marine policy. As legislated in Part 3 of the Marine (Scotland) Act 2011, a Scottish Marine Plan will be delivered at the national level with the ability to form regional planning partnerships to help deliver the National Plan. Planning will be a powerful tool for the management of the marine and coastal environment and at its core is a process for developing an integrated approach across diverse users of the sea. Identifying a common vision for the marine environment will be an important element of planning at all scales, and will require improved data on marine uses and interactions. It is important that any initiative minimises conflict and facilitates opportunities for co-existence of sectors working in the coastal environment.

While the structure, content and institutional design of marine plans is being formulated, the Scottish Government through Marine Scotland is keen to build an understanding of the regional dynamics of coastal economies and communities. One element of a successful planning approach is understanding the nature, extent and intensity of interactions amongst coastal users and identifying potential conflicts and opportunities that can inform the planning process. This information, combined with increasing knowledge about the marine environment together with an evaluation of the ability of existing management mechanisms to help address conflicts or enhance synergies, will help inform future marine planning.



A ‘Sectoral Interactions Matrix’ (SIM) was an approach first developed by the Clyde Forum SSMEI pilot. The study formed a key element of the Firth of Clyde marine spatial plan and was based on strategic environmental assessment techniques to identify different sectors and activities and classify their perceived interactions both positive and negative. Marine Scotland commissioned an extension of the SIM project that was steered by the Scottish Coastal Forum and implemented by Local Coastal Partnerships (LCPs). This activity had the aim of collecting broad scale data on the nature, extent, intensity and compatibility of interactions among key sectors and activities on around sites of the Scottish coastline. This report reviews the outcomes of the project and presents the results of a SIM review workshop with LCP participants.

2. Conceptualising the problem, research design and working with stakeholders.

In this session the panel focused on the following questions:

- How did you (the LCP) approach the initial brief by Marine Scotland?
- How did you conceptualise the initial problem?
- What were the steps used in research design - identifying and approaching participants, setting up interviews, and ensuring quality of information?

The brief, as understood by the LCPs was to compile a sectoral interactions matrix based on perceptions of interactions among key stakeholders in each relevant region building upon the work done by the Clyde SSMEI. The brief was minimal in terms of specific methods or outcomes and as a consequence each LCP approached it in different ways, dependant on the local mix of sectors and actors, spatial coverage across a region, and the LCP approach to partnership working.

The panel noted some ambiguity in the initial conceptualisation of the problem and in research design. This was attributed to a (deliberate) lack of guidance from Marine Scotland in order to encourage experimentation by the LCPs. It was noted that the conceptualisation of the project was slightly different between Marine Scotland and partnerships. LCPs have a deeper understanding of interactions within their regions and saw the exercise as a means to formalise and capture these relationships. LCPs felt that Marine Scotland was encouraging a data gathering process that was a precursor to marine planning. Despite these minor variations, the approach was highly supported by the LCPs who were interested in developing tools and solutions to marine planning.

The SIM was described as a 'snap shot' assessment of regional stakeholder interactions, and the information should not be relied upon, at least in its current form, to drive marine planning decisions. The lack of a rigid methodological guide at the outset of the study allowed LCPs freedom in experimenting and choosing an approach that worked for them. The range of innovative regional analyses developed provide insight into sectoral interactions in 2010-11 but should not be used as the basis of a national comparison.

The classification of broad sectors was comparable across the LCPs but the specifications changed at finer scales. For example, most had re-classified sub-sectors, and subsequently the matrices, based on the current (and in some cases predicted future) activities within an area making comparison difficult. A useful approach taken by the Forth Estuary Forum was that all sectors were retained even if deemed irrelevant. This approach would help consistency in interpretation. Removal of sectors was, with the exception of the Moray Firth Partnership, based on the knowledge of the LCP officers, which is a quick and relatively easy approach but may mean lesser known sectors are excluded. The MFP approach of public consultation to define the sectors was seen as resource intensive but beneficial. Future efforts would benefit from increased consistency of sector identification, data collection, and research techniques such as interviews. In addition the process should seek

alignment with the requirements of the Data Protection Act to ensure standards of rigour and confidentiality are preserved.

The LCPs took an individual approach to identifying respondents, working with them in person or over the phone to score the matrix, and scoring across a qualitative scale across a range of categories (neutral, competition, conflict, incompatible, positive). All LCPs moved early to define the categories and some expressed discomfort with the inherent terminology, particularly use of terms 'conflict' or 'competition' but this differed across the partnerships. LCPs varied in selection of interview respondents – some approached representative organisations, some approached single individuals, and some approached groups to score interactions. When multiple groups were approached a consensus on the interaction was sought.

Some consistency in approach will be required in the future. Some LCPs expressed that stakeholders were reluctant to answer if they were in conflict with another sector, that the response was influenced by the relationship with the interviewer (i.e., trust) and whether it was a face to face response or a phone / postal response. There is no evidence that the slight differences in method have caused material variations in results within or between each partnership. In terms of the selection of respondents, no partnership randomised the selection process, though it is difficult to conceive an effective method for doing so in the circumstances. Users of the matrix results should be aware of how non-random selection can cause distortion, even though there is no evidence it has prejudiced the collection of accurate data in this case. It was noted that a particular problem arises when stakeholders with material input (e.g. MoD) do not participate. Further development of a common standard to define how organisations are targeted for a response and how to ensure the 'right people' within them are speaking on their behalf would be appropriate.

The partnerships preserved a large and valuable amount of metadata for each interaction noted – the contextual details – and this may prove useful for future analysis. Metadata is important when making use of the results because it is clear that the matrices themselves paint too simple a picture – the magnitude, duration and type of interactions can vary enormously on a small scale. Generally, the metadata is spatial though there are some relevant chronological details (e.g. when the interaction occurs only at certain times of year, or when timing means that a potential interaction does not usually occur). This project is a precursor that will support more detailed marine spatial planning efforts.

Peer review conclusions:

- The open and flexible approach allowed LCPs adjust the brief to the resources and expertise of the LCP, to experiment with different approaches and to give Marine Scotland the opportunity to assess which approach is more suited to their needs.
- Despite differences of approach there were obviously many similarities in method and thoroughness in stakeholder engagement throughout the process.
- Further development of a common standard to define how organisations are targeted for a response would be appropriate.
- Training in interview techniques, data storage and analysis would have been useful at the outset to ensure a similar approach was taken across the LCPs.

- Generation of data baselines of interactions provides an excellent foundation for further research and support for planning. A challenge is to develop techniques to use the underlying the matrix in a planning context.

3. Collecting and analysing data

In this session the panel focused on the following questions:

- Do you think the classification and ID of marine users worked well?
- How did you gather, store, and analyse data on sectoral interactions?

This part of the workshop explored the way that data was collected, analysed and interpreted, particularly around the concept of classifying interactions in the matrix. Substantial discussion was given to the concept of conflict and how it was classified and dealt with in the matrices. There were subtle differences in each partnership's approach, with each selecting the most appropriate technique for their circumstances.

The Clyde SSMEI Interactions Matrix was used by LCPs as an initial guide and provided a reference point including approaches to classify sectors. All partnerships relied on interviews to obtain qualitative data but the methods (and responses) to obtain them varied between LCPs. Colour coding and nomenclature of individual cells was not uniform across LCPs which provides a barrier to a standardised national assessment. The most common interactions were generally 'competition' and 'conflict' but partnerships had no clear definition for each term and it was not defined consistently across partnerships. Colour coding of these categories gives a good initial idea of 'areas of concern' but does not qualify the problem e.g. is the conflict throughout the area, is it only for some of the year? The LCPs have obviously gathered relevant data to enable cross hatching to be developed which would give a clearer indication of the complexities and alleviate the sensitivities of some sectors which have been judged 'red' by others. An issue emerged when some stakeholders did not complete the matrix and results were missing. This underscores the importance of a standardised research strategy for how this should be dealt with, for example, using an expert based approach to identify and score any gaps.

There was no uniform attempt to assess the magnitude of critical interactions (e.g. whether it is simply 'inconvenient' or whether it poses a critical safety threat). Nor is it always clear, where 'competition' or 'conflict' were recorded, whether resolution was required or already in place. Both of these details would aid the development of policy responses and should be addressed in further iterations of the matrix. Despite the inherent uncertainties, overall, the panel felt that the responses were useful, representative, and advanced the state of knowledge in coastal stakeholder interactions.

The fact that conflict is a reality of coastal systems was acknowledged but there was common agreement that the matrices explored potential conflict more than actual conflict. Some sort of ground truthing should be considered to separate actual categories of interactions from perceived categories. While both are important, they should be identified to avoid the use of unnecessary management measures. Participants agreed that

interactions could advance towards conflict if they were not managed through communication, consultation, and active management. Conflict and competition, as terms, are neither discrete (all conflict is competition, but not all competition leads to conflict) nor neutral. Rethinking which terms are selected so they link to the way the data is used could improve future results. For example, an alternative categorisation for interactions could be: positive, none, interactions that are self managing (e.g. because each use takes place at different times or because users are pragmatic enough to resolve it), interactions that require external intervention to manage (e.g. an industry code of practice or regulation) and interactions that cannot be reconciled. Metadata, including spatial aspects, could contain information about location, timing, magnitude and other details. The value of spatial and temporal metadata collected under the matrix is not adequately conveyed in the current results. Many interactions result in conflict in only small parts of the overall study area and so the background data is essential in assessing the need for management. To ignore this aspect of the results is problematic as the occurrence of an interaction is of limited value unless you understand its context and the local knowledge it represents could be particularly useful. The panel notes the matrix is an advancement for understanding complex local interactions and further iterations should undertake more detailed analysis of 'space, time and scale' to support planning.

All LCPs identified that they had limited or no access to GIS which appeared to limit the amount of data that could be presented to stakeholders and limited the capture of spatial data. Compatible, or ideally, the same GIS system should be used by all LCPs. Overall, the panel concludes that the LCPs have delivered a very useful data set that will support regional marine planning.

Peer review conclusions:

- Different methods of classification and analysis preclude national assessment or comparison but offer a fine grained understanding of relationships at the regional scale. Future effort should ensure a consistent set of definitions and scoring approaches.
- A more nuanced understanding conflict (actual/potential; present/future) and the policy tools to respond to it should be pursued. This could involve additions to the matrix (e.g. cross hatching) or a separate analysis that refers to 'hotspots' identified from the matrix.
- Investment in GIS resources and training for LCPs will improve data quality, consistency and policy implementation.
- The LCPs have collected a valuable, novel and detailed dataset that provides a starting point for regional marine planning. The partnerships and panel agreed that the information should be used in the context of 'defining the questions that need to be asked' in the marine planning process as opposed to setting out spatial restrictions.

4. Presenting and interpreting results

- How do you ground truth and interpret results?
- Are the methods / results transferable or repeatable?
- How did you present results? Did this feed back to the public or to policy discussions?

A key theme that emerged was 'who was the matrix for - planners and policy makers or stakeholders? What are the core outcomes - a tool for strategists within Marine Scotland to understand conflict or a tool for the partnerships themselves to help prioritise management? The agreement amongst the partnerships and the view of the panel was that the exercise was focused on providing information for the planning process rather than driving stakeholder engagement. The perception was that the gathering of data for the SIM is a 'one way track' moving from stakeholders, sectors, and LCPs through to Marine Scotland. The panel agreed that future iterations should see a downward movement of the information back to stakeholders to be shared in a transparent manner that supports 'buy in' to planning processes. Ground truthing was seen as an important future iteration for finding not only solutions to conflict, but areas of opportunity for co-location. The panel observed that there had been limited ground truthing of the results with the exception of the Moray Firth Partnership. While participants checked views with individual respondents, approaches had not been made at the sector level. Partnerships felt that the information as collected would in many cases not be suitable for going back to stakeholders at this time and a degree of repackaging and engagement would be required to explain how the matrix was developed and how it could be used.

There was considerable discussion of future presentation of results to stakeholders and what form it should take. Depending on the amount of supporting data, the idea of being able to click on a particular cell and bring up relevant spatial and temporal information and information on the frequency and level of impact would be of benefit. Where conflict has been identified for a particular interaction, whether it is an economic or environmental conflict could also be identified. Positive interactions could be presented as opportunities and negative interactions considered as hard (incompatible) or soft (conflict, competition).

The panel noted that the interpretation and messages to planners and stakeholders is a critical point. There should be avoidance of blanket statements concerning conflict, e.g. "there are conflicts between two general sectors" (e.g. MOD vs Fisheries) and any conflict should be interpreted in the appropriate context, including the scale that it occurs and the policy response. For example, the nature of some conflicts may not be tractable at a local level and there may be recourse to national strategy or inter-governmental coordination. The context of the conflict is important, and identifying the spatial and temporal boundaries could lead to practical proposals for management. In addition the presentation of the results needs careful thought as there is a clear difference between sector-sector conflicts and conflicts between an individual and a sector (which may be one-sided and not representative of the wider picture).

The data collected for each partnership is to a large extent dependent on local circumstances. To be useful at a strategic and national level, the overall interactions matrices should be presented in a common format to give a quick visual image of where pinch points occur. The supporting data behind the classifications for each LCP will be the starting point for detailed management at a local scale.

A number of benefits were identified by the panel for different actors in the coastal planning system. For Partnership Officers there are benefits of forging deeper links with sectoral representatives and raising profile of partnership amongst them. For (future) Marine Planners and Marine Scotland it is highly relevant to see where conflicts exist and where opportunities can be developed for marine planning in the future. For Coastal Partnerships and the stakeholders themselves the SIM encourages better day to day management of conflicts by assessing where there is any kind of existing management and exploring potential accommodations with the stakeholders.

Peer review conclusions:

- Focus on opportunities for co-location as well as conflict management.
- The context of the conflict is important, and identifying the spatial and temporal boundaries could lead to practical proposals for management.
- The matrix should be iterated back to stakeholders, but not in its 'raw' form, it will need interpretation and explanation potentially through regional workshops.

5. Future applications

- | |
|---|
| <ul style="list-style-type: none">• Do you think SIM is a good tool for conflict management?• Do you think Partnerships have a role in this area?• What are your plans for future application of the SIM? |
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The panel concluded with a broad ranging discussion on future uses and iterations of the interactions matrix. It was felt that there was significant scope to expand the approach and explore many of the outputs in the context of emerging marine planning. The matrix has developed an excellent resource and baseline data set of interactions and should be used as a material input into establishing regional plans but it is important to be realistic about what a SIM can achieve.

The panel notes that the interactions matrix appears to have value in terms of contributing information to the development of marine spatial plans and ICZM and in the longer term inform the development of decision support tools. The matrix can quickly focus attention and prioritise interactions where policy reform is needed and can help highlight when spatial data is required for management of conflict. Current perceptions on interactions could be reviewed in light of forthcoming National Marine Plan objectives (sector aspirations) at a regional level in order to consider how future conflict can be managed or mitigated through marine planning. The panel agreed that the matrices show that where conflict exists, it is predominantly manageable, given the right foresight and policy tools.

Conversely, an important future use of the metadata is to explore the many positive interactions as a basis for developing complimentary multi-sector use of the coast.

For planners and policy makers the matrix offers a comprehensive data resource for building knowledge on use of the marine environment at scales from national to local. With further refinement, the tool can prioritise and inform effective zonation of marine areas for activity or development where spatial processes are relevant. In this context the SIM can identify negative/incompatible interactions, and translate these into 'hard constraints' for development guides or for when an appropriate policy response is required. Also, the panel reiterates that there is considerable opportunity through the data to explore the effectiveness of existing management regimes for current and future interactions. From the perspective of regulators and developers the matrix data can inform development proposals that minimise negative interactions with other marine users and provides comprehensive lists of local stakeholders for consultation.

There were substantial benefits to the LCPs going through this process. Producing matrixes cemented understanding between officers and regional stakeholders and raised the community profile of the LCP. It was a strategic exercise, as one LCP officer remarked, 'the matrix is a way of storing a wealth of data that can be used to help predict at what point changes or development of individual sectors will create conflict and which stakeholders need to be engaged to negotiate a resolution.' Additionally, the matrix was able to formalise tacit knowledge about local relationships held by the partnerships and sectors and enable this to be shared with Marine Scotland. The process allowed the coastal partnership officers to check the quality of stakeholder engagement with each sector and identify relationships that the LCPs could focus upon in the future. The process has demonstrated the implicit value of the local coastal partnerships themselves in terms of engaging with a large and diverse set of stakeholders and providing the interface between users and communities and the policy process.

A key output should be a guidance document for preparing interactions matrices that would be useful to ensure consistency across different parts of Scotland. A short document would explain research methods, underlying assumptions, matrix terms, nomenclature and guidelines for interpretation. Thinking specifically about the original request from Marine Scotland it might be possible to create a high level strategic interactions matrix at a national level which could be considered at the regional level by LCPs/MPPs. The national matrix could then be refined by stakeholders for their region, with supporting data gathered. The role of a national analysis would be to summarise and draw attention to particular interactions, their consequences and their management. A national map would outline or summarise regional sites of cooperation, competition, or conflict and specify the policy response to the particular interaction. For further detail users can drill down in to the more complex regional interactions. This naturally leads to the question of further opportunities connecting the matrices with GIS and linkages to policy documents such as the objectives for the national marine plan. Substantial work could be done on improving the visualisation of the data and consistency in terms of working with stakeholders and moving towards a nationally consistent matrix. It is important to note that participants highlighted that not all interactions can be mapped on a spatial basis and caution should be expressed in the translation from matrix cells into geo-coded data.

Peer review conclusions

- The SIM matrix has value in terms of contributing information to the development of marine spatial plans and ICZM and in the longer term the development of decision support tools. There is potential for a national workshop to explore the SIM outcomes and applications.
- The SIM should be connected to the objectives of the national marine plan
- While identifying conflicts is important, there are substantial opportunities for co-location of sectors.
- The matrix was able to formalise tacit knowledge about local relationships held by the partnerships and improve their regional delivery and profile.
- Exploring GIS will improve the message and decision support elements of the SIM.
- A guidance document for preparing sectoral interactions matrices would be useful to ensure consistency across different parts of Scotland.

6. Conclusion

The SIM process has delivered a platform from which regional marine planning can be explored and developed. It has provided a grounded view of where particular conflicts can occur and where planning could approach particular 'hotspots' or 'pinch points'. While in its present form the data should be used as a means of guidance, future iterations that are consistent across coastal regions (or regional planning units), capture metadata on positive and negative interactions, and have a GIS basis could provide a clear input into planning deliberations. It was noted by the panel that the local coastal partnerships have developed and delivered a piece of work that is novel, innovative and highly useful and were unanimously congratulated on their efforts. We look forward to future iterations of the matrix and supporting the development of regional marine planning in Scotland.