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# MSPACE

## Recommendations

# East Marine Plan

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**MSPACE**  
Marine Spatial Planning  
Addressing Climate Effects

# MSPACE

# Recommendations

# East Marine Plan

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**MSPACE**  
Marine Spatial Planning  
Addressing Climate Effects

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# 1

## What is MSPACE?

The Marine Spatial Planning Addressing Climate Effects programme (MSPACE) is a highly integrated, multidisciplinary and co-created research initiative, driving forward capability in designing and implementing economically viable and socially acceptable climate-smart marine plans (MSP) (i.e. marine plans that promote climate change adaptation and mitigation). MSPACE was designed to support the ambitions of government policy, the industrial sector, and communities to ensure sustainable management of marine resources and improve the marine environment for the next generation.

We co-created and explored with end-users alternative spatial management scenarios through which changes in marine space uses could enable climate change adaptation (and mitigation) for nature and people. Scenarios focused on actioning opportunities for climate-resilient conservation, fisheries and aquaculture, within the broader lens of marine planning and the many objectives for use of marine space held within the four MSPACE case study planning regions, as well as the wider push to deliver net zero in the UK.

## 2

# Projected climate change impacts in the East Marine Plan area

MSPACE first delivered a UK-level synthesis of projected impacts and opportunities that climate change will bring to our marine and coastal waters (Queirós et al., 2024). Supported by the UK Marine Climate Change Impacts Partnership (MCCIP, 2023), we assessed state-of-the-art climate change modelling projections for marine species and habitats, to help identify possible climate change adaptation (and mitigation) pathways for UK waters (Queirós et al., 2024). We considered these results alongside the current distribution of seabed effects by sectors such as fisheries and dredging based on analyses undertaken in the UK for OSPAR and ICES (Sciberras et al., 2023). Providing a technical evaluation of our confidence in all modelling datasets used (Kay et al., 2023), we were able to make recommendations towards climate-resilient management of fisheries, aquaculture and marine conservation, through the lens of Marine Plans (Queirós et al., 2024). The main results for the East Marine Plan region were:

1. The EMP area is projected to be sensitive to climate change, with few long-term climate change refugia emerging for the three focal sectors (marine conservation, fisheries and aquaculture), when two possible emissions scenarios (2.4°C and 4°C mean global warming) are considered together. Climate change hotspots emerge across most of the planning area (Figure 1).
2. It is likely that current conservation sites may not continue to provide the same biodiversity benefits to designated features in the future as climate change unfolds across the region. This is due to the extensive distribution of climate change hotspots found to emerge for benthic and pelagic habitats, and benthic and pelagic megafauna, throughout the planning area.
3. Refugia for habitat conditions promoting carbon sequestration (i.e. “climate services”, Benyon et al., 2020; Flavell et al., 2020) emerged across most of the planning area, including some areas with comparatively high organic carbon content such as the Outer Silver Pit. These areas hold promise regarding the siting of protected areas that could help deliver resilient climate change mitigation.

Spatial datasets documenting the main results can be found [here](#).

## 3

# Exploration of alternative spatial management futures for the East Marine Plan area

Due to the extent of climate change hotspots identified when analysing results using a mean global warming of 4°C (RCP8.5), we focused the development of adaptation strategies for the EMP region by considering a mean global warming future of 2.4°C only (RCP4.5, in line with current commitments to the Paris Agreement). Based on identified opportunities for adaptation under this emissions scenario (Queirós et al., 2024), MSPACE co-created and explored four alternative hypothetical spatial management scenarios with case-study relevant end-users (Talbot et al., 2025). We started with:

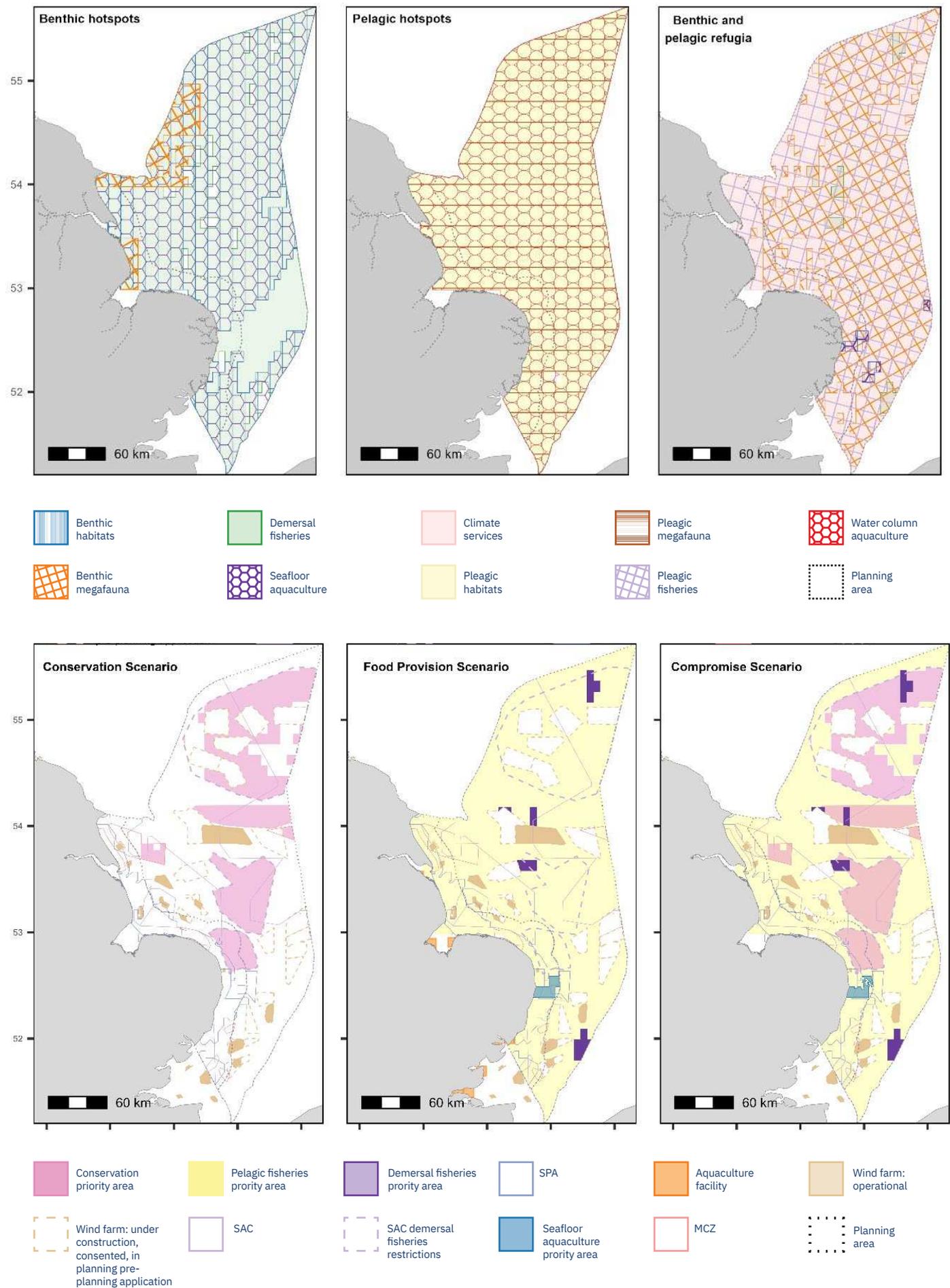
**Business as Usual:** represents the current distribution of marine activities and conservation in the planning area, for which climate impacts were estimated and included in the [MSPACE Early Warning System](#) (Queirós et al., 2024). This scenario is contrasted with the **Baseline**, for which estimates are also provided, excluding climate change impacts.

Three more climate-smart scenarios were co-created and explored: these used climate change refugia (areas where particular sectors are estimated to have low sensitivity to climate change, Section 2) and targeted the development of regional opportunities for climate change adaptation or resilience for particular sectors, based on changes in use of marine space (i.e. interventions).

**Conservation:** changes in spatial uses maximise adaptation outcomes for conservation.

**Food Provision:** changes in spatial uses maximise adaptation for fisheries and aquaculture.

**Compromise:** considers outcomes for marine conservation, fisheries and aquaculture together, balancing overall adaptation goals in the region. This scenario was informed by prior assessment of the priorities of regional stakeholders with regard to marine space Talbot et al (2025).



**Figure 1: Business as Usual (BAU) scenario (top row) in East Marine Plan Area, showing the location of benthic (left) and pelagic (middle) climate change hotspots as well as all refugia (right), for different groups of species, ecological function or sectors, under RCP4.5. Climate-smart scenarios co-developed are shown in the bottom row of figures, highlighting identified priority areas for different sectors in different scenarios (titles). A summary of co-created interventions to support adaptation (and mitigation) is given in the table overleaf.**

**C1:** Avoid, minimise or mitigate extractive activities which could be incompatible with the conservation of priority areas for benthic megafauna identified in Dogger Bank, North Norfolk Sands and Saturn Reef and Haisborough, Hammond and Winterton SACs, and Holderness Offshore and Markham's Triangle MCZs.

**C2:** Avoid, minimise or mitigate seabed extractive activities or seabed disturbance, which could be incompatible with the conservation of a priority area for climate services identified in the Outer Silver Pit.

**FP1:** a) Avoid, minimise or mitigate proposals for uses of marine space which may be incompatible with access by the pelagic fleet to currently unfished areas, identified as pelagic fisheries priority areas. b) Avoid, minimise or mitigate proposals for marine space uses that are incompatible with access for demersal fisheries in those areas identified as demersal fisheries priority areas.

**FP2:** Avoid, minimise or mitigate proposals for activities that disturb the seafloor (or access to this) that could limit the development of seafloor aquaculture in the identified priority area for this sector.

**CM1:** Avoid, minimise or mitigate extractive activities or others which would be incompatible with the conservation of priority areas for benthic megafauna identified in Dogger Bank, Hammond, Haisborough and Winterton, North Norfolk Sands and Saturn Reef SACs, and Holderness Offshore and Markham's Triangle MCZs.

**CM2:** Avoid, minimise or mitigate seabed extractive activities or seabed disturbance, which could be incompatible with the conservation of a priority area for climate services identified in the Outer Silver Pit.

**CM3:** Avoid, minimise or mitigate activities that may be incompatible with access by the demersal and pelagic fleets to identified priority areas for the sectors.

**CM4:** Avoid, minimise or mitigate activities that that disturb the seafloor (or access to this) could limit the development of seafloor aquaculture in the identified priority area for this sector.

The summary of co-developed scenarios and their spatial interventions is given in Figure 1. Areas where changes to spatial management could lead to the use of climate change refugia to deliver climate change adaptation or mitigation for particular sectors are hereafter referred to as **Priority Areas**, and the proposed changes in management in those areas referred to as **Interventions** (Figure 1). The performance of each of these scenarios was then assessed against environmental, economic and social criteria which could then be used to compare the different scenarios.

The estimated environmental, social and economic outputs of the scenarios can be seen in Table 1, where results per scenario are given as the relative change on the Baseline. Environmental assessments in Table 1 rely on estimating the impact of climate change hotspots (Figure 1, Queirós et al. (2024)) on associated marine economy sectors for the BAU relative to the Baseline, as well as the effects of managing climate change refugia towards adaptation for nature and marine economy sectors in the three climate-smart scenarios (Figure 1). All economic and social metrics, as well as Greenhouse Gas Emissions, in Table 1 were estimated via marine-specific Input/Output tables and models for the UK and UK regions, created during MSPACE (Florido & Mair, 2025). A detailed narrative and methodological description for these analyses can be found in Talbot et al (2025).

Through the Food Provision Scenario we identified a small number of priority areas for demersal fisheries, a priority area for seafloor aquaculture, and an extensive priority area for pelagic fisheries, based on identified climate change refugia.

We found that although climate change hotspots were widespread for most sectors, even under the moderate emissions scenario RCP4.5, climate change refugia did emerge for climate services, benthic megafauna conservation and pelagic fisheries (Figure 1, top row). Accordingly, the **Conservation Scenario** (Figure 1) aimed to exploit climate services and benthic megafauna conservation refugia. As easy wins for spatial management, climate change refugia for benthic megafauna emerged in several already designated conservation sites and were highlighted as priority areas supporting megafauna adaptation (C1). Equally, a refuge for climate services in the Outer Silver Pit region (which is currently unprotected) was identified as a potential priority area for climate regulation, overlapping with an area with high carbon stock (C2). **Intervention C1** (Figure 1) could support the recovery and climate-resilience of sharks, skates and rays of conservation and commercial interest in the EMP area, as well as help fulfil the conservation objectives of the MPAs in which they sit.

**Intervention C2** (Figure 1) may limit direct carbon release and degradation of important carbon stocks from disturbed sediment (avoided emissions). Small additional economic losses attributed to interventions C1 and C2 relative to the BAU were much lower than the economic impacts estimated for the BAU when compared to the Baseline (no climate change; Talbot et al (2026), Table 1).

Through the **Food Provision Scenario** (Figure 1) we identified a small number of priority areas for demersal fisheries, a priority area for seafloor aquaculture, and an extensive priority area for pelagic fisheries, based on identified climate change refugia (Figure 1). **Interventions FP1,2** (Figure 1) could therefore help support climate-resilient food provision in the EMP area into the future, with substantial increases in jobs, wages and GVA (compared to BAU) predominantly driven by increases in aquaculture production (Talbot et al (2026), Table 1).

In addition, the **Compromise Scenario** combined interventions from the other two climate-smart scenarios to deliver a balance of adaptation aims (**CM1-4**, Figure 1). Identified benefits to the three focal sectors were included, and jobs, wages and GVA still increase under this scenario relative to the BAU, though to a lesser extent than in the Food Provision Scenario (Talbot et al (2026), Table 1).

## 4

# Social acceptability of hypothetical alternative spatial management scenarios

We tested the social acceptability of climate-smart scenario interventions (Figure 1) through online surveys of marine planning stakeholders. A link to take the survey was shared widely via stakeholder networks and institutional social media networks, and each respondent was required to enter their name and organisation name to ensure no one took the survey more than once. Once collected and validated, respondent names were deleted from the files and cannot be traced to their answers. During the survey, **respondents were able to access detailed information about the project and of co-created scenarios and their outcomes** (Talbot et al, 2026; and Table1). Among other questions, respondents were asked how acceptable they believed each hypothetical climate-smart scenario's predicted outcomes to be when compared to the predicted BAU outcomes (0-10 scale, with 0 being "not at all" and 10 being "completely"). There was then a free-text option to explain why one had rated the hypothetical scenario's predicted outcomes as they had. This two-question set (one question for the numerical rating, plus a second question for the free text) was asked once with only environmental outcomes available for comparison, and then again adding economic and social outcomes of scenarios. Of 112 unique and validated user responses, 30 answered the questions that relied on reading the information given, and 15 of these identified as being active in the East Marine Plan area. Their responses are summarised here, having been analysed using parametric and non-parametric methods (Reinhardt, 2026).

The small number of responses does not enable us to draw statistically significant estimates of differences or trends across respondents at the time of writing. However, examining the average responses and response differences across the 4 co-created scenarios, and between responses provided with and without access to socio-economic outcomes (Table 1) we observe that:

- On average, respondents showed higher acceptability for the climate-smart scenarios than the BAU (all three scenarios addressing climate change impacts).
- On average, respondents found the Conservation Scenario more acceptable than the BAU (6.1 +/- 2.4 (6.0 +/- 2.9), mean +/- standard deviation, with (without) social-economic evidence), while the Food Provision and the Compromise Scenarios were either marginally more or less acceptable than the BAU. This was true when each was compared to BAU and whether (or not) economic and social outcomes were presented alongside environmental scenario outcomes (Food Provision = 4.9 +/- 2.3 (5.3 +/- 2.3); Compromise= 4.1 +/- 1.6 (5.5 +/-2.4) ).
- On average, there was no difference in stakeholder acceptability of Food Provision and Compromise scenarios, when each was compared with the BAU.
- On average, respondents downgraded their acceptance of climate-smart scenarios over the BAU when presented with the economic and social outcomes of scenarios, though the Conservation scenario remained the most acceptable alternative to the BAU.

These results suggest that whether or not presented with social and economic information (alongside environmental information) about the hypothetical scenarios co-developed in the project to promote climate change adaptation and mitigation (Table 1), stakeholders of the East Marine Plan area would more likely accept the hypothetical Conservation scenario over all the other climate-smart scenarios. The fact that the Conservation Scenario ranking held when social and economic outcomes of the scenarios were presented alongside environmental outcomes (Figure 1 and Table 1) suggests that the economic cost of hypothetical adaptation interventions for nature (Table 1 and Storyline), though having a negative effect on acceptability strength and small negative economic impacts (Table 1), was not sufficient to steer end-users away from measures proposed to support nature adaptation and mitigation in the region.

## 5

# Multiple criteria decision analysis

Multi-criteria decision analysis (MCDA, Marcone et al., 2026) was used to help establish indirectly how the performance of co-created scenarios (Figure 1) aligns with the intrinsic preferences of stakeholders over the assessed list of criteria (Table 1).

First, an online survey was used. This MCDA survey mainly targeted experts already involved in MSPACE and marine planning in the EMP region, who were individually contacted by email. During an online interview, respondents were presented with background information about the project and the survey objectives, and answered questions designed to understand their preferences on the criteria list. ***Without knowing how co-created scenarios performed on assessment criteria (Figure 1, Table 1)***, respondents were asked to: rank criteria within categories (i.e. environmental, economic and social, Table 1); and to state how they perceived interactions between pairs of criteria (positive, negative, null, or “I don’t know”). They also answered questions designed to elicit their threshold (indifference to full preference) regarding the value of each individual criterion.

The MSPACE team then estimated scenario performance on each criterion (Talbot et al. 2026), which were combined into the scenario performance matrix (Table 1). The scenario performance matrix was then analysed together with preference information collected through the MCDA survey to rank scenarios accordingly (Table 1), using the Hierarchical-SMAA-PROMETHEE method (Arcidiacono et al., 2018). The preference and indifference relations of each respondent to each criterion elicited during the survey were used to indirectly compute individual’s rankings of the co-created scenarios. Those individual rankings were then aggregated to get a single global ranking of the four co-created scenarios for the EMP study area.

Overall, the intrinsic preferences of respondents from the EMP region were found to be better aligned with the Food Provision scenario (rank=1), and were consistently less aligned with Conservation scenario (rank = 4), with the compromise and BAU scenarios with intermediate ranks. These results suggest too that end-users in the EMP region want adaptation. However, their difference relative to the findings of section 4 indicates that intrinsic preferences of stakeholders with regard to spatial management scenarios supporting climate change adaptation may change when explicit evidence on environmental, economic and social criteria is made directly accessible. Specifically, how the preferred scenario was Food Provision scenario, without specific knowledge of the proposed interventions, but when evidence proposed interventions was presented, the preferred scenario became the Conservation scenario. Together, these results indicate that support for climate change adaptation (and mitigation) through planning is possible in the East Marine Plan, and that how and what evidence for proposed interventions is presented is especially important.

| Assessment criteria   |                             |      |  |              | Baseline* | Scenario performance matrix<br>(% change on Baseline) ** |                |            |     |     |
|---|-----------------------------|------|--|--------------|-----------|--|----------------|------------|-----|-----|
|   | Short name (used in survey) | Unit | Scenario design  | BAU          |           | Conservation   | Food provision | Compromise |     |     |
| ENVIRONMENTAL   | 1                           | a.1  | Climate-resilient MPA  | km2          | maximise  | 45964.07*  | -68            | -67        | -68 | -67 |
|   | 2                           | a.2  | Climate-resilient fishery area                                   | km2          | maximise  | 57823.48*  | 0              | -22        | 0   | -12 |
|   | 3                           | a.3  | Climate-resilient aquaculture area                               | km2          | maximise  | 54.13*   | -100           | -100       | 597 | 469 |
|   | 4                           | a.4  | Total greenhouse gas emissions                                   | kt CO2e/yr   | minimise  | 27.755*  | 1              | -3         | 437 | 332 |
|   | 5                           | a.5  | Potential for marine renewable energy                            | MW           | maximise  | 32652.7*   | 0              | 0          | 0   | 0   |
| SOCIAL  | 6                           | b.1  | Jobs in the food production sector                               | nr of jobs   | maximise  | 84.912*  | 0              | -2         | 503 | 384 |
|   | 7                           | b.2  | Job in the recreation and tourism sector                         | nr of jobs   | maximise  | 1*   | 0              | 0          | 500 | 400 |
| ECONOMIC  | 8                           | c.1  | Economic contribution of the food production sector (GVA)        | £ (millions) | maximise  | 33.016*  | 0              | -3         | 533 | 412 |
|   | 9                           | c.2  | Income in the food production sector (wages)                     | £ (millions) | maximise  | 17.718*  | 2              | -4         | 532 | 414 |
|   | 10                          | c.3  | Economic contribution of the recreation and tourism sector (GVA) | £ (millions) | maximise  | 0.024*   | -17            | -17        | 567 | 442 |
|   | 11                          | c.4  | Income in the recreation and tourism sector (wages)              | £ (millions) | maximise  | 0.018*   | 11             | 11         | 511 | 400 |
| Scenario ranking based on stakeholder acceptance of climate-smart scenario relative to BAU (without/with social-economic evidence, Section 4) |                             |      |  |              |           |  |                | 1/1        | 3/2 | 2/3 |
| Aggregated Scenario ranking based on implicit stakeholder preferences (Section 5)   |                             |      |  |              |           |  | 3              | 4          | 1   | 2   |

\*Baseline values give the current distribution of marine activities and ignore the impacts of future climate change.

\*\* Percent change on Baseline is calculated as: % = (100\*(Scenario criterion estimate / Baseline criterion estimate) - 100).

**Table 1. Criteria used to assess the performance of co-created alternative spatial management scenarios, and the mean acceptability (Section 4) and implicit preference of stakeholders of said scenarios (Section 5). "GVA" stands for Gross Value Added of a given sector.**

# 6

## Recommendations

### 6.1 Stakeholders in the East Marine Plan area want climate change adaptation

**We recommend**, based on our stakeholder surveys and knowledge co-creation, that the spatial management interventions developed during the MSPACE scenario co-creation – especially those developed in the Conservation and the Food Provision scenarios (Talbot et al. 2025) could be used to help address climate change climate change in the East Marine Plan region:

- Interventions C1 and C2 (Figure 1): could be used to inform priority setting by the Dep. for the Environment, Food and Rural Affairs and statutory conservation bodies, which could be supported by marine plan policies. The latter could help promote climate change adaptation for benthic megafauna (C1, Fig. 1), while mitigation through prioritisation of areas for the protection of seabed habitats delivering carbon sequestration (C2, Fig. 2) could also be encouraged through plan policies.
- Identified interventions FP1, FP2 and FP3 (Figure 1): could be used to help inform Fisheries Management Plans and be considered also as marine plan policies, towards promoting climate change adaptation for pelagic and demersal fishers, as well as for a potentially developing seabed aquaculture sector.

MSPACE found that there is support among regional stakeholders for some form of climate change adaptation. Surveyed stakeholders supported the adaptation measures considered in the hypothetical scenarios above the current status-quo and this supports the current Marine Management Organisation's response to issues and evidence identified in the East Marine Plan area (Core theme 3, Marine Management Organisation, 2025) which may lead to more explicit climate change considerations in the East Marine Plan. Our research suggests there is an appetite for this, and the type of climate change evidence produced in MSPACE (ecological, economic and social) can support the design of such measures.

### 6.2 Translating climate change evidence into metrics stakeholders can relate to is key to gather buy-in for adaptation (and mitigation) through marine planning

**We recommend** presenting EMP stakeholders with alternative specific spatial management interventions), including the status-quo (i.e. Business as Usual) during consultations on marine planning (as explored in Figure 1).

We co-created alternative spatial management interventions with planning stakeholders to support adaptation and mitigation and we measured that these interventions are seen by planning stakeholders in the EMP region as preferable to the status-quo.

We also recommend presenting estimates of the environmental, economic and social effects estimated for the spatial management alternatives consulted upon, as shown here in Table 1. This allows stakeholders to give informed, evidence-based views about specific changes to spatial management may be under consideration (as seen in Section 4), rather than expressing general views about which topics matter the most to them (Section 5). MSPACE found that by exploring concrete options for spatial management and evidence of their effects-especially, including ecological, economic and social evidence- may help challenge pre-conceived notions individuals may hold about the cost or impact of addressing climate change to them or their sector. This also presents a fairer and more transparent way to help decision-makers assess which decisions may best represent the interests of stakeholders, and thus what changes to spatial management that address climate change may be best placed to receive social licence.

### 6.3. Wider planning for adaptation and mitigation in England

We co-created alternative spatial management interventions with planning stakeholders to support adaptation and mitigation (Figure 1, Talbot et al. 2026), and we measured that these interventions are seen by planning stakeholders in the EMP region as preferable to the status-quo (Reinhardt 2026, Marcone et al. 2026). While such interventions are not currently regulated by Marine Plans in England, the current review of the Marine Policy Statement, and the current momentum for more spatial prescription in Marine Plans emerging from DEFRA's Marine Spatial Prioritisation Programme may allow for more explicit considerations of these strategies during the current review of the East Marine Plan, in the near future. The landscape of planning mechanisms is developing in England (e.g. Fisheries Management Plans (Joint Fisheries Statement, 2022)), and new opportunities are emerging for the designation of conservation sites as a consequence of compensatory measures to support net-zero (Department for Energy Security & Net Zero, 2025; Ward, 2022). In this context, **we recommend** that these different planning mechanisms must be well integrated with each other and with policies such as the East Marine Plan: this integration will be key to ensure that mutual objectives on adaptation and mitigation are supported well across that policy and governance structure. Indeed, recent research by this team highlighted that siloed approaches to policy and governance are key stumbling blocks limiting opportunities to deliver climate action through marine planning (Queirós et al., 2025). The MSPACE project invested in the co-creation of potential solutions to help address climate change in the East Marine Plan area. These solutions may become actionable through an enabling and well integrated policy and governance landscape.

# References

- Arcidiacono, S. G., Corrente, S., & Greco, S. (2018). GAIA-SMAA-PROMETHEE for a hierarchy of interacting criteria. *European Journal of Operational Research*, 270(2), 606-624. <https://doi.org/https://doi.org/10.1016/j.ejor.2018.03.038>
- Department for Energy Security & Net Zero. (2025). Strategic compensation measures for offshore wind activities: Marine Recovery Fund interim guidance.
- Florida, A. R., & Mair, S. J. (2025). The UK and Selected Regions Marine Focused Input-Output Tables (UK+SRMFIOT v.1). <https://doi.org/10.15124/a76f2b2c-3dd6-435c-abae-a82b5413cafa>
- Joint Fisheries Statement. (2022). chrome-extension://efaidnbmnnnibpcajpcglclefindmkaj/[https://assets.publishing.service.gov.uk/media/637cee048fa8f53f4af6850b/Joint\\_Fisheries\\_Statement\\_JFS\\_2022\\_Final.pdf](https://assets.publishing.service.gov.uk/media/637cee048fa8f53f4af6850b/Joint_Fisheries_Statement_JFS_2022_Final.pdf)
- Kay, S., Salliey, Aldridge, J., McEwan, R., Talbot, E., & Wilson, R. (2023). Technical report: validation of model datasets used in Early-warning system: Climate-smart spatial management of UK fisheries, aquaculture and conservation chrome-extension://efaidnbmnnnibpcajpcglclefindmkaj/[https://www.mccip.org.uk/sites/default/files/2025-01/5.%20MSPACE\\_Report\\_EarlyWarningSystem\\_Annex1\\_V3.pdf](https://www.mccip.org.uk/sites/default/files/2025-01/5.%20MSPACE_Report_EarlyWarningSystem_Annex1_V3.pdf)
- Marcone, O., Beaumont, N., Arcidiacono, S. G., Corrente, S., & Queirós, A. M. (2026). Multi-criteria decision analysis of regional stakeholder preferences for selection of alternative spatial management scenarios in support of climate change adaptation and mitigation in the UK. A report of the Marine Spatial Planning Addressing Climate Effects project.
- Marine Management Organisation. (2025). East Marine Plan Issues with Supporting Evidence Engagement Summary. <https://www.gov.uk/government/publications/issues-with-supporting-evidence-final-report>
- MCCIP. (2023). Futureproofing our ocean through climate-smart spatial management of UK fisheries, aquaculture and conservation. Summary Report.
- Queirós, A. M., Brink, T. t., Bas, M., Sweeting, C. J., McGuinness, S., Edwards, H., Talbot, E., Sørdaahl, P. B., Lønborg, C., Deecker-Simon, S. R., Elliott, M., Sardá, R., Fernades-Salvador, J. A., Pretty, C., Varjopuro, R., Virtanen, E. A., Gissi, E., Yates, K., Morf, A., . . . Aonghusa, C. N. (2025). The opportunity for climate action through climate-smart Marine Spatial Plannin. npj Ocean Sustainability.
- Queirós, A. M., Kay, S., Sciberras, M., Talbot, E., Kaiser, M., Wilson, R., Salliey, S., Marra, S., Matear, L., Fernandes, J., Aldridge, J., McEwan, R., Morris, K., McNeill, C. L., Nunes, J., Woodcock, K., Duncombe-Smith, S., Smith, A., Lynam, C., . . . Somerfield, P. J. (2024). Early Warning System: Climate-smart spatial management of UK fisheries, aquaculture and conservation. A report of the NERC/ESRC Marine Spatial Planning Addressing Climate Effects project. .
- Reinhardt, G. (2026). MSPACE Social Acceptability Survey. Technical Report.
- Sciberras, M., Marra, S., Morris, K., Kaiser, M., Matear, L., Woodcock, K. A., Duncombe-Smith, S. W., Smith, A. P., & Vina-Herbon, C. (2023). Marine Spatial Planning Addressing Climate Effects (MSPACE): Report of Task 1.3 Seabed Habitat Condition Assessment in the UK EEZ chrome-extension://efaidnbmnnnibpcajpcglclefindmkaj/[https://www.mccip.org.uk/sites/default/files/2024-04/SMMR\\_WP1.3\\_060323\\_with%20authors%20contributions.pdf](https://www.mccip.org.uk/sites/default/files/2024-04/SMMR_WP1.3_060323_with%20authors%20contributions.pdf)
- Talbot, E., Mair, S., Roca Florida, A., Marcone, O., Yannitell Reinhardt, G., Danahey Janin, P., & A.M., Q. (2025). East Marine Plan Storyline: Narrative of marine (spatial) planning scenarios explored in the MSPACE project.
- Ward, O., Aberson, M., Kirby, D., Chaverra, A., Roberts, A., Cross, K., Warner, I., Reach, I. (2022). Spatial assessment of benthic compensatory habitats for offshore wind farm impacts: Natural England Commissioned Report NECR443
- Reinhardt, Gina Yannitell and Danahey Janin, Patricia (2025) MSPACE Values and Preferences Methodology. Project Report. University of Essex. <http://doi.org/10.5526/err-00041405>
- Reinhardt, Gina Yannitell (2026) MSPACE Social Acceptability Report. Project Report. University of Essex. <https://doi.org/10.5526/ERR-00042632>
- Marcone, Océane, Beaumont, Nicola, Arcidiacono, Sally Giuseppe, Corrente, Salvatore, and Queiros, Ana M. (2026) Multi-criteria decision analysis of regional stakeholder preferences for selection of alternative spatial management scenarios in support of climate change adaptation and mitigation in the UK. A report of the Marine Spatial Planning Addressing Climate Effects project. <https://doi.org/10.5281/zenodo.18472784>

Marine Spatial Planning Addressing Climate Effects (MSPACE) was a highly integrated, multidisciplinary research project, designed to drive forward the capability of the four UK nations in designing and implementing economically viable and socially acceptable climate-smart marine plans. The project was co created with UK governments, the policy community, marine industries and communities to ensure sustainable management of UK marine resources and improve the marine environment for the next generation.

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The MSPACE initiative continues as an endorsed UN Ocean Decade Action, helping deliver the vision of the UN Decade of Ocean Science for Sustainable Development 2021-2030.



**MSPACE**  
Marine Spatial Planning  
Addressing Climate Effects