# Theme Session I Report 2024

## Accounting for climate change in marine spatial planning: Experiences and lessons learnt

Conveners: Kira Gee (Germany), Talya ten Brink (USA), Catarina Fonseca (Portugal)

**Session synopsis**

Climate change is widely understood to have significant impacts on marine space, and with this, marine spatial planning (MSP). Climate change is driving complex change in marine ecosystems and the provision of maritime resources and services, in turn affecting communities and sectors using maritime resources and space. New national and international responses have emerged to adapt to and mitigate climate change, e.g., by expanding offshore renewable energy generation or protecting and enhancing blue carbon habitats, leading to new patterns and potentially new conflicts of use. At the same time, there are many uncertainties associated with climate change, such as those linked to the availability and reliability of data and information, the variability in data and governance structures in different oceans, the interpretation of available data (including modelling results), the timescales of expected climate change impacts, as well as shifting societal preferences with respect to different ocean use priorities. A key question is thus how MSP can and should respond to these new challenges in a way that promotes sustainable ocean use.

The session was convened as a joint session of ICES WG Marine Planning Coastal Zone Management (WGMPCZM) and UNESCO MSPglobal. UNESCO MSPglobal is currently collating existing knowledge and experience with a view to supporting planners including climate change in MSP in a meaningful way, with a collaborative MSPglobal workshop planned for October 2024 and publications being developed for planners in the form of guides and case studies from different regions. The aim of the session was to support this work, as well as the scientific work of WGMPCZM, by drawing insights from multiple case studies, research, and practical experiences to provide a comprehensive analysis of how consideration of climate change (adaptation and mitigation) is changing MSP practices at multiple scales.

Specific questions discussed by the session included:

- What tools are being employed in different places and at different scales to anticipate and interpret the expected impacts of climate change for and with stakeholders?
- How are current generation marine spatial plans responding to the expected impacts of climate change in their respective localities? For example, how are they dealing with conflicts arising from the displacement of activities, data uncertainties, and the call for more flexible spatial management tools and approaches?
- Are mitigation and/or adaptation to climate change leading to (significant) changes in MSP practices and/or processes, and if so, in what way? For example, does the need for climate change adaptation lead to new stakeholder constellations or broader involvement in MSP? Are there shifting power dynamics, and how is MSP addressing these shifts?
- Is climate change adaptation mostly viewed as a challenge or also as an opportunity for MSP, e.g. for more inclusive processes or broader sustainability transformation?

**Block 1: Integrating climate change in MSP - Tools and approaches**

Literature reveals that climate change adaptation challenges are encountered at different stages of the MSP process. They are mainly related to data limitations, but also to institutional barriers, insufficient policy integration, and lack of stakeholder engagement. Economic considerations, such as valuing environmental services, are sometimes overlooked due to resource restrictions.

In the UK, the MSPACE decision-support system (DSS) uses climate modelling data to map the sensitivity and resilience of marine areas to climate change for different climate scenarios. This is then translated into climate-ready spatial advice for marine planning, e.g., on where to locate climate bright spots or refugia. But planners need more than climate change evidence; they also need socio-economic information on the impact of climate change and which sectors or groups might be affected where and in what way. Extensive stakeholder engagement has allowed for a mapping of the values policy makers and sectors place on different aspects of the marine environment across the UK.

A methodology based on Bayesian Belief Networks (BBNs) shows considerable overlaps in objective setting in Systematic Conservation Planning (SCP) and ecosystem-based MSP processes, pointing to opportunities for integrating conservation and restoration objectives in MSP. The method can also be used to highlight shortcomings as BBNs can not only predict the chance that a topic is deemed relevant in a given MSP process, but also improve the likelihood that objective setting has been used in practice.

In Norway, introducing offshore renewables is creating new spatial conflicts. There is a significant overlap between fishing and planned/suggested offshore wind farms; there is also significant interest in expanding offshore aquaculture. One of the main challenges is still how to address overlapping demands and needs in several sectors.

Integrating climate change in MSP plans may be more about asking the right questions rather than having ready or transferable answers. An important question is, what is the role of MSP in climate change adaptation and mitigation relative to other approaches, and what is reasonable to expect from MSP within its respective mandate? There are no universal solutions, but possibly universal questions and context-specific solutions.

**Block 2: Climate-smart MSP in practice - Country experiences**

Integrating climate change in MSP is still a learning process for most countries. An eMSP study in North and Baltic Sea countries explored climate smartness as an example of environmental policy integration, while the MSP GREEN project systematically analysed how MSP translates EGD objectives into planning policies. Climate change policy is not fully integrated in MSP, and EGD objectives are included in a very site- and context specific way, i.e., focused on a specific aspect only rather than considering all EGD objectives.

In England, incorporating climate-smart in the vision and objectives is an important goal for second generation marine plans, but there is recognition that this will be dependent on Government priorities. One of the challenges is how to actually incorporate modelling into planning, and if planners have the skills to use modelling results. Italy is taking an incremental approach to MSP with three main maritime areas for planning. So far, there are few practical solutions in place for addressing climate adaptation in these plans, revealing considerable gaps between conceiving climate-smart MSP solutions and implementing them as part of practical planning.

**Block 3: Anticipating changes in biodiversity for MSP**

Climate refugia are increasingly presented as an anticipatory spatial management tool for MSP. A recent study on megafauna concludes that species richness alone is not enough as a criterion for designing climate refuges. Climate refuges should be established for areas that will retain their functional diversity even if they are foreseen to lose species.

A study in the UK investigated whether climate change will make the UK more or less suitable for certain species. Rather than looking at averages, it is important to look at each species as it may be small local areas that will become more or less suitable habitat in future. Adaptive planning is necessary to allow species to shift, which means identifying barriers to movement and suitable management options becomes increasingly important.

In the Mediterranean, a systematic conservation planning exercise was carried out to enable protection of VME under scenarios of ongoing climate change. The resulting spatial information can be integrated in MSP.

At a general level, there is often a mismatch in scale between climate change and conservation; approaches are also context-specific and do not always look at the broader regional context, leading to disconnected climate-smart protected areas. Ways forward could include prioritising transboundary collaboration, emphasising connectivity in designing networks, prioritising cross-realm ridge to reef approaches, and ensuring transferability so that data-poor regions like the high seas can also benefit.

**Block 4: Anticipating climate change - Practical solutions**

Two very different presentations focused on the role of MSP in supporting marine carbon removal and securing a future for sustainable and climate-resilient small-scale fisheries. For marine CO2 removal, key questions are how to assess the risks and consequences of operational deployment (including, e.g., the impact of proposed technologies on productivity and fish stocks), how to weigh the potential benefits of new technologies against the pressures they are likely to cause, and how to include climate change issues in local permitting decisions. Co-existence of mCDR installations with other uses should be a given.

Lessons from Finland show that sectors play an important role in validating scientific input and modelling results, and that a safe and trusted space is needed for sectors to be heard. As in the previous block, a lesson was that modelling is important, but that ultimately, fishers should decide on the location of their important places for the future. Checking the outputs of the process with stakeholders was found to be helpful. Generally, MSP needs to tread a careful path between adaptability and stability in order to gain and retain the trust of old/new and stronger/weaker stakeholders.

**Block 5: Governance for climate smart MSP**

There are specific challenges faced by SIDS like Dominica in developing climate-smart MSP. Dominica's Coastal Master Plan incorporates risk assessments and climate adaptation measures (more than mitigation measures) and CC measures derived from national policies are reflected in the plan. However, several barriers prevent the implementation of the plan, such as limited resources. Globally, there is growing interest in blue carbon as a nature-based solution. Several countries have included blue carbon in their Nationally Determined Contributions (NDCs), and MSP can help accelerate the implementation of these commitments. Key issues include land-sea integration and the development of multi-level governance which are essential to accommodate new uses like offshore wind farms. Political reliability is also an issue in the context of forward planning. In order to govern to achieve climate-smart MSP, there is also a need for better cross-municipal planning and improvements in data presentation to support decision-making.

**Conclusions**

Climate change is only one challenge among many for marine planners. Planners need tools to enable them to make no-regret decisions, such as locating climate hotspots and refugia in the face of rapidly developing marine industries. To help planners make such decisions, scenarios are needed that integrate environmental change and human activity, e.g., anticipating not only ecological shifts but also future states of sectors, more general economic change, or changes in how human activities interact with each other.

Scale and resolution are an issue for scenario work as regional or global models often cannot be applied locally where climate smart MSP solutions are needed. Scenarios need to be reliable, i.e., based on a robust data and information, acknowledging that different sectors work to different timescales and may have a very different knowledge base. The precautionary approach needs to be strengthened to deal with uncertainties in scenarios. Better use of evidence and removing barriers that hinder the uptake of climate data and information is important, and more resources are needed to better integrate science tools in decision making. Most importantly, monitoring is essential to allow for adaptive planning, including understanding of what works.

It is still unclear under which circumstances climate change adaptation can be viewed as an opportunity and how MSP can contribute to fair and just transition when, where, at what scale and with what end goal in mind, especially since not all pressures experienced by communities are related to climate change. Meaningful ways thus need to be found to involve groups in building climate-smart MSP, acknowledging that local needs may differ, and that MSP may need to think in low resolution to find specific solutions to more general questions.

Within existing governance structures, it is still proving difficult to make climate change a cross-cutting issue. In some regions, climate change may well compound political conflicts, including transboundary conflicts. The long-term political impacts of climate change are difficult to anticipate yet strongly affect preparedness and resilience, and with this the potential of MSP to anticipate developments. It is therefore essential to understand the context in which maritime spatial plans are being used. What decisions are effectively informed by the plan in what way, and how can this contribute to climate change adaptation and mitigation? Modelling is likely to play an increasing role in making climate-smart decisions in transboundary contexts, such as forecasting the shadowing effects of offshore wind farms across borders.

As many national governments increasingly prioritise renewable energy goals, modelling will be important to consider the impacts of these developments. Different models generate different types of knowledge, each with its own specific merits and associated uncertainties. These need to be communicated and understood by conservation managers and MSP planners. For MSP to make best use of the wide range of modelling results, planners need to become more dedicated addressees. Some standardisations of data and methods could also be useful, especially in the context of transboundary MSP. Scientists should understand that even the best modelling results only serve as inputs for discussions, e.g., on where to place climate refugia. Research and other kinds of knowledge area also included in decision-making. A combination of climate refuge identification and cumulative pressure analysis would help planners to identify management options, as would the identification of safe “no go areas” for now. Generally, closer links between MSP and SCP/conservation would be useful to support adaptive management, including the development of dynamic area-based approaches to conservation that can then be supported by MSP. Monitoring underpins all forms of knowledge generation and should therefore be prioritised.

As MSP processes are maturing, countries increasingly see MSP as an integrative platform and “safe space” for ongoing stakeholder involvement and discussion. Such safe spaces will become more important as sectors will want to play a stronger role in validating scientific data and modelling results based on their own information and knowledge. Particular attention needs to be paid to smaller sectors to ensure they are equally heard and valued in such processes. Transboundary platforms and exchange need to be strengthened. Scenarios are useful formats to discuss the opportunities and challenges arising from different planning decisions in national contexts and internationally, as well as implications arising from new and emerging technology such as mCDR. More research is needed on the ecological and spatial impacts of such new technology.

Ultimately, MSP is a tool to deliver political priorities which can and will change. Planners thus need to “sell” a plan to politicians (via language and communication) in a way that increases the longevity of the plan, in particular with respect to climate change. This may require more evidence on the tangible impacts of a plan and understanding of how the plan furthers political goals.