Welsh Government

Aligning Marine Planning with Climate-Smart Principles

Final Report

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Innovative Thinking - Sustainable Solutions

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Executive Summary

Global efforts to reduce carbon emissions to address climate change are driving the development and implementation of new policies, strategies and targets. In Wales, this includes net zero, The Environment (Wales) Act 2016[1], the declaration of the climate[2] and nature emergencies[3], and delivery of the Climate Adaptation Strategy for Wales[4]. With increased use of the marine space, and impacts of climate change more apparent, marine planning is a valuable tool to enable sustainable long-term use by providing opportunities for climate change adaptation and mitigation[5]. To achieve this, it is vital that marine plans are responsive to emerging evidence, approaches and tools.

In Wales, the Welsh National Marine Plan (WNMP) provides a statutory framework to guide sustainable use of the marine area, but evolving climate evidence, emerging sectors, and growing spatial pressures mean that opportunities exist for marine planning approaches to become more explicitly climate-smart. This study examines how climate-smart principles are currently incorporated within Welsh marine planning and identifies opportunities to strengthen policy, guidance, evidence, and monitoring to support long-term resilience. This has been done through a review of the existing marine planning framework in Wales, an evaluation of eight international countries' marine planning processes and stakeholder engagement through a survey and a follow-on workshop.

MSPglobal[6] identifies four key and interconnected elements as central to the development of climate-smart MSP:

- Ecosystem health;
- System interactions and dynamics;
- Social knowledge, equity and change; and
- Policies integration.

A review of the Welsh marine planning framework found that climate change is well anchored within the WNMP through Plan Objective 8 and its four supporting policies. However, as understanding of climate-smart approaches to marine planning have developed, there are now opportunities to further strengthen climate integration into the WNMP, evidence base, and implementation tools.

A review of eight countries' planning processes (Australia, Canada, England, Ireland, Norway, Scotland, Seychelles, and Sweden*)* demonstrates a clear global shift towards integrating climate mitigation and adaptation into marine planning. Common approaches include embedding climate considerations across all sectors, using advanced climate modelling tools, identifying climate refugia and bright spots (see Section 7), adopting nature-based solutions, and strengthening multistakeholder governance. Many of these approaches hold applicability for Wales, particularly in relation to cumulative effects assessment, spatial prioritisation, integration of natural capital, and clearer alignment of climate objectives within plan vision and policies.

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1 Environment (Wales) Act 2016

2 Welsh Government. (2019). Welsh Government makes climate emergency declaration. Available at: Welsh Government makes climate emergency declaration | GOV.WALES (Accessed 04 November 2025).

3. Welsh Parliament, (2021). Plenary. Plaid Cymru Debate: Climate and biodiversity. Available at: Plenary 30/06/2021 - Welsh Parliament (Accessed 04 November 2025).

4 Welsh Government. (2024). Climate Adaptation Strategy for Wales 2024. Available at: Climate Adaptation Strategy for Wales 2024 | GOV.WALES (Accessed 04 November 2025).

5 Climate change adaptation refers to the actions required to manage the effects of unavoidable expected climate change. Mitigation refers to actions to prevent or reduce greenhouse gas emissions to address the underlying causes of climate change (definition from Climate change adaptation and resilience in the UK - House of Commons Library).

6 MSPglobal (2021). International guide on marine/maritime spatial planning, volume 3: Climate-smart Principle. Available at: MSPglobal: international guide on marine/maritime spatial planning, volume 3: Climate-smart Principle - UNESCO Digital Library (Accessed 27 February 2026)

Across the review of international approaches, assessment of the existing Welsh framework, stakeholder survey, and workshop exercises, several consistent themes emerged for building climate-smart approaches in the Welsh marine planning framework. These related to:

- Potential for stronger and clearer policy direction;
- Greater coherence across associated planning frameworks;
- Strengthened integration and accessibility of climate-relevant evidence; and
- More agile, proportionate and user focused guidance.

Across policy, guidance, evidence and monitoring, the study highlights a broad consensus on the importance of a phased, proportionate approach to climate-smart marine planning. While some potential improvements would require formal re-planning of the WNMP (which would be subject to Ministerial priorities and approval), a significant number of enhancements could be delivered within the current plan framework through supporting guidance, evidence integration, update cycles and targeted communication.

In summary, this study has found that the Welsh marine planning framework already contains many of the elements required to support climate-smart marine planning. However, to remain effective in the face of accelerating climate change, there are clear opportunities to strengthen climate change considerations in policies, guidance, evidence, and monitoring and evaluation.

Collectively, these enhancements could help strengthen ecosystem resilience, and enable sustainable, climate-smart marine development over the long term, therefore supporting Welsh Government in delivering national climate targets, the Climate Adaptation Strategy for Wales, the Wellbeing of Future Generations Act, and the Kunming-Montreal Agreement[7].

[7] Convention on Biological Diversity (2024). Kunming-Montreal Global Biodiversity Framework. Available at: Kunming-Montreal Global Biodiversity Framework (Accessed 03 March 2026).

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1 Introduction

Global efforts to reduce carbon emissions to address climate change are driving the development and implementation of new policies, strategies and targets. In Wales, this includes net zero, The Environment (Wales) Act 2016[8], the declaration of the climate[9] and nature emergencies[10], and delivery of the Climate Adaptation Strategy for Wales[11]. With increased use of the marine space, and impacts of climate change more apparent, marine planning is a valuable tool to enable sustainable long-term use by providing opportunities for climate change adaptation and mitigation[12]. To achieve this, it is vital that marine plans are responsive to emerging evidence, approaches and tools.

The UK Marine Policy Statement[13] (MPS) provides an overarching policy position on marine planning between the UK administrations. The MPS flows from the Marine and Coastal Access Act 2009[14] (MCAA), which provides the legislative framework for marine planning in the UK. The MPS sets out a high-level consideration of climate change across sectors. However, since its publication, understanding of climate change pressures and impacts has evolved, and sectors have emerged with a direct relationship to climate change (e.g., hydrogen production).

The Welsh National Marine Plan (WNMP)[15] covers Welsh inshore and offshore regions and introduces a strategic framework of statutory planning policy to guide decision making by public authorities. The plan provides a high-level consideration to climate change on a non-mandatory basis and contains a specific climate change objective to 'Improve understanding and enable action supporting climate change adaptation and mitigation'. The WNMP has two general policies explicitly relating to climate change (SOC_10 Minimising climate change, and SOC_11 Resilience to climate change), complemented by further supporting policies (e.g., SOC_08: Resilience to coastal change and flooding, and SOC_09: Effects on coastal change and flooding). The WNMP is supplemented through formal planning guidance, underpinning evidence, the Wales Marine Planning Portal, and other supplementary planning material.

Several countries are incorporating climate-smart principles into marine planning. Climate change can bring an intensifying of physical impacts through storms, sea-level rise, and flooding. Species and habitat shifts can also occur. As a result, impacts can be felt across industry, ecosystems, and coastal communities. Welsh Government is therefore considering the role of existing policies, tools and guidance, as well as potential future approaches, which could be developed and applied to marine planning in Wales to embed climate-smart principles and assist with mitigating, adapting, and promoting resilience to climate change over the long term. Uncertainties exist regarding future emission levels, and the level of impact across sectors and locations, as well as the potential for nature-based

8 Environment (Wales) Act 2016

9 Welsh Government. (2019). Welsh Government makes climate emergency declaration. Available at: Welsh Government makes climate emergency declaration | GOV.WALES (Accessed 04 November 2025).

10. Welsh Parliament, (2021). Plenary. Plaid Cymru Debate: Climate and biodiversity. Available at: Plenary 30/06/2021 - Welsh Parliament (Accessed 04 November 2025).

11 Welsh Government. (2024). Climate Adaptation Strategy for Wales 2024. Available at: Climate Adaptation Strategy for Wales 2024 | GOV.WALES (Accessed 04 November 2025).

12 Climate change adaptation refers to the actions required to manage the effects of unavoidable expected climate change. Mitigation refers to actions to prevent or reduce greenhouse gas emissions to address the underlying causes of climate change (definition from Climate change adaptation and resilience in the UK - House of Commons Library).

13 UK Government, (2011). UK marine policy statement. Available at: UK marine policy statement - GOV.UK (Accessed 04 November 2025).

14 Marine and Coastal Access Act 2009

15 Welsh Government. (2019). Welsh National Marine Plan. Available at: Welsh National Marine Plan (Accessed: 19 November 2025).

solutions to contribute to mitigation. Adopted approaches must therefore operate at the right spatial scale and bring flexibility to incorporate new evidence and shifting sectoral and ecosystem needs.

Welsh Government has commissioned ABPmer to explore how marine planning in Wales can align with climate-smart principles to remain effective as climate change impacts exacerbate. The study will inform considerations on whether climate-smart approaches could be explicitly embedded within the WNMP and/or associated guidance to provide greater clarity and direction for development, whilst supporting its resilience, should the plan undergo a formal re-planning process or supporting guidance documents be updated.

The study objectives were to:

1. Identify and review marine and terrestrial planning policy approaches to climate change in other countries (not confined to the UK) and assess their potential applicability to marine planning in Wales.
2. Consider:
    a) the effectiveness of current climate change marine planning policy; and
    b) opportunities for how to further develop or improve these.
3. Consider:
    a) the implications of climate change for existing marine planning policy and tools; and
    b) outline options to maintain their currency and effectiveness.
4. Identify options for marine planning policy and guidance to support developers to ensure resilience of their development to climate change and to minimise the impact of development on climate change.
5. Consider tools or approaches which marine planning could adopt and or promote, to help reduce vulnerability to climate change in Wales.

2 Approach and Structure

The study objectives were captured in two key stages and synthesised into this report, as presented in the flow diagram, provided in Figure 1.

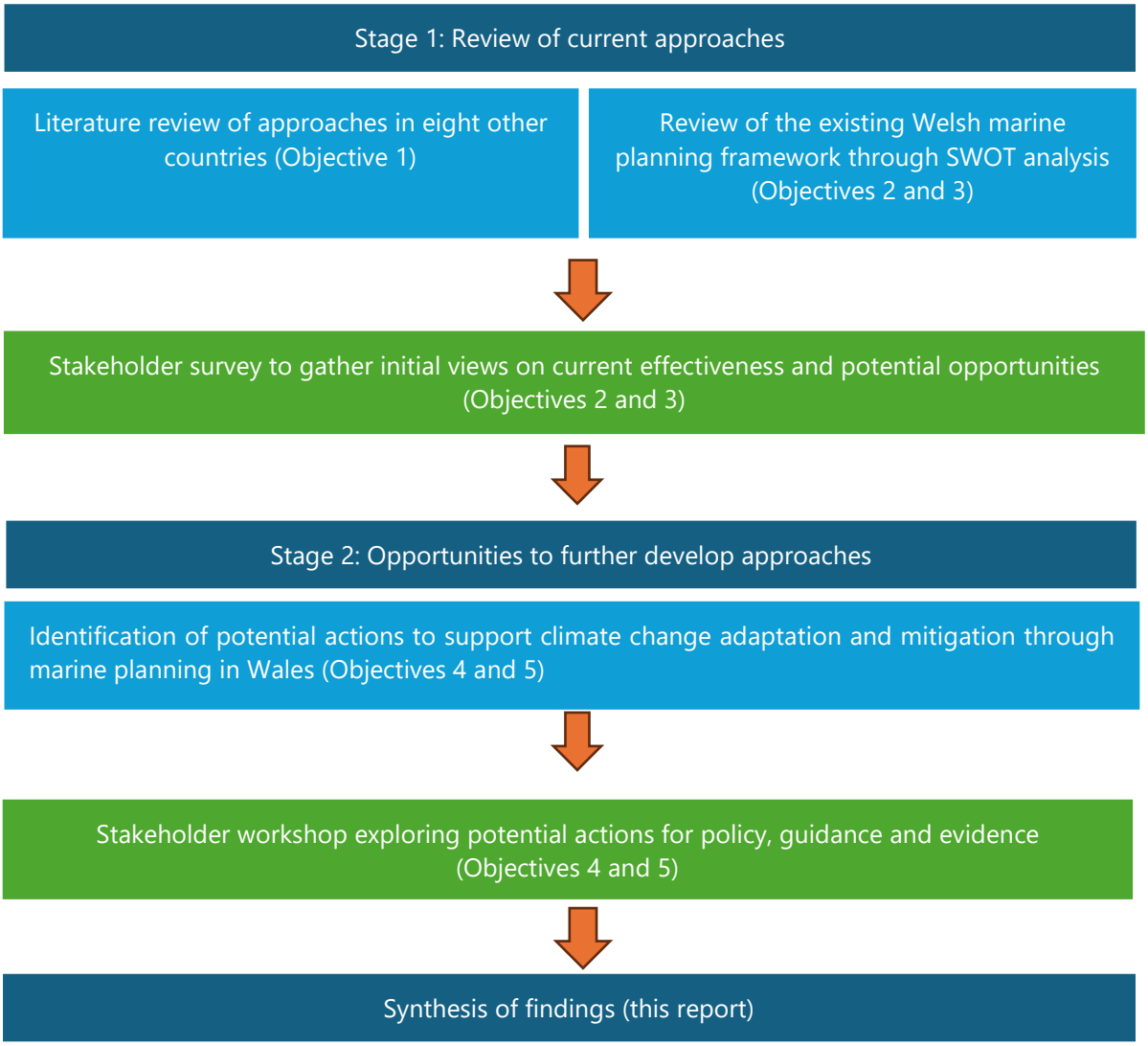


Figure 1 Flow chart of the study approach

Full details of the study methods and overall approach are provided in Appendix A.

This report synthesises findings across the two stages and five objectives. The remainder of the report is structured as follows:

- Section 3 summarises outputs from Stage 1, including:
  - Approaches applied in other countries (Objective 1, Section 3.1);
  - A review of the existing Welsh marine planning framework (Objectives 2 and 3, Section 3.2); and
  - Findings from the stakeholder survey (Section 3.3).
- Section 4 captures outputs from Stage 2, exploring opportunities to further develop approaches (Objectives 4 and 5); and
- Section 5 presents study conclusions and options for consideration.

Outputs of individual objectives which informed the study are provided in the following appendices:

- Appendix B presents the scoping outputs from the review of other countries (Objective 1);
- Appendix C details individual reviews of other countries (Objective 1);
- Appendix D sets out the current WNMP policies (Objectives 2 and 3);
- Appendix E presents the evaluation of the Welsh marine planning framework (Objectives 2 and 3);
- Appendix F displays the results of the stakeholder survey quantitative responses (Objectives 2 and 3); and
- Appendix G summarises outputs from the stakeholder workshop (Objectives 4 and 5).

3 Stage 1: Review of Current Approaches

3.1 Approaches to climate change in other countries

This stage of the work investigated how climate change considerations have been incorporated into marine spatial planning approaches in eight case study countries. The eight countries identified for research and agreed with Welsh Government, which are the focus of this report, were:

- Australia;
- Canada;
- England;
- Republic of Ireland;
- Norway;
- Scotland;
- Seychelles; and
- Sweden.

Full outputs of the reviews are provided in Appendix C.

A range of approaches were identified across the eight different countries. It is apparent that all the countries reviewed are seeking to implement further strategies and plans to ensure resilience to climate change and to mitigate the impact of development on climate change, promoting a more holistic and climate-smart approach to marine planning. Climate change considerations are often included at a high-level within the plans, but there are differences in how and when sector-specific climate change policies are applied.

The review of the eight countries has identified a range of themes with potential applicability to Wales. These are summarised in Table 1.

Table 1 Identified climate-smart approaches in other countries and their potential applicability to Wales

Theme	Key case study countries	Identified approaches	Potential applicability to Wales
Consideration of climate change projections/models	England, Scotland, Seychelles, Sweden	In England, the MSPACE programme[16] identifies potential climate refugia and hotspots. The Marine Management Organisation (MMO) are aware of the MSPACE initiative and its outputs. Further work is required for MMO to evaluate the project outputs and understand how they could be used to inform marine planning processes in England going forwards. Scotland's National Marine Plan Interactive (NMPi)[17] includes layers for climate change, including UK Climate Projections 2009 (UKCP09)[18]. The Seychelles Marine Spatial Plan[19] identifies climate refuges in the zoning plans. 'High Biodiversity Protection Zones' are sufficiently large to ensure ecological resilience and climate change adaptation[20].	MSPACE is potentially applicable to all the UK administrations. While further consideration is needed to understand the degree of confidence which can be applied to MSPACE outputs, they could help inform future decision making and development of proposals. Collaboration with other planning authorities, such as the MMO, could help to inform how study outputs, as well as wider climate data and modelling, can be applied to the Welsh marine planning framework. DataMapWales[22] currently contains MSPACE outputs but does not include UKCP09 projections. UKCP09 projections could be added to DataMapWales to inform development of proposals.

16 Queirós *et al.* (2023) 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. 58 pp. doi: 10.14465/2023.msp02.tec Available at: MSPACE: Marine Spatial Planning Addressing Climate Effects | Marine Climate Change Impacts Partnership (Accessed 10 November).

17 Scottish Government. (2017). Marine science: open data network. Available at: Marine Scotland Maps NMPI - Marine science: open data network - gov.scot (Accessed 04 November 2025).

18 UK Climate projections have been developed to help understand possible future climate by modelling chemical, biological and physical processes in the atmosphere, oceans and land. Further detail is available here: Adapting to climate change - UK Climate Projections (Accessed 20 March 2026).

19 Government of Seychelles. 2025. Seychelles Marine Spatial Plan. Ministry of Agriculture, Climate Change and Environment, Mahé, Seychelles. (Version 1.1). 142 pages. Available at: SMSP_PLAN-WEB.pdf (Accessed 11 November 2025).

20 Government of Seychelles. (2025). Seychelles Marine Spatial Plan. Available at: SMSP_PLAN-WEB.pdf (Accessed 04 November 2025).

22 Welsh Government. (2025). DataMapWales. Available at: Home | DataMapWales (Accessed 04 November 2025).

Theme	Key case study countries	Identified approaches	Potential applicability to Wales
		Sweden has developed the tool 'Symphony'[21] which incorporates climate model data as well as marine spatial planning data to inform national planning decisions.	
Cross-cutting and sector specific climate change policies	England, Republic of Ireland	Among several English marine plans, the England North West Inshore and North West Offshore Marine Plan[23] include sector-specific climate change policies, such as for fisheries, air quality and emissions, marine protected areas (MPAs), and biodiversity. Ireland's NMPF[24] contains overall and sector-specific, climate change policies.	The WNMP contains overarching climate change policies. Consideration could be given to the development of sector-specific climate change policies. To avoid repetition of policies, these should be developed only where there is a clear sector-specific need identified.
Cumulative impacts	Australia, England, Norway, Sweden	Australia recognises cumulative impact assessment as an area for necessary on-going effort for management of the Marine Reserves Network, in which climate change pressures can best be monitored[25]. Sweden's tool 'Symphony' is used to objectively compare the cumulative environmental impact from different marine spatial planning options, ensuring marine spatial plans are developed with an ecosystem approach[26].	The WNMP contains a policy for proposals regarding cumulative effects (GOV_01). Consideration of cumulative effects therefore currently exists within the WNMP, but not explicitly in relation to climate change. Consideration of cumulative impacts in the marine planning framework could be strengthened, for example through development of a tool comparable to 'Symphony'. However, it should be noted that cumulative effects is a challenging area for assessments due to the level of uncertainty that can exist across the individual projects

21 Swedish Agency for Marine and Water Management. (2025). Symphony – a tool for ecosystem-based marine spatial planning. Available at: Symphony – a tool for ecosystem-based marine spatial planning (Accessed 04 November 2025).

23 MMO. (2024). North West Marine Plans. Available at: North West Marine Plans - GOV.UK (Accessed 04 November 2025).

24 Government of Ireland. (2024). National Marine Planning Framework. Available at: National Marine Planning Framework (Accessed: 07 November 2025).

25 Sustineo. (2024). South-East Commonwealth Marine Reserves Network Management Plan Evaluation. Available at: SE Network Evaluation Summary (Accessed 12 November 2025).

26 Swedish Agency Marine and Water Management. (2020). Symphony – a tool for ecosystem-based marine spatial planning. Available at: Symphony – a tool for ecosystem-based marine spatial planning - Marine Spatial Planning - Swedish Agency for Marine and Water Management (Accessed 04 November 2025).

Theme	Key case study countries	Identified approaches	Potential applicability to Wales
		Symphony includes 41 different environmental pressures, including two directly relating to climate change. In England, Cefas is preparing to carry out a Cumulative Impact Assessment using the east marine plan areas as the study area. The Norwegian marine spatial plans include a section 'The Assessment of cumulative environmental effects and progress towards goals' which outlines future projections of each sector and informs sector specific recommendations.	or components in addition to the lack of agreed methodologies for assessing cumulative impacts. Development of a bespoke tool will require targeted funding and resource. Engagement with the MMO, beyond the timescales of this study, may help to identify lessons learned from the Cefas study that could be applied to the marine planning framework in Wales. Aligning with approaches in Norway, the WNMP or guidance could be developed for Wales, which includes future projections for each sector and generating sector-specific recommendations.
Data availability	England, Republic of Ireland, Scotland	Many of the countries reviewed have a portal to display activities information and policies (e.g., Explore Marine Plans[27], Ireland's Marine Atlas[28], and NMPi[29]). The Marine Climate Change Impacts Partnership (MCCIP)[30] have collaborated and brought together scientific experts with planners, ministers and those responsible for policy implementation which is an integral component for decision making and putting objectives forward.	Outputs from MCCIP provide a valuable evidence source for marine planning in Wales. Consideration could be given to the integration of datasets, specifically those in relation to climate change (e.g., UK marine climate projections, heatwave and temperature projections, blue carbon habitats, MCCIP outputs and reporting cards, etc.), within DataMapWales or the Marine Planning portal. Where data is not spatial they could be signposted within marine planning guidance.

27 MMO (2024). Explore Marine Plans. Available at: Explore marine plans - GOV.UK (Accessed 03 March 2026).

28 Marine Institute (2026). Ireland's Marine Atlas. Available at: Ireland's Marine Atlas (Accessed 03 March 2026).

29 Scottish Government. (2017). Marine science: open data network. Available at: Marine Scotland Maps NMPI - Marine science: open data network - gov.scot (Accessed 04 November 2025).

30 MCCIP (2026). Marine Climate Change Impacts Partnership. Available at: WELCOME TO THE MCCIP | Marine Climate Change Impacts Partnership (Accessed 03 March 2026).

Theme	Key case study countries	Identified approaches	Potential applicability to Wales
Emerging industries/future sector predictions	Norway	The marine spatial plan for Norway[31] covers emerging industries such as hydrogen production and the use of biofuels in vehicles to aid their ambitions to mitigate climate change. Future projections of each sector are also included. This information is used to inform sector-specific recommendations.	Marine plans will always need to be responsive to changing uses and practice. The need for further emerging industries to be included in the WNMP and/or marine planning guidance may be identified in the regular monitoring of the WNMP. Norway's marine spatial plan could give an example of how these industries could be incorporated into the Welsh marine planning policy landscape.
Governance/ engagement	Canada, Seychelles	A particular strength of Canada's marine spatial planning is their inclusive approach to their planning process. By including an array of government and council bodies, in addition to Indigenous Peoples and local groups, this collaborative approach ensures equitable and well considered decision making which will better meet the challenges of climate change and the needs of society and the environment in that region. In the Seychelles, Debt-for-Nature (see Section 7) initiatives have been integrated to help deliver outcomes[32].	The marine planning process in Wales has inbuilt robust stakeholder engagement processes, as set out in the MCAA and through delivery of the Statement of Public Participation (SPP)[33]. The Wales Coasts and Seas Partnership (CaSP) launched an initiative called 'Y Môr a Ni'. The initiative aims to grow people's relationship with the coasts and seas by hosting events that aim to engage the public in marine-themed activities to spread awareness[34]. Initiatives such as this could be built upon to raise awareness of the importance of marine planning and climate change impacts on the sea. Should a formal re-planning process for the WNMP be initiated, engagement of this nature could add value to the defined legislative processes.

31 Government.no. (2024). Norway's integrated ocean management plans. Available at: Meld. St. 21 (2023–2024) Report to the Storting (white paper) (Accessed 05 February 2026).

32 Queiros *et al.*, (2026). A roadmap towards climate-smart marine spatial planning in UK Overseas Territories. Marine Climate Change Impacts Partnership. DOI: 10.14465/2026.csp.01.rd. Available at: UKOTs_CSMP_Roadmap_2026 (Accessed 20 March 2026).

33 Welsh Government. (2018). Statement of Public Participation for the Welsh National Marine Plan. Available at: Statement of Public Participation for the Welsh National Marine Plan (Accessed 19 November 2025).

34 Natural Resources Wales. (2025). Y Môr a Ni (The Sea and Us). Available at: Y Môr a Ni (The Sea and Us) - Natural Resources Wales Citizen Space - Citizen Space Accessed 03 December 2025).

Theme	Key case study countries	Identified approaches	Potential applicability to Wales
			Debt-for-Nature initiatives are seen as a means to access finance to deliver outcomes in ocean climate change adaptation, helping bridge the financial burden at the national level. Participation in Debt-for-Nature, however, has been restricted primarily to countries where the risk of default on debt payments is high, whereby the funder can purchase the debt at well below its face value[35]. This approach may be challenging to pursue in Wales.
Integration of climate change into marine plan Vision and Objectives	England, Scotland, Sweden	The second generation of marine plans in England is seeking to incorporate climate-smart approaches into the plan vision and objectives[36]. Scotland's National Planning Framework 4 (NPF4)[37] contains a direct statement as the first policy that 'When considering all development proposals significant weight will be given to the global climate and nature crises'. Sweden's national marine plans'[38] visions include consideration of climate change mitigation and adaptation.	The WNMP currently contains a Plan Objective relevant to climate change, and the vision references the Welsh marine area making a strong contribution to energy security and climate change emission targets. The vision of the WNMP could be updated to also capture explicitly climate change adaptation and the importance of the plan being climate-smart. A policy could be added to the WNMP stating that 'significant weight' will be given to the global climate and nature crises'. Lessons learned from Scotland could be drawn upon to fully understand the potential impact of a policy of this nature.

35 Queiros *et al.*, (2026). A roadmap towards climate-smart marine spatial planning in UK Overseas Territories. Marine Climate Change Impacts Partnership. DOI: 10.14465/2026.csp.01.rd. Available at: UKOTs_CSMP_Roadmap_2026 (Accessed 20 March 2026).

36 ICES. (2024). ICES Annual Science Conference 2024. Theme Session I – Accounting for climate change in marine spatial planning: Experiences and lessons learnt. Available at: ASC 2024 - Theme session I report.pdf (Accessed: 07 November 2025).

37 Scottish Government. (2023). National Planning Framework 4. Available at: National Planning Framework 4 - gov.scot (Accessed 04 November 2025).

38 Swedish Agency Marine and Water Management (SwAM). (2023). Marine Spatial Plans. Available at: Marine Spatial Plans - Publications - Swedish Agency for Marine and Water Management (Accessed: 07 November 2025).

Theme	Key case study countries	Identified approaches	Potential applicability to Wales
Incorporation of mitigation and adaptation strategies	Australia, Canada, Republic of Ireland	Throughout the plan documents for the North Pacific region in Canada[39,40,41,42], climate change mitigation and adaptation are discussed for many sectors within the plan. The applicability of climate change to each sector is discussed before introducing Issues, Objectives and Strategies which are then formed in a way to address climate change. The framing of climate change in this context successfully means that climate change is integrated throughout. Australia has in place a National Climate Risk Assessment[43]. The Reef Blueprint 2030[44] includes actions to support delivery of five climate change mitigation and adaptation goals. To help mitigate climate change, Ireland's National Marine Planning Framework (NMPF)[45] includes advice on the location and regulation of uses of marine areas where the seafloor has high	The WNMP, if updated, could be structured in a similar manner to Canada, with the applicability of climate change for each sector being set out. Alternatively, key information could be included in a guidance document. For example, for the fishing sector the potential impacts of climate change on stock distributions could be set out, followed by the issues this could create (e.g., potential need to move fishing grounds or adapt to alternative gears, and the corresponding impact on coastal communities). Policies could then be signposted that support addressing the issue. Welsh Government published a Climate Adaptation Strategy in 2024[48], which includes links to the WNMP. Due to the date of publication, the WNMP (published in 2019) does not explicitly reference the Climate Adaptation Strategy. A new climate change risk assessment (CCRA) is due for publication in 2026. A review of the 2026 CCRA could inform if updates to the Climate Adaptation Strategy are required to target key areas of risk. The Climate Adaptation Strategy could be

39 MaPP (2015). Haida Gwaii Marine Plan. Available at: Haida Gwaii Marine Plan (Accessed 12 November 2025).
40 MaPP (2015). North Coast Marine Plan. Available at: North Coast Marine Plan (Accessed 12 November 2025).
41 MaPP (2015). Central Coast Marine Plan. Available at: Central Coast Marine Plan (Accessed 12 November 2025).
42 MaPP (2015). North Vancouver Island Marine Plan. Available at: North Vancouver Island Marine Plan (Accessed 12 November 2025).
43 Australian Government. (2025). The National Adaptation Plan. Available at: Adaptation planning - DCCEEW (Accessed 12 November 2025).
44 Australian Government. (2024). Reef Authority. Reef Blueprint 2030. Great Barrier Reef Blueprint for Climate Resilience and Adaptation. Available at: Reef Blueprint 2030 (Accessed 04 November 2025).
45 Government of Ireland. (2024). National Marine Planning Framework. Available at: National Marine Planning Framework (Accessed: 07 November 2025).
48 Welsh Government. (2024). Climate Adaptation Strategy for Wales 2024. Available at: Climate Adaptation Strategy for Wales 2024 | GOV.WALES (Accessed 20 January 2026).

Theme	Key case study countries	Identified approaches	Potential applicability to Wales
		natural carbon content[46]. This is achieved through the application of Climate Change Policy 1 across the plan area, and the use of indicative maps to demonstrate where sediments are present that have a higher storage of carbon[47].	explicitly drawn into the marine planning framework in Wales through inclusion in the WNMP or guidance. Indicative maps could be produced in Wales to demonstrate where the seafloor has high natural carbon content or the location of blue carbon ecosystems more generally, linking with relevant climate change policies in the WNMP. The weighting applied to the indicative maps would be influenced by policy wording (Section 4.2.3).
Integration of natural capital	England, Republic of Ireland	The Republic of Ireland is committed to integrating natural capital into decision-making processes and has developed a natural capital policy within their marine plan (Biodiversity Policy 3)[49]. The MMO is exploring embedding a natural capital approach into the Sustainability Appraisal (SA) of the East Marine Plan[50]. The draft SA will be published alongside the updated East Marine Plan at consultation.	In Wales, under the Environment (Wales) Act, the Sustainable Management of Natural Resources (SMNR) is the leading policy approach, placing a more holistic focus on ecosystem services and benefits. Lessons learned from the MMO case study for the East Marine Plans could be drawn upon in combination with SMNR to inform approaches in Wales, particularly if a plan update is carried out.
Nature-based solutions and ecosystem restoration in support of climate	England, Republic of Ireland, Seychelles	Recognising the important role that habitats can provide for flood defence or carbon sequestration ecosystem services, the Republic of Ireland's marine	The WNMP contains a policy that encourages proposals that contribute to the protection, restoration and/or enhancement of marine ecosystems (ENV_01: Resilient

[46] Queirós *et al.* (2025). The opportunity for climate action through climate-smart Marine Spatial Planning. Available at: https://www.researchgate.net/publication/391560692_The_opportunity_for_climate_action_through_climate-smart_Marine_Spatial_Planning (Accessed: 07 November 2025)).

[47] Marineplan.ie. (2026). Overarching Marine Planning Policies – Environmental. Climate Change. Policy 1. Available at: Climate Change | marineplan.ie (Accessed: 05 February 2026)

[49] Government of Ireland. (2024). National Marine Planning Framework. Available at: National Marine Planning Framework (Accessed: 07 November 2025).

[50] MMO (2025). Guidance: East Marine Plan Scoping Report. Available at: East Marine Plan Scoping Report - GOV.UK (Accessed 03 March 2026).

Theme	Key case study countries	Identified approaches	Potential applicability to Wales
resilience and emissions reduction		plan[51] includes a climate change policy for proposals to demonstrate how they will enhance or restore these habitats. The Seychelles have extensively mapped key habitats, such as seagrass, in recognition of their value as carbon stocks[52]. The Crown Estate's Marine Delivery Routemap[53] considers 'opportunities for nature'. These are areas where there is an identified potential for nature to flourish and grow.	marine ecosystems). 'Opportunities for nature' in the Crown Estate's Routemap could be a useful tool to inform marine policy development in Wales for nature-based solutions and ecosystem restoration in support of climate resilience and emissions reduction.
Spatial specificity of approaches	Australia, Scotland, Seychelles	Some countries (e.g., Australia and Scotland) adopt a mixture of national and regional strategies allowing targeted approaches and policies. Updating the Sectoral Marine Plan for Offshore Wind Energy[54] in Scotland will identify spatial opportunities for the future development of offshore wind deployment. The Seychelles marine plan[55] focuses on a zonal approach to planning.	While Wales could consider adopting a mixture of national and regional marine plans, recognising the different geographical scales of Wales compared to Australia and Scotland, this is unlikely to be the most appropriate approach for Wales and could risk adding complexity into the system. In Scotland, seabed leasing is devolved to Crown Estate Scotland, which will guide leasing through the Sectoral Marine Plan. In Wales, seabed leasing is not devolved and is managed by The Crown Estate. Therefore, the Scottish

51 Government of Ireland. (2024). National Marine Planning Framework. Available at: National Marine Planning Framework (Accessed: 07 November 2025).

52 Rowlands GP , Antat S , Baez SK , Cupidon A , Faure A , Harlay J , Lee CB , Martin LEC , Masque P , Morgan M , Mortimer JA, Traganos D. (2024). The Seychelles Seagrass Mapping and Carbon Assessment. A report to be submitted to the Government of Seychelles, Ministry of Agriculture, Climate Change and Environment (MACCE). Available at: Seychelles_Seagrass_MACCE_report-1.pdf (Accessed 11 November 2025).

53 The Crown Estate (2026). Marine Delivery Routemap. Available at: Marine Delivery Routemap | The Crown Estate (Accessed 03 March 2026).

54 Scottish Government. (2025). Offshore wind energy - draft updated Sectoral Marine Plan 2025: consultation. Available at: Offshore wind energy - draft updated Sectoral Marine Plan 2025: consultation - gov.scot (Accessed 04 November 2025).

55 Government of Seychelles. 2025. Seychelles Marine Spatial Plan. Ministry of Agriculture, Climate Change and Environment, Mahé, Seychelles. (Version 1.1). 142 pages. Available at: SMSP_PLAN-WEB.pdf (Accessed 11 November 2025).

Theme	Key case study countries	Identified approaches	Potential applicability to Wales
			approach to guiding leasing through sectoral marine plans is not simply transferable and different approaches would need to be taken in Wales. In Wales, Strategic Resource Areas (SRAs) have been developed for tidal stream energy, with a Marine Planning Notice (MPN) issued. SRAs could be developed for further sectors (e.g., aggregates, aquaculture, floating wind, or wave energy), or plan policies amended to enable SRAs for further sectors (e.g., to safeguard future fishing grounds or for nature)

3.2 Review of the Welsh marine planning framework

3.2.1 Introduction

The marine planning framework in Wales consists of formal planning documents (such as the WNMP, and formal planning guidance) and supplementary (non-statutory) materials. Marine planning in Wales is further guided by wider legislation and policy including the Climate Adaptation Strategy for Wales, Planning Policy Wales (PPW), Shoreline Management Plans (SMPs), Local Development Plans (LDPs), Future Wales, The Wellbeing of Future Generations Act (Wales) and The Environment (Wales) Act. The marine planning framework is summarised in Figure 2.

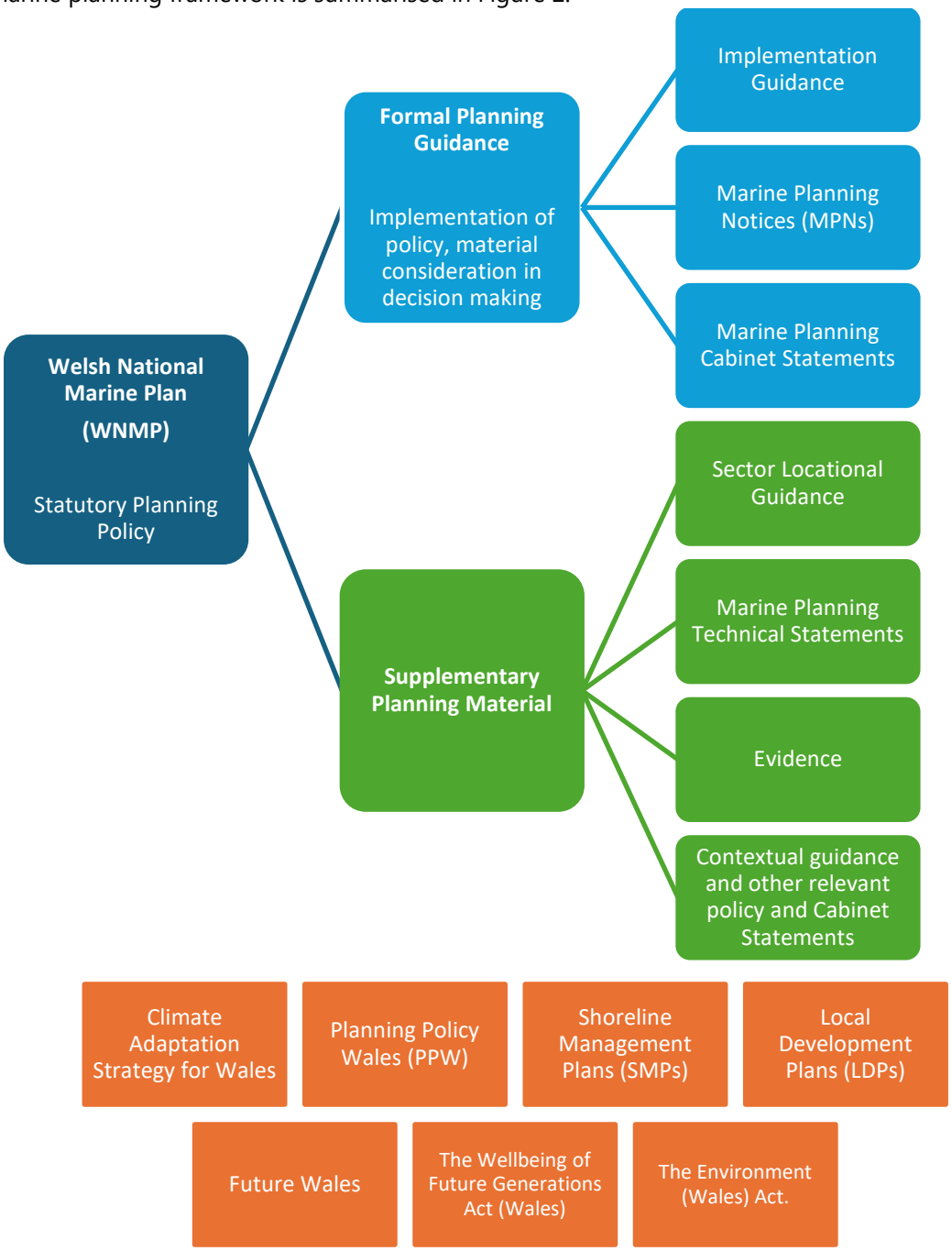


Figure 2 **Overview of the marine planning framework in Wales (blue and green cells) and relevant considerations (orange cells)**

Development of the marine planning framework in Wales follows MSP best practice guidance[56], the stages of which have been simplified for the purposes of this report (Figure 3) as:

- Pre-plan;
- Plan;
- Implementation; and
- Monitoring and evaluation.

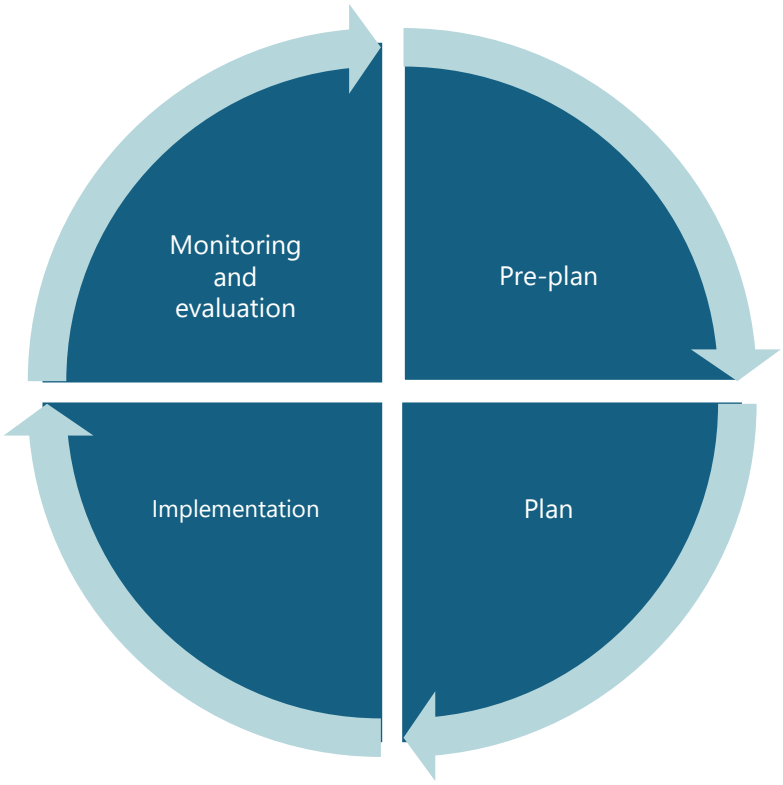


Figure 3 Simplified infographic of the key stages of marine planning

The four stages of the planning process were reviewed and assessed through SWOT analysis. The review and analysis considered:

- The extent of incorporation of climate change into policy and guidance across the planning stages, identifying strengths and limitations;
- The degree of commonality with the Climate Adaptation Strategy for Wales[57] and PPW[58];
- How the WNMP has supported climate change adaptation and mitigation, considering the WNMP monitoring report and technical assessments[59, 60]; and
- Sector-specific issues.

This section summarises key findings of the review, with the full review of the Welsh marine planning framework found in Appendix E

56 MSPglobal 2030 (2021). MSPglobal International Guide on Marine/Maritime Spatial Planning. Available at: MSPglobal International Guide on Marine/Maritime Spatial Planning (Accessed 03 March 2026).

57 Welsh Government, (2024). Climate Adaptation Strategy for Wales 2024. Available at: Climate Adaptation Strategy for Wales 2024 | GOV.WALES (Accessed 19 November 2025).

58 Welsh Government (2024). Planning Policy Wales. Edition 12. February 2024. Available at: Planning Policy Wales - Edition 12 (Accessed 19 November 2025).

59 Welsh Government (2022). Welsh National Marine Plan Monitoring and Technical Assessments. Available at: Welsh National Marine Plan monitoring 2019 to 2022 | GOV.WALES (Accessed 19 November 2025).

60 Welsh Government (2025). Welsh National Marine Plan Monitoring Report 2022 to 2025. Available at: Welsh National Marine Plan monitoring report 2022 to 2025 | GOV.WALES (Accessed 20 March 2026).

3.2.2 Review across planning stages

Pre-plan

Stakeholder engagement formed a central part of the pre-plan stage in Wales, supported initially through the SPP[61] and targeted engagement via groups such as the Marine Planning Stakeholder Reference Group (MPSRG). Although the SPP made limited reference to climate change, the report 'Marine Planning: understanding the benefits and opportunities'[62] captures the role the WNMP can play in achieving climate change adaptation and mitigation. Development of the WNMP was informed by the 2015 Marine Evidence Report[63], which incorporated climate considerations extensively but was constrained by limited marine specific climate scenario data. A Sustainability Appraisal further embedded climate change by assessing climate- related objectives and identifying- positive effects across multiple policies, even where sector policies did not explicitly reference climate change. The Habitats Regulations Assessment (HRA), with its narrower statutory focus, understandably gave minimal attention to climate change. Following consultation, Welsh Government updated draft WNMP policies to strengthen their emphasis on climate resilience. In summary, climate change appeared in early thinking, but data gaps and limited modelling constrained how far climate-smart planning could be integrated during plan development.

Plan

The WNMP is the key marine planning document for Wales. The WNMP embeds climate change in its Plan Vision, which emphasises low-carbon technologies, and through Objective 8[64], supported by four key policies (SOC_08 – SOC_11 – see Appendix D and Figure 4) that address resilience to coastal change and flooding, minimising greenhouse gas emissions, and adapting to climate impacts. Additional overarching policies, such as those on planning and risk-based decision-making, operate alongside climate policies to strengthen their application across marine planning. Although the plan does not include sector-specific climate policies, wider policies (such as ENV_01: Resilient marine ecosystems) could indirectly support climate mitigation and adaptation, for example through encouraging the restoration and/or enhancement of blue carbon habitats like seagrass. Recognising that some species and habitats are more sensitive to climate change and may therefore experience greater population or distributional impacts, it is important that the latest understanding of climate change impacts is available and drawn upon to inform proposals.

Climate change policies included in the WNMP

- SOC_08: Resilience to coastal change and flooding
- SOC_09: Effects on coastal change and flooding
- SOC_10: Minimising climate change
- SOC_11: Resilience to climate change

Figure 4 Key climate change policies included in the WNMP

61 Welsh Government. (2018). Statement of Public Participation for the Welsh National Marine Plan. Available at: Statement of Public Participation for the Welsh National Marine Plan (Accessed 19 November 2025).

62 Welsh Government. (2017). Marine Planning: understanding the benefits and opportunities. Available at: MARINE PLANNING: UNDERSTANDING THE BENEFITS AND OPPORTUNITIES (Accessed 19 November 2025).

63 Welsh Government (2015). Wales' Marine Evidence Report. Available at: wales-marine-evidence-report-wmer.pdf (Accessed 19 November 2025).

64 Objective 8: Improve understanding and enable action supporting climate change adaptation and mitigation.

Implementation

The implementation of the WNMP is supported by a suite of formal planning guidance, such as the WNMP Implementation Guidance[65], guidance for SRAs[66], and the MPN introducing SRAs[67], all of which help clarify policy intent and support practical decision making. These formal materials are supplemented by additional tools including Technical Statements[68], Sector Locational Guidance[69], the Wales Marine Planning Portal[70], DataMapWales[71], webinars[72] and infographics[73], which applicants and decision-makers may draw upon when considering marine authorisations. Climate change appears within implementation primarily where it is embedded in WNMP policy. Current guidance reflects this through SOC_08 – SOC_11 included within the WNMP Implementation Guidance, and SOC_10 referenced within Tidal Stream Energy Sector Locational Guidance[74] and Wave Energy Sector Locational Guidance[75]. The deployment of low carbon energy sources is supported through formal implementation guidance for SRAs and the MPN for the 'Introduction of Strategic Resource Areas and Activation of Safeguarding Policy for Tidal Stream Energy'. Technical Statements are tied to specific WNMP policies and therefore currently have very limited consideration of climate change. There is variable inclusion of climate change in sector locational guidance, with inclusion in Tidal Stream Sector Locational Guidance[76], but no reference to it in Aquaculture Sector Locational Guidance[77]. Climate change data are not displayed on the Wales Marine Planning Portal, but are available on DataMapWales.

65 Welsh Government. (2020). Welsh National Marine Plan. Implementation Guidance. Available at: welsh-national-marine-plan-implementation-guidance.pdf (Accessed: 19 November 2025).

66 Welsh Government. (2025). Implementation guidance: Policy SAF_02 – Strategic Resource Areas – working draft. Available at: Implementation guidance: Policy SAF_02 – Strategic Resource Areas – working draft | GOV.WALES (Accessed: 19 November 2025).

67 Welsh Government. (2025). Welsh National Marine Plan: Marine Planning Notice - Introduction of Strategic Resource Areas and Activation of Safeguarding Policy for Tidal Stream Energy. Available at: Welsh National Marine Plan: Marine Planning Notice (Accessed 19 November 2025).

68 Welsh Government. (2025). Marine planning technical statements. Available at: Marine planning technical statements | GOV.WALES (Accessed 19 November 2025).

69 Welsh Government. (2022). Sector locational guidance. Available at: Sector locational guidance | GOV.WALES (Accessed 19 November 2025).

70 Welsh Government. (2025). Wales Marine Planning Portal. Available at: Wales Marine Planning Portal (Accessed: 19 November 2025).

71 Welsh Government. (2025). DataMapWales. Available at: Home | DataMapWales (Accessed 04 November 2025).

72 Welsh Government. (2023). Webinars covering aspects of marine planning. Available at: Marine Planning in Wales - YouTube (Accessed: 19 November 2025).

73 Welsh Government. (2021). Considering marine plans in terrestrial planning permission: infographic. Available at: Considering marine plans in terrestrial planning permission: infographic | GOV.WALES (Accessed: 19 November 2025).

74 Welsh Government. (2021). Sector Locational Guidance. Enabling Evidence for Sustainable Development. Tidal Stream Energy. Available at: Sectoral Locational Guidance: Enabling evidence for sustainable development. Tidal Stream Energy (Accessed 03 March 2026).

75 Welsh Government. (2021). Sector Locational Guidance. Enabling Evidence for Sustainable Development. Wave Energy. Available at: Sectoral Locational Guidance: Enabling evidence for sustainable development. Wave Energy (Accessed 03 March 2026).

76 Welsh Government. (2021). Sector Locational Guidance. Enabling Evidence for Sustainable Development. Tidal Stream Energy. Available at: Sectoral Locational Guidance: Enabling evidence for sustainable development. Tidal Stream Energy (Accessed 03 March 2026).

77 Welsh Government. (2021). Sector Locational Guidance. Enabling Evidence for Sustainable Development. Aquaculture. Available at: Sectoral Locational Guidance: Enabling evidence for sustainable development. Aquaculture (Accessed 19 November 2025).

Monitoring and evaluation

Monitoring and reporting under the MCAA (2009) is a statutory requirement, with Welsh Government reviewing the effectiveness of WNMP policies at least every three years. The monitoring and reporting framework outlines how climate-related objectives will be assessed, and eight indicators relevant to climate change (ranging from policy application and data use to renewable energy proposals and coastal flooding costs) were established to track progress. The 2019 –2022 and 2022–2025 monitoring were largely qualitative, offering case studies and broad evaluation, but had limited explicit analysis of climate change and they did not contain recommendations for strengthening climate-related policy or monitoring. The 2020 Marine Evidence Report update substantially improved the climate evidence base by incorporating UKCP18 projections and emerging research such as MCCIP, summarising advances in understanding of sea level rise, coastal erosion, ocean acidification, water quality changes and species movement, all of which are important considerations for marine planning.

3.2.3 The degree of commonality with the Climate Adaptation Strategy for Wales and Planning Policy Wales

The Climate Adaptation Strategy for Wales[78] sets out national actions to respond to climate change, and although the WNMP predates it, the plan's climate-focused objectives and policies (particularly SOC_08, SOC_09, SOC_11 and ENV_01) directly support the Strategy's priorities. The Climate Adaptation Strategy directly references the WNMP and incorporates some of its policies into cross-sector adaptation action plans, bringing commonality in themes such as ecosystem resilience, coastal change, flood risk, and the transition to net zero. Both documents also take an ecosystem-based approach and rely on shared levers such as SMPs, ensuring coherence across marine, coastal and terrestrial planning considerations.

PPW[79] and the WNMP both recognise climate change throughout and support integrated marine–terrestrial decision making. The WNMP cross-refers to PPW and *vice versa*, reflecting shared priorities including decarbonisation, the energy hierarchy, coastal community resilience, and strategic management of flood risk. While flood-risk mapping tools such as the Flood Map for Planning[80] are referenced in PPW rather than the WNMP, they are accessible through DataMapWales to inform marine licensing and implementation. Both PPW and the WNMP also draw on common evidence bases, such as the State of Natural Resources Report[81], supporting consistent high-level planning approaches for enhancing ecosystem resilience and addressing climate change impacts across Wales.

3.2.4 How the WNMP has supported climate change adaptation and mitigation

Monitoring reports show that progress toward the WNMP's climate change objective has been mixed, with the 2019–2022 Technical Assessment[82]giving a green/amber rating based on factors such as the absence of new oil and gas activity, no marine carbon capture projects, evidence of nature-based adaptation work, and some policy influence in decision making. Since then, the introduction of tidal

78 Welsh Government. (2024). Climate Adaptation Strategy for Wales 2024. Available at: Climate Adaptation Strategy for Wales 2024 | GOV.WALES (Accessed 19 November 2025).

79 Welsh Government (2024). Planning Policy Wales. Edition 12. February 2024. Available at: Planning Policy Wales - Edition 12 (Accessed 19 November 2025).

80 NRW (2025). Flood map for planning. Available at: Natural Resources Wales / Flood map for planning (Accessed 05 February 2026).

81 NRW (2024). State of Natural Resources Report (SoNaRR) for Wales 2025. Available at: State of Natural Resources Report 2025 (Accessed 03 March 2026).

82 Welsh Government. (2022). Welsh National Marine Plan Monitoring – Technical Assessments. Available at: Welsh National Marine Plan Monitoring - Technical Assessments (Accessed: 19 November 2025).

stream SRAs[83] assessed a specific climate-related indicator on whether public funding schemes reference the WNMP, concluding with medium confidence that no new evidence demonstrates this influence. However, this indicator is more contextual in nature and other climate-relevant indicators show progress, including continued investment in fixed and floating offshore wind.

3.2.5 Sector-specific issues

The WNMP covers a broad range of marine sectors, though some emerging sectors, such as hydrogen energy and biofuels are not yet included, and others like nuclear energy and surface or wastewater management are referenced only indirectly through safeguarding rather than supporting policies. Sectors can be impacted by a range of climate change pressures such as sea level rise, rising sea and air temperatures and changes in precipitation and storminess. Stakeholders raised sector-specific issues for recreation as facility damage, safety risks and financial impacts. For the aquaculture sector, increased risk of disease, heat stress, acidification, and lower predictability of spat settlement were flagged. For offshore operational sectors (e.g., aggregates and offshore infrastructure), impacts of storm disruption and wind/wave changes, operational challenges, damage to assets, higher insurance and repair costs were highlighted in responses to the survey. Cross-cutting socio-economic impacts were noted through economic pressures on coastal sectors and communities.

Sectors that are intrinsically linked to the productivity and distribution of marine living resources (e.g., marine ecology and biodiversity, MPAs, fisheries, aquaculture, and environmental restoration) are affected by the largest number of different climate change pressures[84]. Key environment sector risks raised by stakeholders in the survey included species/habitat shifts, loss of ecosystem services, invasive species, and reduced resilience.

Many sectors both contribute to and help mitigate climate change, for example through emissions or through renewable energy generation and blue carbon restoration. Climate change may drive shifts in species and activities, meaning both planning and MPA policy may need to adapt, particularly for fisheries, MPAs, invasive species and aquaculture. Some sectors with fixed physical assets may face increased coastal flood, degradation, erosion, and corrosion risks. However, with regards to corrosion, the studies on this subject are limited[85]. If activities or species move in response to climate pressures, SRA and MPA boundaries may need reconsideration, noting MPA governance sits separately within Welsh Government marine biodiversity teams. It is recognised that whilst increased offshore wind development is beneficial for mitigation, it may also have the potential for adverse visual and landscape/seascape impacts.

[83] Welsh Government. (2025). Welsh National Marine Plan monitoring report 2022 to 2025. Available at: gov.wales/sites/default/files/publications/2025-11/welsh-national-marine-plan-monitoring-report-2022-to-25.pdf (Accessed 19 November 2025).

[84] MMO (In Press). Understanding the impacts of climate change that can be directly addressed by marine plans. A report produced for the Marine Management Organisation, MMO Project No: 1350, August 2025, 270pp

[85] Kassinis, C. *et al.* (2025). A review on the environment's influence on coastal marine steel corrosion and in-situ monitoring. Available at: A review on the environment's influence on coastal marine steel corrosion and in-situ monitoring | Journal of Materials Science: Materials in Engineering | Springer Nature Link (Accessed 23 March 2026).

3.2.6 SWOT analysis

The full SWOT analysis across the plan stages is given in Appendix E.5. A high-level summary is provided below in Table 2.

Table 2 High-level summary of Welsh planning process SWOT analysis in relation to climate change

Strengths	Limitations
▪ Climate change embedded through Plan Objective 8 and four dedicated policies. ▪ Commonality with PPW and the Climate Adaptation Strategy. ▪ SRA mapping (e.g., tidal stream) safeguards areas for climate-smart development. ▪ Monitoring frameworks and regular review cycles support ongoing improvement.	▪ Lack of sector-specific climate policies and future climate projections. ▪ Climate modelling gaps (especially marine-specific) reduce robustness. ▪ Inconsistent treatment of climate issues in implementation guidance. ▪ Limited evidence of WNMP influencing public climate-related funding.
Opportunities	**Threats**
▪ Use of new climate modelling tools (e.g., MSPACE, UKCP18) and projections for each sector to inform future planning. ▪ Potential for stronger (potentially sector-specific) climate policies (through formal re-planning only) or guidance. ▪ Improved integration of climate data into mapping tools (e.g., UKCP layers on DataMapWales). ▪ Expanded, more strategic climate monitoring and cumulative impact assessment. ▪ Updating the WNMP vision to explicitly consider climate change adaptation. ▪ Recognising that climate change policies are monitored across a range of indicators, monitoring reports could collate findings across indicators to provide a targeted view on whether individual policy aims are being met.	▪ Climate change may outpace policy relevance (shifting species distributions, increased risks). ▪ Congestion in near-shore areas may limit restoration or mitigation projects. ▪ Data uncertainties risk weakening climate-related evaluation. ▪ The data needed to form the evaluation of how policies are progressing can take significant time to gather or become measurable.

3.3 Stakeholder survey

A survey was carried out by ABPmer on behalf of Welsh Government to further explore with stakeholders how climate change is considered within the Welsh marine planning process. This work also considered options to further develop marine planning to support climate change adaptation and mitigation. Details of methods are available in Appendix A.5.2, with quantitative results provided in full in Appendix F. Key themes and insights from the stakeholder survey included:

- Some uncertainty among respondents regarding the effectiveness of marine planning to address climate change;
- A need for clearer, more enforceable climate focused policy, with a shift from 'should' to 'must' for some policies, supported by sector specific or cross-cutting guidance;
- Requests for improved access to climate evidence, including hazard data, blue carbon mapping, regularly updated datasets, and incorporation of outputs from projects such as MSPACE;
- A desire for better integration across planning systems and strategies (WNMP, terrestrial planning, SMPs, Climate Adaptation Strategy) to ensure coherent climate adaptation and mitigation, particularly at the coast;
- Recognition that nature-based solutions and ecosystem restoration are essential for both climate resilience and emissions reduction. There were, however, mixed views regarding protection of blue carbon ecosystems, with a need to consider how these areas align with existing protections;
- A need for enhanced monitoring, evaluation and adaptive mechanisms to ensure marine planning remains climate-relevant over time;
- Growing pressure from climate-driven spatial squeeze, for example leading to movement of species and potential conflict with other sectors. Clearer spatial prioritisation and conflict management was therefore raised as being required;
- Sector-wide calls for practical, accessible, and proportionate guidance to support climate-smart project delivery;
- Inclusion of natural capital in marine planning and decision making;
- The dual nature and climate crises to be further emphasised and developed in the WNMP;
- A need to assess cumulative effects (including climate change) through marine planning; and
- The need to consider how protected sites can be adapted in response to climate change.

Suggestions for how marine planning policy and tools can maintain their effectiveness in light of potential climate change impacts included:

- Regular, agile review cycles to stay current with climate data;
- Flexible, adaptive policies that integrate emerging evidence;
- Embedding climate-smart principles across the full planning cycle;
- Using strong evidence and forecasting to guide decisions;
- Consideration of governance mechanisms (e.g., expert advisory groups); and
- Alignment with long-term national climate milestones.

4 Stage 2: Opportunities to Further Develop Approaches

4.1 Introduction

This section outlines potential opportunities to further develop climate-smart marine planning approaches in Wales. It draws upon the outcomes of Stage 1 (see Section 3), in addition to the findings from a focussed stakeholder workshop on 11 February 2026 (see Appendix A.5.3). The workshop explored the key themes of:

- Policy;
- Guidance; and
- Evidence.

This section is structured under those themes, with key findings from the workshop acknowledged. Options for marine planning policy and guidance to support developers is reported in Section 4.5.

The workshop included attendees voting for actions that they felt were a priority to support the Welsh marine planning framework to be climate-smart. It should be noted that voting attendees were primarily from the sectors: partnership; government sponsored bodies and agencies; NGO/eNGO/charity; government department/ministry; recreation; local authority; and multi-sector representation. As not all sectors attended the workshop/voting, this should be recognised as a limitation to the study. Further detail on the outputs from the stakeholder workshop are provided in Appendix G.

4.2 Policy

4.2.1 Introduction

The theme of 'policy' explores opportunities to develop the planning policy set out in the WNMP. In line with the MCAA (2009), policy amendments and new policy can only be made through a formal re-planning process, initiated through a decision by Welsh Ministers.

Five potential areas of development in the WNMP were identified and voted upon:

- Strength and clarity of wording;
- Introduction of new policies;
- Spatial specificity of policies;
- Integration of policy frameworks; and
- Enhancement of climate change adaptation and mitigation.

These are discussed in Sections 4.2.2 to 4.2.6 below. During the stakeholder workshop, there was a relatively even spread of votes across the potential areas of development for policy. The greatest number of votes was received for 'increase strength of the WNMP and certain policies'.

4.2.2 Strength and clarity of wording

A series of potential actions were identified and discussed with stakeholders in relation to increasing the strength and clarity of wording of policies. This included: changing the strength of wording from 'should' to 'must' across climate and environmental policies; reducing use of 'encourage' wording; stating in the marine planning framework that significant weight must be given to the climate and nature crises; and clarifying what is meant by 'significant emissions'.

Key policies identified for a potential increase in the strength of wording include SOC_08 (Resilience to coastal change and flooding), SOC_09 (Effects on coastal change and flooding), SOC_10 (Minimising climate change), SOC_11 (Resilience to climate change), and ENV_01 (Resilient marine ecosystems). It was noted by stakeholders that if wording is strengthened, it is important to retain the option for a case for proceeding and that potential implications of increasing the strength of policies is fully explored. For example, increasing the strength of wording will place additional burdens on developers and public authority decision makers (when assessing marine licence applications). It was felt by stakeholders that guidance on coastal climate projections would be essential to enable implementation of strengthened policies. The importance of maintaining proportionality was raised, in line with policy GEN_02 (Planning policy) which states 'Relevant public authorities should take a proportionate, risk-based approach to application of relevant marine planning policies in decision making'. When developing policies, consideration could also be given to incorporating a series of tests developed by the MMO, applying these to a Welsh context. The tests outline that a policy should be:

1. Positively prepared;
2. Justified;
3. Effective; and
4. Consistent with national policy.

Several policies use the word 'encourage' (e.g., 'proposals that align with relevant SMPs are encouraged'; and 'proposals that contribute to climate change adaptation and/or mitigation are encouraged'). Stakeholders raised that use of 'encourage' wording should be avoided to help strengthen the policies. The alternative would therefore be removing the word 'encourage' from policies. However, consideration should be given to the additional burdens this may place on developers and decision makers.

Scotland's NPF4[86] contains a direct statement as the first policy that 'When considering all development proposals significant weight will be given to the global climate and nature crises'. The WNMP and PPW both consider climate change throughout but do not give a steer for 'significant weight' to be given. The WNMP could include similar wording, but the effect of this wording is not yet clear. Engagement with Scottish Government would be beneficial to understand any lessons learned before taking forward the approach.

The benefit of clarifying wording of policies was raised to make implementation of policies more effective. For example, the term 'significant emissions' is included within policy SOC_10 (Minimising climate change), but the term is undefined. Stakeholders raised that the definition may need to be sector-specific (as different activities will have different needs), and that for some sectors the Greenhouse Gas Inventory[87] could be referred to. It was noted that the Climate Change Act requires the UK to be net zero by 2050 and that policies and approaches within the WNMP will need to align with this target. It was therefore raised that clarifying the term 'significant emissions' may not make a notable difference.

[86] Scottish Government. (2023). National Planning Framework 4. Available at: National Planning Framework 4 - gov.scot (Accessed 04 November 2025).

[87] National Atmospheric Emissions Inventory (2025). Greenhouse Gas Inventories for England, Scotland, Wales and Northern Ireland: 1990 – 2023. Available at: DA GHG Inventory 1990-2023 Report (Accessed 03 March 2026).

There were mixed views from stakeholders on the need to strengthen policies, with some proposing a focus on redrafting policies. A hierarchy of policies was also raised as a possibility, helping to resolve issues where policies appear to be in conflict, for example, placing climate change adaptation/mitigation policies above sector-specific policies. However, this may be contentious and challenging to achieve cross-sector support for.

It was felt by some stakeholders that there is duplication between some of the policies (SOC_08 – SOC_11). Links with SMPs were noted, and it was raised that links with terrestrial planning need to be strengthened, with more detail regarding consequences if SMP policies are not complied with. Specific Measurable Achievable Relevant and Time-bound (SMART) principles were considered during the SMP refresh process to ensure information is clear and actionable. This could provide a useful framework should wording of policies be amended.

4.2.3 Introduction of new policies

As previously noted, policy amendments and new policy can only be introduced through a formal re-planning process, initiated through a decision by Welsh Ministers. Potential actions identified and discussed with stakeholders included: introducing a policy to protect blue carbon habitats or avoid damage to natural carbon sinks; introducing 'surface water management and wastewater treatment and disposal' and 'environmental enhancement' as sectors with individual supporting policies in the WNMP; and introducing sector-specific climate change policies.

There were mixed views from stakeholders regarding the introduction of new policies. Consideration was given by stakeholders to separate environmental policies focussing on nature's role in mitigation and adaptation, with a policy relating to blue carbon habitats sitting under climate mitigation. Learning from Ireland's NMPF could be built upon, with the application of policy across the plan area, and the use of indicative maps to demonstrate where key carbon habitats are located. There was some support for a reference to blue carbon from stakeholders. However, it was felt that further definition and guidance would be required and there were concerns over a blanket prohibition of activities. Careful consideration would therefore be required over the strength of wording applied to a policy. It was raised that any prohibitions should be commensurate with the impact of the activity. Benefits of investing in technology improvements, such as advanced eco-mooring systems, were recognised to enable co-location of activities with habitats. It was raised by stakeholders that some of the highest blue carbon habitats are already protected under existing MPAs, and with the application of the mitigation hierarchy, impacts are already assessed, avoided, mitigated, and compensated as appropriate. Hence, there were some concerns that the development of a blue carbon policy may not add significant benefits to climate change mitigation, but could increase burdens for applications.

As outlined in Section 3.1, several countries (e.g., England and the Republic of Ireland) contain sector-specific and overarching climate change policies. There is therefore a precedent within the UK and Ireland for their development and application. Feedback from stakeholders reflects that any new sector-specific policies should target the specific needs of a sector to avoid duplication of policy intent. It was proposed by stakeholders that sector-specific policies could be linked to those sectors identified as having 'significant emissions' (noting that this term would need defining – see Section 4.2.2).

The stakeholder survey identified the largest consensus for the introduction of 'surface water management and wastewater treatment and disposal' and 'environmental enhancement' as sectors with individual supporting policies in the WNMP. Limited views were captured in this area during the stakeholder workshop. Whilst ecosystem restoration and improvement is not currently treated in isolation in the WNMP, it is covered under the environmental policies (ENV_01: Resilient marine ecosystems). If a new policy were to be introduced for environmental enhancement, it is important that it adds value beyond current policies. A key issue raised through this study for environmental restoration

is the limited opportunities for restoration activities. This could help to be addressed through drawing on new evidence bases, such as The Crown Estate's Marine Delivery Routemap[88] which considers 'opportunities for nature'.

4.2.4 Spatial specificity of policies

A theme which emerged from the stakeholder survey was the growing pressure from climate-driven spatial squeeze, requiring clearer spatial prioritisation and conflict management. In the survey there was support for areas of current and potential future use for sectors (including nature) to be safeguarded (Section F.5). Potential actions identified and discussed with stakeholders included: spatially defining policies for certain sectors; expanding the number of sectors to which the safeguarding SRA approach can be applied; and developing more SRAs for sectors where the provision already exists in the WNMP (this action can be achieved without policy change).

It was noted from stakeholders that greater spatial definition would provide clarity for sectors, but that it could also limit the flexibility to adapt to climate change. It was raised that spatial planning of any sector needs to be undertaken with climate change pressures and potential shifts in mind. Lessons can be drawn from The Seychelles Marine Spatial Plan[89] where 'High Biodiversity Protection Zones' are sufficiently large to ensure ecological resilience and climate change adaptation[90]. The importance of robust evidence to underpin a spatial policy was highlighted.

It was recognised by stakeholders that there could be benefits in developing further SRAs, but that these would need to be mindful of existing activities happening in the area, such as fishing. Developing 'nature SRAs' was explored with stakeholders. These could seek to safeguard areas identified as climate refugia or bright spots through evidence projects such as MSPACE, or to safeguard areas to support healthy fish populations, such as key nursery grounds. It was raised by stakeholders that a 'nature SRA' could help to offer protection outside of the MPA network, but care should be taken that these do not become *de facto* MPAs. SRAs could also be developed to safeguard use of potential future fishing grounds, drawing on understanding from models such as MSPACE on how species distributions may change in the future. To enable SRAs to be created for nature or fishing, the WNMP would require amendment, as there is not currently the provision to enable SRA development for these purposes. An alternative to spatially defining policies was raised in the workshop, of instead applying a prioritisation of activities based on their spatial area and impacts. In this scenario, developments that have a negative impact on ecosystems and blue carbon habitats would be given less priority.

4.2.5 Integration of policy frameworks

Potential actions identified and discussed with stakeholders included: stronger integration of SMP policies; greater WNMP policy commonality with the Climate Adaptation Strategy; improved consistency in policy requirements (e.g., between the WNMP, Future Wales: The National Development Plan, PPW, SMPs, LDPs, Fisheries Management Plans (FMPs), and other marine plans); and the WNMP to cater for 'emergency situations', aligning with the approach in the Climate Adaptation Strategy for Wales.

88 The Crown Estate (2026). Marine Delivery Routemap. Available at: Marine Delivery Routemap | The Crown Estate (Accessed 03 March 2026).

89 Government of Seychelles. 2025. Seychelles Marine Spatial Plan. Ministry of Agriculture, Climate Change and Environment, Mahé, Seychelles. (Version 1.1). 142 pages. Available at: SMSP_PLAN-WEB.pdf (Accessed 11 November 2025).

90 Government of Seychelles. (2025). Seychelles Marine Spatial Plan. Available at: SMSP_PLAN-WEB.pdf (Accessed 04 November 2025).

There was general support from stakeholders for improved integration across policy frameworks, noting that marine plan policies should add value to what other frameworks deliver. The need for integration was emphasised for the coastal zone, where there is a need for join up across marine and terrestrial planning. The SMP refresh guidance for Wales[91] notes that the WNMP is aligned with the broad principles of the SMPs, and the 'health checks' raised no issues with the existing relationships between the SMP and the WNMP. However, the report provided a key recommendation to improve awareness of the WNMP and the policies therein, and its supporting materials. Improvements in integration are being sought in some SMP areas. For example, stakeholders raised that the MMO and the Southern Coastal Group[92] have drafted, for SMP15, an SMP and marine plan policy matrix for the South Marine Plan, with a similar matrix previously explored for SMP19 (The Severn Estuary). A review of SMP policies alongside those of the WNMP could help to support integration of the plans.

As outlined in Section 3.2.3, the Climate Adaptation Strategy directly references the WNMP and incorporates some of its policies into cross-sector adaptation action plans, but as the WNMP precedes the Climate Adaptation Strategy, it does not directly reference it. Should the WNMP be updated, this would bring the opportunity to more directly integrate the Climate Adaptation Strategy. However, recognising that review cycles of documents vary, and the need for the planning framework to remain responsive, detail could remain in the Climate Adaptation Strategy or be included in guidance, rather than drawn into the WNMP.

Potential linkages with FMPs were highlighted by stakeholders, noting that FMPs could be integrated in an iterative manner. This would ensure that as data on the impacts of certain types of fishing gear on blue carbon habitats is developed, the marine plan can reflect these new datasets in a precautionary manner. The FMPs could also be used to assist in climate-smart marine planning to ensure that areas identified for future fishing are maintained, should fish stocks move due to climate change, for example. FMPs were introduced after publication of the WNMP and are therefore not currently included. Should an update of the WNMP be taken forward, this would provide an opportunity for strengthened integration.

4.2.6 Enhancement of climate change adaptation and mitigation

Potential actions identified and discussed with stakeholders included: updating the WNMP vision to explicitly capture climate change adaptation; placing greater emphasis on the dual nature and climate crises in policy, context, and guidance; embedding future projections for sectors in the WNMP; and bringing stronger integration of nature into mitigation policy.

As outlined in Section 3.1, several countries include or are in the process of integrating climate change adaptation and mitigation in the vision and objectives of the plan (e.g., Sweden). The WNMP currently contains a Plan Objective relevant to climate change, and the vision references the Welsh marine area making a strong contribution to energy security and climate change emission targets. The vision of the WNMP could be updated to also explicitly capture climate change adaptation and the importance of the plan being 'climate-smart'. This was generally supported by stakeholders, noting that the WNMP provides the central framework from which guidance follows. However, the survey showed stronger support for alternative actions, such as embedding future projections for sectors in the WNMP (Appendix F.6), aligning with approaches in Canada. Should the WNMP be updated, there would be

[91] NRW (2021). Shoreline Management Plans: Supplementary guidance for their ongoing maintenance and delivery – Wales. NRW Evidence Report, Natural Resources Wales, Cardiff. Available at: Shoreline Management Plans: Supplementary guidance for their ongoing maintenance and delivery – Wales (Accessed 03 March 2026).

[92] Southern Coastal Group and SCOPAC (2026). Available at: The Southern Coastal Group and SCOPAC | Portland Bill to Selsey Bill including the Isle of Wight (Accessed 03 March 2026).

merit in carrying out both actions to support the plan being climate-smart. Should the WNMP not be updated, projections for sectors could be captured within guidance and supporting evidence.

To bring stronger integration of nature into mitigation policy, it was noted by stakeholders that SOC_10 (Minimising climate change) mainly identifies that climate change effects can be minimised by reducing greenhouse gas emissions. It was therefore raised that blue carbon habitats could potentially play a role in mitigating climate change. As discussed in Section 3.2.2, it is recognised that some habitats and species can be more sensitive to climate change and may therefore experience population and distributional impacts. It is therefore important to ensure a diverse range of blue carbon approaches to build resilience and avoid a *de facto* approach that doesn't take account of local conditions. Policy SOC_10 could be updated to also capture wider approaches to minimising climate change, but there is a risk this could duplicate the intention of ENV_01 (Resilience to climate change).

The important role of marine restoration in supporting climate change mitigation and adaptation was noted, and that action to encourage large-scale multi-habitat projects would help to maximise benefits. Support for restoration projects is currently captured in ENV_01 (Resilient marine ecosystems) which states that 'Proposals that contribute to the protection, restoration and/or enhancement of marine ecosystems are encouraged'.

Climate change adaptation could also be enhanced through links with the Climate Adaptation Strategy. This is discussed in Section 4.2.5.

4.3 Guidance

4.3.1 Introduction

WNMP guidance sits alongside the WNMP itself and can be updated more frequently than the Plan. Guidance must align with the policies set out in the WNMP. Effective guidance can help users to better understand and utilise the WNMP to plan projects in accordance with the Plan's objectives, including adaptation and mitigation of climate change. Four potential areas of development for guidance were identified and discussed with stakeholders:

- Planning documents published in a way that can be updated regularly;
- Guidance tailored and accessible to the intended audience;
- Guidance consolidation; and
- Climate change guidance created or updated for all sectors.

These are discussed in Sections 4.3.2 to 4.3.5 below. During the stakeholder workshop, the action receiving the least number of votes on the topic of guidance was 'guidance tailored and accessible to the intended audience'. The remaining three actions had a fairly even spread of votes across the potential areas of development for guidance, but the greatest number of votes was received for 'climate change guidance (e.g. in a technical statement) created (or updated) for all sectors'.

Guidance was selected as a topic to explore based on the review of approaches to climate change in other countries (Section 3.1 and Appendix C) and the SWOT analysis (Section 3.2.6 and Appendix E.5). The SWOT analysis detailed that there was currently an inconsistent treatment of climate issues in implementation guidance for the WNMP. It was also found that climate change may outpace policy relevance (shifting species distributions, increased risks) which may be an opportunistic area for guidance to help marine licences remain reactive to climate change evidence where a formal revision of the Plan would take longer to implement. This research was used to form the actions put forward in the workshop.

Each proposed action was voted upon by workshop attendees to demonstrate which ideas should be prioritised. Climate change guidance created or updated for all sectors was the most popular action. It was raised by workshop attendees that good guidance is inherently well tailored and accessible to the intended audience and guidance documents are generally more easily updated than the WNMP which requires a formal re-planning process.

4.3.2 Planning documents published in a way that can be updated regularly

The need for planning documents to be published in a way that can be updated regularly was discussed with stakeholders. Non-statutory documents such as technical statements, sector locational guidance, evidence and other contextual planning documents, are more easily updated than re-writing policy documents such as the WNMP.

There was broad agreement that guidance should be subject to regular review, with updates made where necessary to ensure alignment with current government priorities, policies and consideration of emerging evidence. Non-statutory guidance was seen as more flexible and easier to update than statutory documents, but it must clearly distinguish between what is recommended and what is required, and remain consistent with statutory frameworks. Some stakeholders considered implementation guidance, technical guidance and SMPs to be appropriate vehicles for updates, particularly where new evidence becomes available or where there are changes in regulation, sectoral approaches or leasing processes. Aligning review cycles with established milestones, such as the Climate Change Committee's five-year reporting cycle and the publication of Climate Change Risk Assessments, was suggested, while recognising that the frequency of updates must take account of available resources. Monitoring and evaluation were identified as critical in informing when updates are needed, with climate change adaptation and mitigation highlighted as areas that should be more centrally embedded within marine plan monitoring. Finally, it was noted that guidance should be published in an accessible, readily updateable format, such as a web-based platform, to allow timely responses to new evidence, reports and policy developments, while statutory guidance could provide additional weight and allow minor clarifications without triggering a full policy review.

4.3.3 Guidance tailored and accessible to the intended audience

The need for guidance to be tailored and accessible to the intended audience was discussed with stakeholders. Guidance documents could have a tiered structure with different amount of detail at different levels, different guidance could be published for different intended users, and guidance could help assess proposals on a case-by-case basis.

Views differed on how guidance should be tailored and delivered, but there was broad agreement that clear, accessible guidance on climate and nature would benefit most sectors. Many respondents emphasised the need for bespoke guidance developed collaboratively with Statutory Nature Conservation Bodies (SNCBs), sector experts and governing bodies, supported by adequate resourcing and funding to enable meaningful input. Guidance was seen as most effective when transparent and consistent, while also providing practical, sector-specific direction for both project proponents and decision makers. Particular gaps were identified in coastal and restoration licensing, including guidance aimed at community groups seeking to implement nature-based solutions to address climate change impacts. Given variable levels of in-house expertise, respondents highlighted the importance of linking guidance to relevant climate projections, especially for coastal processes such as changing sea states and storminess. The complexity of the coastal zone, with overlapping planning and regulatory regimes, reinforced calls for integrated guidance to support climate mitigation and adaptation, potentially aligned with terrestrial planning frameworks. Overall, guidance was viewed as a means of building a shared understanding across users, supported by practical case studies, clarity on affordability and funding support, and an appreciation of differing sectoral capacity to implement change.

4.3.4 Guidance consolidation

A series of potential actions were identified and discussed with stakeholders including: how guidance could be consolidated across multiple frameworks and processes to make climate change more explicit; how each sector can consider nature-based solutions, with potential inclusion of case studies; and consolidation/signposting of tools.

There was broad support for consolidating guidance, with many respondents noting that a single, clearly structured guidance document could simplify implementation across multiple frameworks and policies, including for emerging areas such as blue carbon. Consolidation was seen as beneficial in improving navigability, reducing duplication and resource, and promoting consistency in approach, particularly if the guidance signposts existing best-practice documents and clearly identifies key stakeholders to consult, such as SNCBs. However, some cautioned that consolidation could be challenging and emphasised that guidance must be practical and effective, as there is a risk that producing multiple or overly complex documents could result in guidance being overlooked or under-used. To address this, respondents highlighted the importance of keeping guidance simple, easy to navigate, and focused on key sectors, with the inclusion of case studies to support real-world application. Early stakeholder engagement was also considered important to identify which elements of existing frameworks are most relevant across sectors, helping to ensure that any consolidated guidance is widely applicable and used as intended.

4.3.5 Climate change guidance created or updated for all sectors

Stakeholders were asked whether climate change guidance should be created or updated for all sectors. This included whether guidance could explain what is expected from each sector included within the WNMP, and what actions can be taken for avoiding, minimising and mitigating climate change and how the overarching climate change policies should be adhered to.

This action received the most votes in the workshop under the topic of guidance. However, there were differing views on whether cross-cutting or sector-specific guidance should be adopted. Stakeholder responses highlighted broad support for strengthening guidance on how climate change should be addressed across sectors. Many respondents emphasised the value of clearer, practical guidance particularly on issues such as blue carbon, climate adaptation and mitigation for different sectors, and how regulatory requirements may evolve under different climate pressures and scenarios.

Diverging opinions arose where some attendees suggested that climate change advice should be fully embedded within existing overarching planning and implementation guidance, rather than addressed through separate documents, to ensure consistency and avoid the duplication as a result of making sector-specific guidance. Others supported sector-specific guidance or guidance grouping sectors facing similar climate change related challenges, noting that different sectors face distinct risks and adaptation needs and could benefit from tailored advice informed by climate risk assessments.

There was further debate as to whether there should be distinct guidance for different user groups such as applicants, case officers and consultees. Respondents noted that less experienced or under-resourced stakeholders require clear, proportionate guidance to enable effective engagement without reliance on external expertise. Others added that rather than having different documents providing tailored advice, an overarching document could have different sections tailored to different audiences.

Overall, a hybrid approach was commonly proposed, combining overarching climate change policy and definitions with targeted sector-level or grouped guidance, signposting to existing resources and integrating climate considerations more explicitly within approval and decision-making processes.

4.4 Evidence

4.4.1 Introduction

Evidence underpins the application of policy and guidance. It can be made available on data platforms, such as DataMapWales[93] and the Marine Planning Portal[94], but it can also be drawn from a wide range of other sources. Five potential opportunities for improved evidence were identified and discussed with stakeholders:

- Emerging climate and environmental data to be regularly updated and available;
- Integration across data platforms;
- Strengthened assessment of cumulative impacts;
- Inclusion of natural capital approaches; and
- Strengthened monitoring of existing policies.

These are discussed in Sections 4.4.2 to 4.4.6 below. During the stakeholder workshop, there were two potential areas of development for evidence which received a high number of votes in comparison to the remaining three actions. These were 'emerging climate and environmental data to be regularly updated on DataMapWales and/or the Marine Planning Portal to aid in decision making' and 'better integration across data platforms to aid in decision making'.

4.4.2 Climate and environmental data

Potential actions identified and discussed with stakeholders included: signposting of blue carbon habitats and MPAs, future projections for sectors, sea level rise and heatwave data, and MSPACE project outputs; and a full review of climate change relevant information held on DataMapWales alongside a 'call for evidence' for other relevant information that could be uploaded.

Through the survey and workshop, stakeholders identified a range of datasets that could be drawn upon for marine planning. Those raised by stakeholders through this study included:

- Blue carbon habitat mapping (e.g., NRW data/maps identifying carbon within MPA features; the blue carbon inventory mapping[95]; Project Seagrass[96]);
- Coastal erosion risk maps[97];
- Coastal Monitoring Centre data[98];
- Coastal squeeze evidence (e.g., NRW Coastal Squeeze Evidence and Monitoring Requirement Review[99]);

93 Welsh Government. (2025). DataMapWales. Available at: Home | DataMapWales (Accessed 04 November 2025).

94 Welsh Government. (2025). Wales Marine Planning Portal. Available at: Wales Marine Planning Portal (Accessed 04 November 2025).

95 Burrows *et al.*, (2024). The United Kingdom's Blue Carbon Inventory: Assessment of Marine Carbon Storage and Sequestration Potential in the Irish Sea and Welsh Coast Region (Including Within Marine Protected Areas). A Report to The Wildlife Trusts, WWF and the RSPB. Scottish Association for Marine Science, Oban. Available at: Irish Sea & Welsh Coast - scientific report.pdf (Accessed 03 March 2026).

96 Project Seagrass (nd). Project Seagrass. Available at: Homepage | Project Seagrass (Accessed 03 March 2026).

97 NRW (2025). Check your coastal erosion risk (National Coastal Erosion Risk Management map). Available at: Natural Resources Wales / Check your coastal erosion risk (National Coastal Erosion Risk Management map) (Accessed 03 March 2026).

98 Coastal Monitoring (nd). National Network of Regional and Coastal Monitoring Programmes. Available at: National Network of Regional Coastal Monitoring Programmes - Welcome (Accessed 03 March 2026).

99 NRW (2018). Coastal Squeeze Evidence and Monitoring Requirement Review. Available at: Microsoft Word - R3034 Draft NRW Cstl Sqz Data and LitRvw 26 Nov18.docx (Accessed 03 March 2026).

- Heatwave and temperature projections (Met Office)[100];
- JNCC data;
- MCCIP outputs and reporting cards[101];
- MSPACE[102];
- Sea-level rise and coastal flood projections;
- Storm survey and extreme weather event data;
- The Crown Estate's data, such as the Marine Delivery Routemap[103]; and
- UK marine climate projections[104].

A full analysis of data currently held on DataMapWales and the Marine Planning Portal was beyond the scope of this study. The findings of this study could be built upon to carry out a full review of existing data held on these platforms alongside a call for evidence to identify further key data sets to be uploaded. It was noted by some stakeholders that there could be an opportunity to develop the accessibility of the portals to ensure key datasets can be easily located.

Evidence is continually evolving and it is therefore important that the marine planning framework is responsive to this. Stakeholders highlighted the importance of regular reviews, alongside agile mechanisms to update and adapt policies and tools, as required. It was noted that this would likely require dedicated funding over the long-term and the identification of a body responsible for undertaking reviews and updates. Stakeholders suggested that data reviews could align with the five year reporting cycle from the Climate Change Committee and the release of the Climate Change Risk Assessments.

It was noted by stakeholders that there should be a clear audit trail of data used for decisions, which are based on the best available evidence at the time. Subsequent changes in data may influence future consenting decisions.

'Emerging climate and environmental data to be regularly updated and available' was identified during the stakeholder workshop as a priority area for development, also supported by the stakeholder survey results (Appendix F.6). It should be noted, however, that not all sectors attended the workshop or responded to the survey, which is recognised as a limitation to the study.

4.4.3 Integration across data platforms

The potential action to capture evidence from licensing applications and planning applications to facilitate knowledge sharing was discussed with stakeholders.

The evaluation of approaches to climate change in other countries (Section 3.1 and Appendix C) highlighted examples of countries which have integrated climate change data into their marine planning platforms or marine plans. For example, further work is required for MMO to evaluate the MSPACE project outputs and understand how they could be used to inform marine planning processes in

100 Met Office (nd). UK and Global extreme events – Heatwaves. Available at: UK and Global extreme events – Heatwaves - Met Office (Accessed 03 March 2026).

101 MCCIP (2026). Marine Climate Change Impacts Partnership. Available at: WELCOME TO THE MCCIP | Marine Climate Change Impacts Partnership (Accessed 03 March 2026).

102 Queirós *et al.* (2023) 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. 58 pp. doi: 10.14465/2023.msp02.tec Available at: MSPACE: Marine Spatial Planning Addressing Climate Effects | Marine Climate Change Impacts Partnership (Accessed 10 November).

103 The Crown Estate (2026). Marine Delivery Routemap. Available at: Marine Delivery Routemap | The Crown Estate (Accessed 03 March 2026).

104 Cefas (2025). UK marine ecosystem impacts under future warming pathways. Climate projection summary. Available at: Marine warming pathways_climate projection summary_V1.pdf (Accessed 03 March 2026).

England going forward; Scotland's National Marine Plan Interactive includes climate change layers such as UKCP09; and Sweden's Symphony tool combines climate model and marine planning data to inform national decisions. MSPACE has potential applicability across all UK administrations, and while further work is needed to understand confidence levels in its outputs, they could potentially support future decision making and be considered within a Welsh context. The forthcoming East Marine Plan case study may offer recommendations relevant to Wales, where MSPACE outputs are already available via DataMapWales. UKCP09 projections are not currently included and could be added to better inform proposal development.

The SWOT analysis (Section 3.2.6 and E.5) also evaluated that an opportunity for the WNMP was to integrate new climate modelling tools (e.g., MSPACE, UKCP18) and their projections to inform future planning for each sector. Additionally, an opportunity to strengthen other aspects of the Welsh marine planning process was to improve the integration of climate data into mapping tools such as including UKCP layers on DataMapWales (Section 4.4.2).

Responses from the workshop built upon the findings from the countries evaluation and SWOT analysis. Feedback detailed the opportunity to link to the Wales Coastal Monitoring Centre which hosts coastal change information, and the Maximising UK Adaptation to Climate Change (MACC) monitoring hub. This monitoring hub is actively seeking to populate their Climate Change Knowledge Portal with a Wales-specific section.

Attendees further noted that integration is hindered by data sharing regulations and incompatibility. Instead, Marine Environmental Data and Information Network (MEDIN) data standards should be adhered to and promoted to improve sharing capabilities and interoperability.

There was general support for the integration of data platforms from stakeholders, but it was noted that this can be challenging and requires funding and consensus. The importance of engagement across administrations was noted. It is acknowledged that engagement between marine planning authorities occurs between administrations through both a UK wide coordination group and through specific liaison meetings between representatives of each devolved administration. Seven nation meetings have been held in the past pulling together different marine planning decision makers from UK administrations and bordering nations (England, Scotland, Wales, Northern Ireland, Isle of Man, Gurnsey, Jersey and the Republic of Ireland). The UK devolved administrations also sit on several North Sea coordination and collaboration groups that maintain communication between UK and European marine planning authorities.

4.4.4 Assessment of cumulative impacts

Potential actions identified and discussed with stakeholders included: development of a bespoke tool to assess cumulative impacts; and to agree consistent methodologies for assessing cumulative impacts.

As outlined in Section 3.1, cumulative impacts are recognised in some countries as a key tool for marine planning in the context of climate change. For example, Sweden's tool 'Symphony' is used to objectively compare the cumulative environmental impact from different marine spatial planning options, ensuring marine spatial plans are developed with an ecosystem approach[105]. It was noted by stakeholders that cumulative and in-combination assessments are already being undertaken, and these could be explored further. Cumulative effects is a challenging area for assessments due to the level of uncertainty that can exist across the individual projects/components in addition to the lack of agreed methodologies for assessing cumulative impacts. Stakeholders raised that Cefas is preparing to carry out a Cumulative Impact Assessment using the East Marine Plan as the study area. The study will therefore help to identify

[105] Swedish Agency Marine and Water Management. (2020). Symphony – a tool for ecosystem-based marine spatial planning. Available at: Symphony – a tool for ecosystem-based marine spatial planning - Marine Spatial Planning - Swedish Agency for Marine and Water Management (Accessed 04 November 2025).

areas of high cumulative impact on different species within that area but won't translate directly over to the Welsh Marine area. However, lessons may be learned regarding the method for undertaking a Cumulative Impact Assessment, such as likely data requirements and potential gaps.

4.4.5 Natural Capital approaches

Potential actions identified and discussed with stakeholders included: embedding natural capital in baseline evidence; and carrying out a natural capital assessment of Plan policies.

Within the state of Natural Resources Report published in December 2025, NRW stated that 'going forwards, sustainable management of marine natural resources needs to be climate-smart, taking account of predicted changes and adapting approaches to meet the implications of a changing climate'[106]. A natural capital approach has not been committed to in Wales, and SMNR[107] is the current approach promoted. SMNR is defined in the Environment (Wales) Act as: 'using natural resources in a way and at a rate that maintains and enhances the resilience of ecosystems and the benefits they provide. In doing so, meeting the needs of present generations of people without compromising the ability of future generations to meet their needs, and contributing to the achievement of the well-being goals in the Well-being of Future Generations Act.' A natural capital approach considers the value of the natural environment for people and the economy, with 'stocks' of natural capital providing flows of environmental or ecosystem' services over time[108]. Delivery of SMNR is therefore linked to the effective management of natural capital.

Stakeholders raised that natural capital is becoming more common in usage and when considering the application of a natural capital approach in Wales, it is important to ensure efforts are not duplicated with SMNR. Outputs from the Department for Environment Food and Rural Affairs (Defra's) marine Natural Capital Ecosystem Assessment (mNCEA)[109] were raised as a valuable reference source.

The MMO is exploring embedding a natural capital approach into the SA of the East Marine Plan[110]. This is a novel area of application. The draft SA will be published alongside the updated East Marine Plan at consultation. Lessons learned from the MMO case study for the East Marine Plan could be drawn upon to inform approaches in Wales, particularly if an update to the WNMP is carried out, and an accompanying SA required. A formal lessons learned exercise has not been carried out at the time of writing, but initial lessons learned reported by the MMO include:

- The approach can be data and resource intensive;
- Data quality and availability can be variable;
- Given the complexity of the approach there is a high risk of human error, however opportunities may exist for automation to reduce these risks and speed up the process; and
- Given the technically complex and novel nature of the approach, a dedicated expert is required.

Embedding a natural capital approach could be considered outside of an SA, adopting approaches similar to the Republic of Ireland by developing a natural capital asset register and national natural capital accounts (Section C.4.4). The NMPF in the Republic of Ireland contains a biodiversity policy relating specifically to natural capital assets recognised by government.

106 Natural Resources Wales. (2025). State of Natural Resources Report 2025. Available at: State of Natural Resources Report 2025 (Accessed: 04 March 2026).

107 NRW (nd). Sustainable Management of Natural Resources. Available at: Introducing Sustainable Management of Natural Resources (Accessed 03 March 2026).

108 Defra (2023). Guidance: Enabling a Natural Capital Approach. Available at: Enabling a Natural Capital Approach (ENCA) - GOV.UK (Accessed 03 March 2026).

109 Defra (nd). Marine NCEA. Available at: Natural Capital and Ecosystem Assessment (NCEA) programme - GOV.UK (Accessed 03 March 2026).

110 MMO (2025). Guidance: East Marine Plan Scoping Report. Available at: East Marine Plan Scoping Report - GOV.UK (Accessed 03 March 2026).

4.4.6 Marine plan monitoring and evaluation

Potential actions identified and discussed with stakeholders included: collating findings across indicators to provide a targeted view on if individual climate change policies are being achieved, and better data sharing regarding progress on climate-related actions; and whether measures like flood resilience and habitat protection are reducing risk to coastal facilities. The MCAA (2009) requires a three yearly review cycle for the WNMP. Marine plan monitoring is key to ensuring appropriate review and adaptation of marine plans.

Given the dynamic nature of the marine environment and the broad range of factors influencing marine ecosystems and human activities, marine plan monitoring is a challenging area. It can be difficult to directly attribute an observed change to a marine plan policy, with monitoring assessments often being necessarily qualitative in nature. Stakeholders raised that the monitoring approach needs to be adaptable by design, recognising the changing environmental and climate context.

The MMO is currently using a logic model approach to monitor the effectiveness of marine plans but is moving towards a theory of change (ToC) model for the overall plan. The draft ToC will be published alongside the draft East Marine Plan for consultation. This shift provides an opportunity to integrate climate-smart marine planning into monitoring more comprehensively. The MMO is initiating a piece of work as part of the update to the East Marine Plan to revisit monitoring indicators for all policies, noting that for monitoring to be effective it should be built into policy development. It was raised by stakeholders that it is unlikely that a single indicator can effectively measure an outcome. Therefore, multiple indicators are likely required to support evaluation.

Should the WNMP be updated, a ToC could be developed to ensure integration of climate-smart principles, with monitoring evaluation providing evidence for whether current indicators need updating. Liaison with the MMO could be taken forward to draw upon any lessons learned through the update to the East Marine Plan.

The MMO uses a 'Marine Plan Policy Assessment Tool' to help facilitate a plan-led process for marine licensing decisions. This is completed by applicants to demonstrate policy compliance. Data from the tool can be extracted to inform marine plan monitoring. NRW is developing a similar tool for licensing decisions in Wales, which will improve understanding of how the Plan policies are considered in the licensing decision document. This will aid in understanding where the Plan is having a particular impact.

4.5 Options for marine planning policy and guidance to support developers

Through the survey and workshop, stakeholders agreed that there is a need to protect habitats delivering climate mitigation and resilience through blue carbon and coastal protection, for example, and that there are cross-cutting climate pressures affecting multiple sectors including warming, acidification, sea level rise, extreme events and species distribution shifts. Stakeholders broadly supported the need to strengthen delivery of climate change actions through marine planning. Thirteen agreed whereas only two disagreed, with two stakeholders voting neither for nor against (Appendix F.5).

Sections 4.2, 4.3, and 4.4 explored stakeholder views on policy, guidance and evidence. This section explores these topics with a developer focus in support of Objective 4 of the study (Section 1).

4.5.1 Policy

From a list of six sectors currently not included in the WNMP with supporting policies, there was strong consensus in the stakeholder survey that surface water management and waste water treatment and disposal should be included, with even stronger consensus for environmental restoration and improvement (Appendix F.9).

There was a difference in opinion, however, when sector-specific or overarching climate change policies were considered. Whilst there was strong support for individual sectors to have targeted climate change policies, there were voters who strongly disagreed with this proposition. (Appendix F.5). There was stronger support for specific sectors having targeted marine planning policy or guidance with 79% respondents voting for yes, and 21% voting for 'I don't know' (Appendix F.15).

Figure 5 shows the sectors which stakeholders felt would benefit from targeted marine planning policy or guidance, particularly highlighting surface water management and waste water treatment and disposal, and renewable energy (covering static and floating wind farms, wave, and tidal energy). It is noted that water utility companies did not respond to the survey or attend the workshop, presenting a limitation of this study. This is therefore an area where further engagement would strengthen outputs to determine if sector-specific climate change policies or guidance would be beneficial for this sector. Please note within Figure 5, surface water management and waste water treatment and disposal has been shortened to 'surface water management' for readability.

Building upon the stakeholder survey and considering the workshop outputs, responses reflected mixed views on bespoke sector policies, noting concerns about the burden of reviewing detailed sector-specific information. There were suggestions that grouping sectors with shared objectives and integrating coastal and terrestrial planning policies could provide a more streamlined and consistent approach for developers.

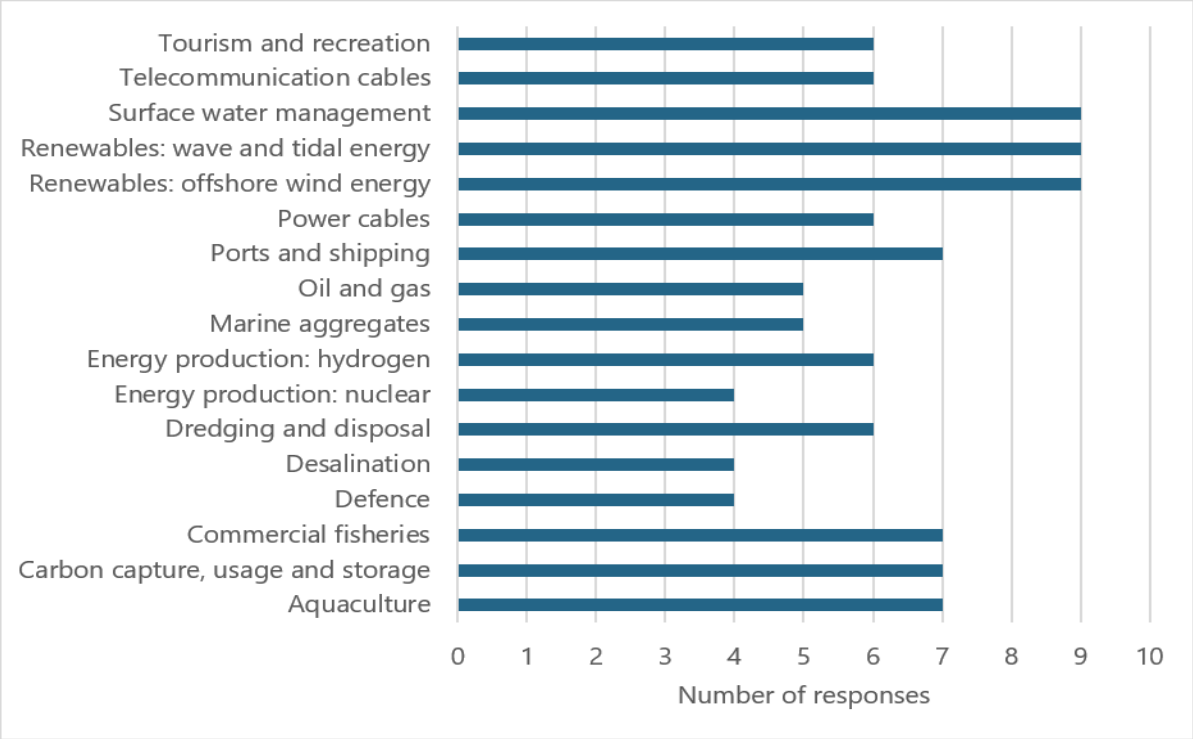


Figure 5 Survey responses for Q15 which asked 'Which sectors would benefit from targeted marine planning policy or guidance to support adapting to climate change or to mitigate climate change impacts?'

4.5.2 Guidance

The stakeholder engagement demonstrated that there were diverging views on whether overarching guidance would be most suitable for climate mitigation or adaptation, or whether sector-specific guidance would be most helpful for developers and other stakeholders.

There was strong support for the provision of overarching, cross-sector climate change guidance, supplemented by targeted, sector-specific advice where this is most needed. Respondents favoured a single, coherent framework for climate guidance, within which tailored technical statements or implementation guidance could be developed for vulnerable or priority sectors. Such guidance should support planners, case officers and developers in identifying, interpreting and applying climate evidence in decision-making, and should include clear, practical and affordable adaptation measures alongside appropriate training. A baseline level of guidance applicable to all marine users was widely supported, with sector-specific add-ons proposed for priority areas including aquaculture (focusing on species resilience, future environmental conditions and infrastructure), fisheries (addressing shifting stocks and changing fishing grounds), ports (reflecting complex governance boundaries and the need for bespoke clarity), and coastal protection and sea defences as a sector in its own right. Strengthening links between the WNMP and FMPs was also highlighted.

Overall, there was consensus that all marine sectors would benefit from climate-related guidance, whether focused on reducing sectoral contributions to climate change or supporting adaptation to its impacts, with respondents emphasising the need for consistent, aligned climate policy across regimes and clearer definitions of key terms, such as ‘significant emissions’.

4.5.3 Evidence

Developers expressed that easy access to regularly updated and accessible data is essential to support effective decision making. Licence applications should clearly state the data sources used to inform the project, including the date the data was last updated, so that there can be confidence that decisions are based on the best currently available information. This transparency is particularly important given the rapidly evolving evidence base associated with climate change. It may also enable case officers to signpost applicants to more relevant or up to date datasets, for example through platforms such as DataMapWales.

5 Study Conclusions and Options for Consideration

This study has examined how climate-smart principles can be more explicitly and effectively embedded within the Welsh marine planning framework. The findings demonstrate that the WNMP already provides a strong basis for supporting climate change adaptation and mitigation, particularly through Plan Objective 8 and its four supporting policies. Climate change appeared in early thinking of development of the WNMP, but data gaps and limited modelling constrained how far climate-smart planning could be integrated during development.

As understanding of climate-smart approaches to marine planning have developed, there are now opportunities to further strengthen climate integration into the WNMP, evidence base, and implementation tools. Across the review of international approaches, assessment of the existing Welsh framework, stakeholder survey, and workshop exercises, several consistent themes emerged, relating to:

- Opportunities for policy development;
- Opportunities for guidance development;
- Evidence needs; and
- Monitoring and evaluation.

Taken together, these themes highlight a shared desire among stakeholders for the marine planning system to become more explicitly climate-smart, ensuring Wales is well positioned to manage risks and support long-term sustainable use of the marine area. This is supported through the stakeholder workshop, where priority actions were voted for across all three themes explored. As Wales considers future iterations or updates to the WNMP and related material, opportunities to strengthen climate-smart marine planning are outlined below.

5.1 Opportunities for policy development

Opportunities for policy development centre on clarifying and potentially strengthening climate-relevant policies within the WNMP. This includes:

- Reviewing policy wording (e.g., ‘should’ versus ‘must’);
- Addressing gaps such as sector-specific climate considerations; and
- Exploring options to integrate future climate projections into sectoral policy narratives.

Evidence from other countries underscores the value of embedding climate adaptation and mitigation priorities into plan vision statements, objectives and spatial policies. While any substantive policy change would require a formal re-planning exercise, there is strong potential for enhancements through supporting materials, particularly where flexibility is required to reflect emerging climate evidence.

5.2 Opportunities for guidance development

Opportunities for guidance development were strongly supported by stakeholders. In particular, the need for a coherent suite of climate-focused guidance, either cross-cutting or tailored to specific sectors, was highlighted as a key mechanism to enhance consistency in decision-making and provide practical support for applicants and regulators. Guidance that is accessible, regularly updated, and

aligned with terrestrial planning processes would help clarify expectations for climate adaptation and mitigation, including how to interpret policy requirements, incorporate climate projections, and identify nature-based solutions.

5.3 Evidence needs

Evidence needs were identified as central to more climate-responsive planning. Enhancing the availability and integration of climate and environmental data, such as climate projections, blue carbon habitat maps, coastal risk information and outputs from programmes like MSPACE, could significantly strengthen the application of WNMP climate change relevant policies. Stakeholders emphasised the importance of improving data accessibility (particularly on DataMapWales), ensuring compatibility across data platforms, and developing mechanisms to support regular evidence updates, recognising the evolving nature of climate science.

5.4 Monitoring and evaluation

Monitoring and evaluation presents a further opportunity to enhance the integration of climate-smart approaches into the Welsh marine planning framework. Existing indicators capture several climate-relevant themes, but do not yet provide a clear picture of how effectively climate objectives are being achieved. Strengthening evaluation through more targeted climate-specific reporting, revisiting indicator design, and drawing on best practice, such as logic modelling and theory of change approaches, could help to ensure that monitoring remains fit-for-purpose as climate pressures and policy priorities evolve.

5.5 Summary

Across policy, guidance, evidence and monitoring, this study highlights a broad consensus on the importance of a phased, proportionate approach to building climate resilience into marine planning policy in Wales. While some potential improvements would require formal replanning of the WNMP, a significant number of enhancements can be delivered through supporting guidance, evidence integration, update cycles and targeted communication.

The Welsh marine planning framework already contains many of the elements required to support climate-smart marine planning. However, to remain effective in the face of accelerating climate change, there are clear opportunities to strengthen climate change considerations in policies, guidance, evidence, and monitoring and evaluation.

Collectively, these enhancements could strengthen ecosystem resilience, and support coastal communities by enabling sustainable, climate-smart marine development over the long term, therefore supporting Welsh Government in delivering national climate targets, the Climate Adaptation Strategy for Wales, the Wellbeing of Future Generations Act, and the Kunming-Montreal Agreement[111].

[111] Convention on Biological Diversity (2024). Kunming-Montreal Global Biodiversity Framework. Available at: Kunming-Montreal Global Biodiversity Framework (Accessed 03 March 2026).

6 Abbreviations/Acronyms

AA	Appropriate Assessment
ABP	Associated British Ports
CaSP	Coasts and Seas Partnership
CCA	Coastal Change Adaptation
CCAP	Coastal Change Adaptation Plans
CCRA	Climate Change Risk Assessment
CSMP	Climate-Smart Marine Spatial Planning
DCEE	Department of Climate Energy and the Environment
Defra	Department for Environment Food and Rural Affairs
DMAP	Designated Maritime Area Plan
EEZ	Exclusive Economic Zone
EIA	Environmental Impact Assessment
eNGO	environmental Non-Governmental Organisation
FMP	Fisheries Management Plan
GBRMP	Great Barrier Reef Marine Park
GBRMPA	Great Barrier Reef Marine Park Authority
GES	Good Environmental Status
GW	Gigawatt
HLO	High Level Objective
HRA	Habitats Regulations Assessment
JNCC	Joint Nature Conservation Committee
LDP	Local Development Plan
LOMA	Large Ocean Management Area
MaPP	Marine Plan Partnership
MCA	Maritime and Coastguard Agency
MCAA	Marine and Coastal Access Act
MCCIP	Marine Climate Change Impacts Partnership
MEDIN	Marine Environmental Data and Information Network
MEECC	The Ministry of Environment, Energy and Climate Change
MLWS	Mean Low Water Springs
MMO	Marine Management Organisation
mNCEA	marine Natural Capital Ecosystem Assessment
MOD	Ministry of Defence
MPA	Marine Protected Areas
MPN	Marine Planning Notice
MPS	Marine Policy Statement
MPSRG	Marine Planning Stakeholder Reference Group
MSP	Marine Spatial Plan
MSPACE	Marine Spatial Planning Addressing Climate Effects
MW	Megawatt
NAF	National Adaptation Framework
NCCAF	National Climate Change Adaptation Framework
NDC	Nationally Determined Contributions
NFCS	National Framework for Climate Services
NGGI	National Greenhouse Gas Inventory
NGO	Non-Governmental Organisation
NM	Nautical miles
NMP	National Marine Plan

NMP2	National Marine Plan 2
NMPF	National Marine Planning Framework
NMPi	National Marine Plan Interactive
NPF4	National Planning Framework 4
NRW	Natural Resources Wales
NSIP	Nationally Significant Infrastructure Project
OMPPs	Overarching Marine Planning Policies
ORE	Offshore Renewable Energy
OWF	Offshore Wind Farms
PPS	Planning Position Statement
PPW	Planning Policy Wales
RCP	Representative Concentration Pathways
RSPB	Royal Society for the Protection of Birds
SA	Sustainability Appraisal
SAC	Special Area of Conservation
SAP	Sectoral Adaptation Plan
SCCAP	Scottish Climate Change Adaptation Programme
SEA	Strategic Environmental Assessment
SeyCCAT	Seychelles Conservation & Climate Adaptation Trust
SMART	Specific Measurable Achievable Relevant and Time-bound
SMHI	Swedish Meteorological and Hydrological Institute
SMNR	Sustainable Management of Natural Resources
SMP	Shoreline Management Plan
SMSP	Seychelles Marine Spatial Plan
SNCB	Statutory Nature Conservation Body
SoNaRR	State of Natural Resources Report
SPA	Special Protection Area
SPP	Statement of Public Participation
SRA	Strategic Resource Area
SST	Sea Surface Temperature
SwAM	The Swedish Agency for Marine and Water Management
SWOT	Strengths, Weaknesses, Opportunities, Threats
TCE	The Crown Estate
TNC	The Nature Conservancy
ToC	Theory of Change
TWh	Terawatt hour
UNDP GEF	United Nations Development Programme Global Environment Facility
UNESCO	United Nations Educational, Scientific and Cultural Organization
UKCP09	UK Climate Projections 2009
UKCP18	UK Climate Projections 2018
WNMP	Welsh National Marine Plan

Cardinal points/directions are used unless otherwise stated.
SI units are used unless otherwise stated.

7 Glossary

Bright spots: areas where species may find improved habitat condition in the medium term and where there may be new opportunities for sustainable blue growth and conservation[112].

Climate change adaptation and mitigation: Climate change 'adaptation' is a term used to describe actions taken to address climate risks and increase climate resilience, whereas climate change 'mitigation' refers to actions taken to limit further global warming through reductions in greenhouse gas emissions[113].

Climate-smart marine planning: Marine planning that integrates climate-related knowledge; adapts to changing conditions; and supports climate adaptation and mitigation actions[114].

Climate resilience: the ability to anticipate, prepare for, and respond to hazardous events, trends, or disturbance related to climate[112].

Climate refugia: areas where environmental conditions are projected to remain stable over time[112].

Cumulative impact: the impacts (positive or negative, direct and indirect, long-term and short-term) arising from a range of activities throughout an area or region, where each individual effect may not be significant if taken in isolation, but collectively may impact and damage the environment[112].

Debt-for-Nature Initiative: financial mechanisms that allow portions of a developing country's foreign debt to be forgiven in exchange for commitments to invest in biodiversity conservation and environmental policy measures[115].

Ecosystem services: the benefits provided by ecosystems that contribute to making human life both possible and worth living. Coastal and marine ecosystem services include: provisioning services (e.g., fisheries, building materials); supporting services (e.g., life-cycle maintenance for both fauna and local communities, element and nutrient cycling); regulating services (e.g., carbon sequestration and storage, erosion prevention, waste-water treatment, moderation of extreme events); and cultural services (i.e. tourism, recreational, aesthetic, and spiritual benefits)[112].

Natural capital: the stocks of living and non-living resources that provide benefits and services needed by people and all live on Earth[112].

[112] MSPglobal (2021). International guide on marine/maritime spatial planning, volume 3: Climate-smart Principle. Available at: MSPglobal: international guide on marine/maritime spatial planning, volume 3: Climate-smart Principle - UNESCO Digital Library (Accessed 27 February 2026)

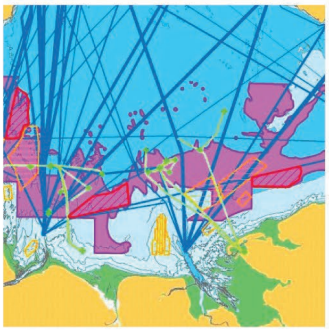
[113] Welsh Government. (2024) Climate Adaptation Strategy for Wales. Available at: Climate Adaptation Strategy for Wales (Accessed 27 February 2026)

[114] Based upon the definition of 'climate-smart' from Frazão Santos *et al*. (2024).

[115] Bove, T (2021). What are debt-for-nature swaps & how can they address countries' climate and debt crises? Available at: https://earth.org/debt-for-nature-swaps/ (Accessed 11 March 2026)

Appendices




Innovative Thinking - Sustainable Solutions

ABP mer

A Study Methods

A.1 Objective 1: Approaches in other countries

Objective 1 was completed through a desk-based literature review. Initial scoping was undertaken, following development of a search protocol, enabling a broad web-based search of planning approaches across different countries. Eight countries were identified for detailed review and agreed with Welsh Government.

A.2 Scoping exercise

To ensure the inclusion of the most relevant information, a scoping exercise was undertaken to identify countries to be taken forward for detailed investigation. This included applying the search protocol to ensure consistency, transparency, and replicability in identifying relevant literature and policy documents. Microsoft Co-Pilot Researcher Agent was used to apply the search protocol (Appendix A.3).

Based on a review of academic research papers, 14 countries were identified for the scoping exercise:

- Australia;
- Belgium;
- Canada;
- England;
- Ghana;
- Indonesia;
- Republic of Ireland;
- Italy;
- Norway;
- Scotland;
- Seychelles;
- Sweden;
- The Netherlands; and
- USA.

To objectively identify the most appropriate countries to take forward for more detailed research and final reporting, the scoping exercise captured the following information for each country:

- An overview of the planning system (marine and terrestrial);
- The regulatory body/government department responsible;
- Whether climate change is considered within the policy approach and how;
- An assessment of the availability of information (Likert scale: 1 - 5; 1 = information minimal or not accessible, 5 = extensive information and readily accessible); and
- A recommendation of whether the country should be considered for more detailed research.

A summary of the scoping results is shown in Appendix B.

A.3 Search Protocol

To ensure the inclusion of the most relevant information, a search protocol was applied in the scoping exercise to ensure consistency, transparency, and replicability in identifying relevant literature and policy documents. Details of the search protocol are provided below.

Research aim:
Identify and review marine and terrestrial planning policy approaches to climate change in other countries (not confined to the UK).

Search strategy:
Google Scholar and Google were used to identify key sources of information. Government websites and academic research papers were targeted. The 14 countries outlined in Section A.2 were identified from academic research papers and were the focus of initial review. These countries were entered into search terms to assist with delivering targeted returns. As part of this, an initial established search protocol Word document was uploaded, and the research agent was asked the following statement:

Can you carry out an initial search for (country). Prioritise peer-reviewed articles and government reports, but also include other types of sources if they appear highly relevant (for example, independent reviews undertaken). As an output provide a list of the first 10 reference sources and a link to that reference source. I need to also know the total number of search results.

The search terms below were clarified within the search and acted as prompts:

The following key search terms were applied:
'marine planning' OR 'maritime spatial plan' OR 'marine spatial plan' OR 'spatial plan' OR 'coastal management' AND 'climate change' OR 'climate-smart' OR 'climate adaptation' OR 'climate resilience' AND 'selected country'

Microsoft Co-pilot produced ten references that were identified to be most relevant to the question asked. Prior to this, to check for accuracy, an initial Microsoft Co-Pilot Researcher Agent was tested against Wales. To enable a rapid review, to support the scoping exercise, the initial ten search results for each country were reviewed and documented. The criteria below were used to ensure the accuracy of the results outputted by Microsoft Co-pilot.

Inclusion and exclusion criteria:
Included:

- Peer-reviewed articles and government reports. Other types of sources included if they appeared highly relevant (e.g., independent reviews undertaken);
- Articles published in any language. For articles not published in English, translation tools were applied where available; and
- Reports published after 2010.

Excluded:

- Non-official sources and duplicates.

Screening of documents:
Titles and abstracts were reviewed to assess relevance of the reference to the objective aim. If the relevance was uncertain, the document was searched for the keywords 'plan' and/or 'climate'. If uncertainty in the relevance of the reference remained, an independent second review was undertaken by another project member.

Recording of results:
Results were recorded in an Excel spreadsheet, capturing:

- The reference source;
- External link to the reference;
- Whether the reference is relevant to the objective aims;
- The country/countries the reference is relevant to;
- The search terms used;
- Date search undertaken; and
- Number of results from search.

Information from the selected references sources were then extracted to capture:

- The country;
- The reviewer;
- Overview of the planning system;
- Planning regulatory body/government department;
- Whether climate change is considered in planning policy approaches;
- Availability of information (Likert Scale);
- Recommendation that country be taken forward for detailed review; and
- Explanation of recommendation.

Search updates:
Given the short duration of the project, and the need for results to feed into other project tasks, the search results were not updated at a later date.

Quality Assurance:
Researcher findings were discussed with the project manager and any uncertainties in findings flagged and explored further.

A.4 Review of the Welsh marine planning framework

Objectives 2 and 3 were assessed collectively with a Strengths, Weaknesses, Opportunities, and Threats (SWOT) analysis structure through a review of the marine planning framework for Wales (see Appendix E.6) in order to highlight limitations of the current framework, and to highlight opportunities for its strengthening and further development. To consider how planning policy approaches to climate change in other countries could inform Objectives 2 and 3, findings from Objective 1 (Appendix C) were drawn upon. The outputs of this review informed the design of the stakeholder survey, with input from Welsh Government.

A.5 Stakeholder engagement

A.5.1 General approach

Stakeholders were invited to take part in both an online survey and an online workshop to gain valuable insight to inform Objectives 2 and 3. The Welsh Government's MPSRG were first used to identify relevant stakeholders who could be contacted to take part. Welsh Government carried out a gap analysis to see which other stakeholders should be contacted if they were not part of the MPSRG to ensure that the survey and workshop were as representative as possible. Welsh Government contacted the MPSRG members to establish whether they consented to receiving contact about the engagement. In the MPSRG meeting on 04 November 2025, where a presentation about the engagement was held, MPSRG members who had not yet responded were reminded again to give their consent if they wished to participate. Welsh Government contacted stakeholders outside of the MPSRG to share further information and gain consent where appropriate. A collated list of emails for individuals that consented was shared with ABPmer for the engagement commencement.

A.5.2 Stakeholder survey

Welsh Government provided ABPmer with a list of emails from stakeholders who wished to participate in the online survey hosted on Survey Monkey. ABPmer distributed the survey via email to each participant on 08 December 2025 for completion by 04 January 2026. The survey consisted of a mix of qualitative and quantitative questions, with a total of 17 quantitative responses, five qualitative responses and two blank responses. The sector each participant represented was collected through the survey. Full details are provided in Appendix F

A.5.3 Stakeholder workshop

The stakeholder survey responses were used to inform an online stakeholder workshop to further explore the themes raised. The workshop was held on 11 February 2026. Participants were invited to the workshop after they had given their consent to Welsh Government. There were 23 participants. Full details are in Appendix G.

B Climate-Smart Approaches in other Countries: Scoping Outputs

Table B1 summarises the findings from the scoping results.

Table B1 Summary of scoping results

Jurisdiction	Recommended that Jurisdiction be Taken Forward for Detailed Review? (Yes, No, Maybe)	Explanation for recommendation
Australia	Yes	Have considered strategies to become more climate resilient on a national, state (Queensland) and regional (Great Barrier Reef) level. Focuses very much on marine conservation, future climate risks and assessments. Seek to reduce emissions in line with Paris Agreement. Acknowledges the risk of multiple hazards and seeks to become more prepared and adapted to this across all sectors.
Belgium	Yes	Largest percentage of offshore renewable space in the world; one of the first countries in the world to draw up a marine spatial plan and 37% of seas designated as a Marine Protected Area[116]. A small territory within the North Sea in comparison to the Netherlands, which occupy more space. Belgium, the Netherlands, and Norway appear to focus on Offshore Renewable Energy rather than Climate Change. Belgium adopts a similar approach to marine spatial planning to the Netherlands where both countries border the North Sea. Due to marine spatial planning focusing on the North Sea rather than Belgium individually, other countries were taken forward to gather a wider variety of strategies that could provide further recommendations and strategies.
Canada	Yes	Quite far advanced in their plans and zoning. Provinces have established a regional hub called CLIMAtlantic to provide climate information and advance climate-related research and training, as well as having developed climate adaptation policies[117]. A National Adaptation Strategy (2022) sets out federal adaptation actions which include the Marine Protected Areas programme

116 Health Food Chain Safety. (2023). Marine Spatial Plan. Available at: Marine spatial plan | FPS Public Health (Accessed: 14 November 2025).

117 CLIMAtlantic. (2024). Enhancing Atlantic Climate Resilience. Available at: https://climatlantic.ca/ (Accessed: 14 November 2025).

Jurisdiction	Recommended that Jurisdiction be Taken Forward for Detailed Review? (Yes, No, Maybe)	Explanation for recommendation
		which seeks to protect 25% of Canada's oceans by 2025 and 30% by 2030[118]. Employs stakeholder engagement within plans including Indigenous Peoples.
England	Yes	Climate change adaptation and mitigation is included within the MPS and subsequently the marine plans and their policies. Specifically, newer marine plans better address climate change, such as the North West Marine Plan published in 2021. The older East Marine Plan is being updated and should be more progressive in its climate change ambitions in its newer version.
Ghana	No	Marine spatial planning still in development, as well as climate change plans. However, Ghana is moving forward towards these plans currently.
Indonesia	No	Although recognises a need for Climate Change Adaptation, this is still in the development phases, and has not yet been incorporated into marine spatial planning.
Republic of Ireland	Yes	Irish marine planning area is adjacent to Wales (and therefore subject to similar pressures and activities, and cross-border coordination). The NMPF includes all marine-based human activities, setting out the Government's objectives and marine planning policies for each marine activity for the country[119]. Whereas the NAF sets out a national strategy to reduce the negative effects of Climate Change within a smaller area/sector within the Country. The NAF identifies 13 priority sectors that are required to prepare sectoral adaptation plans under the Climate Act[120].
Italy	No	Very new to co-existence and marine planning. Less literature available than other countries.

118 Vanderzwaag *et al.*, (2023). Canada and ocean climate adaptation: tracking law and policy responses, charting future directions. Available at: https://www.frontiersin.org/journals/marine-science/articles/10.3389/fmars.2023.1168573/full (Accessed: 06 November 2025).

119 Government of Ireland. (2024). National Marine Planning Framework. Available at: National Marine Planning Framework (Accessed: 07 November 2025)).

120 Department of Climate, Energy and the Environment. (2025). National Adaptation Framework (NAF). Available at: National Adaptation Framework (NAF) (Accessed: 14 November 2025).

Jurisdiction	Recommended that Jurisdiction be Taken Forward for Detailed Review? (Yes, No, Maybe)	Explanation for recommendation
Norway	Yes	The Integrated Ocean Management Plans give clear priorities for the marine areas [121]. Ministry of Climate and Environment has adopted an updated integrated management plan for the Barents Sea-Lofoten area with regards to climate change.
Scotland	Yes	Similar goals to England and Wales e.g. net zero by 2045 [122]. Scotland recognises a need for climate-smart plans due to the level of urgency with Global Climate Change.
Seychelles	Maybe	Heavily focused on marine conservation and climate change adaptation and resilience. The SMSP uses a multi-sector approach to address climate change adaptation and has designated over 30% of its marine area for protection [123, 124]. The Seychelles have extensively mapped key habitats such as seagrass and has also contributed to Seychelles' NDC. It was therefore decided to gather a wider variety of strategies that could provide further recommendations.
Sweden	Yes	The Swedish Agency for Marine and Water Management (SwAM) is responsible for submitting amended marine spatial plans to Government which include proposals such as assigning more areas for offshore wind, more energy areas and energy extraction areas etc. [125]. Sweden aims to achieve climate neutrality by 2050 and the long-term goal of net zero by 2045 [126].
The Netherlands	Yes	Stated by BirdLife International (2023) that the North Sea Agreement (NSA) could serve as an

121 Centre for Environment, Fisheries and Aquaculture Science (Cefas). (2023). A review of Marine Spatial Planning and Spatial Prioritisation approaches internationally and in the United Kingdom. Available at: Defra_Cefas 2023_MSPri review.pdf (Accessed 04 November 2025).

122 Scottish Government. (n.d). Policy for Climate change. Available at: Climate change - gov.scot (Accessed: 14 November 2025).

123 Government of Seychelles. 2025. Seychelles Marine Spatial Plan. Ministry of Agriculture, Climate Change and Environment, Mahé, Seychelles. (Version 1.1). 142 pages. Available at: SMSP_PLAN-WEB.pdf (Accessed 11 November 2025).

124 Republic of Seychelles. (2026). Seychelles Marks Historic Milestone in Ocean Conservation with Conclusion of Marine Spatial Plan. Available at: https://macce.gov.sc/2025/06/27/seychelles-marks-historic-milestone-in-ocean-conservation-with-conclusion-of-marine-spatial-plan/ (Accessed: 21 January 2026)

125 Swedish Agency Marine and Water Management (SwAM). (2025). Proposals for amended marine spatial plans, 2025. Available at: Proposals for amended marine spatial plans, 2025 - Marine Spatial Planning - Swedish Agency for Marine and Water Management (Accessed: 07 November 2025).

126 European Parliament. (2024). Sweden's climate action strategy. Available at: Sweden's climate action strategy (Accessed: 07 November 2025).

Jurisdiction	Recommended that Jurisdiction be Taken Forward for Detailed Review? (Yes, No, Maybe)	Explanation for recommendation
		example to other countries[127]. Plans in motion to increase offshore wind demands. Heavily focuses on North Sea. Norway and Sweden both border the North Sea, so could provide similar climate strategies/action plans. The Netherlands adopts a similar approach to marine spatial planning to Belgium. Due to marine spatial planning focusing on the North Sea rather than the Netherlands individually, other countries were taken forward to gather a wider variety of strategies that could provide further recommendations.
USA	No	Larger area to cover. Appear to be focusing on land planning and Climate Change.

[127] BirdLife Marine Spatial Plan Assessment. (2023). Independent review of NL's maritime spatial plan (nature & climate). Available at: birdlife.org/wp-content/uploads/2023/09/Birdlife-Maritime-Spatial-Plan-Assessment-NL_2023.pdf (Accessed: 14 November 2025).

C Climate-Smart Approaches in other Countries: Detailed Reviews

C.1 Australia

C.1.1 Existing plan

There are several regional marine planning initiatives within Australia. These include the South-east Regional Marine Parks Network Management Plan [128], the Victoria Marine Spatial Planning Framework [129] and the Great Barrier Reef Marine Park (GBRMP) [130].

C.1.2 Overview of the planning system

South–east Regional Marine Parks Network Management Plan

The South-east Regional Marine Parks Network Management Plan covers the waters surrounding Victoria, southern New South Wales, eastern South Australia, Tasmania, and around Macquarie Island [131]. The plan details the use, management and the conservation of marine resources, seeking to improve the links between different sectors and users such as Indigenous Peoples, communities and industry in both space and time. The plan uses a holistic approach that sets out objectives on understanding, measuring and managing marine space [132].

Victoria Marine Spatial Planning Framework

The Victoria Marine Spatial Planning Framework uses an integrated and co-ordinated whole-of-government, state-wide approach, collaborating with Traditional Owners, industry and the community to set objectives and guiding principles for the management of the state's marine and coastal environment. The Policy is also accompanied by a Marine and Coastal Strategy [133] which outlines the actions required to achieve policy targets.

128 Australian Government. (2025). South-east Marine Parks Network Management Plan 2025. Available at: South-east Marine Parks Network Draft Management Plan 2025 (Accessed: 11 November 2025).

129 Victoria State Government. (2020). Marine and Coastal Policy. Available at: Marine and Coastal Policy 2020 (Accessed 12 November 2025).

130 Australian Government. (2024). The great barrier reef marine park zoning plan – 20 years on protecting the great barrier reef for future generations. Available at: The Great Barrier Reef Marine Park Zoning Plan – 20 years on Protecting the Great Barrier Reef for Future Generations (Accessed 12 November 2025).

131 Australian Government. (2004). South-east Regional Marine Plan. Available at: South-east Marine Plan (Accessed 11 November 2025).

132 Centre for Environment, Fisheries and Aquaculture Science (Cefas). (2023). A review of Marine Spatial Planning and Spatial Prioritisation approaches internationally and in the United Kingdom. Available at: Defra_Cefas 2023_MSPri review.pdf (Accessed 04 November 2025).

133 Victoria State Government. (2022). Marine and coastal strategy. Available at: Marine-and-Coastal-Strategy_May-2022.pdf (Accessed 11 November 2025).

Great Barrier Reef Marine Park, Queensland

The primary focus of the Great Barrier Reef Marine Park plan is the conservation and protection of the reef[134]. Zoning has been implemented as part of an adaptive management plan to help manage and protect the values of the Marine Park. Each zone has different rules around what activities are allowed within that area and whether the activity requires a permit[135]. The Australian government take a holistic integrated management approach, that incorporates engagement with Indigenous Peoples to enable their input into the marine plans[136].

C.1.3 Regulatory body/Government department

Different authorities are responsible for the different marine plans. The Australian Government is responsible for the South-east Regional Marine Parks Network Management Plan, and the Victoria State Government is in charge of the Victoria Marine Spatial Planning Framework. For the GBRMP, the Great Barrier Reef Marine Park Authority (GBRMPA) are responsible, overseen by the Australian and Queensland Governments.

C.1.4 How climate change is considered in planning policy approaches

Australia set a new 2035 emissions reduction target, which aims to reduce emissions by 62-70% below 2005 levels by 2035, with the ambition to achieve net zero emissions by 2050. It was adopted by the Climate Change Act 2022[137]. Proposed plans such as reaching 82% renewable energy on major electricity grids, decarbonising the electricity sector, and phasing out the majority of coal have been detailed to reach these targets[138].

Strategies have been developed at national, Queensland and Great Barrier Reef level to support climate adaptation measures and the resilience of the environment[139]. Since 2022, there have been extensive projects and adaptation measures underway that are responding to future climate risks. Nationally, the Australian Government has developed Australia's first National Climate Risk Assessment to help better prepare and manage increasing risks resulting from climate change[140]. The top ten priority hazards within Australia are identified, and then these changing hazards are assessed for how they are likely to impact the seven systems within Australia. These seven systems are the economy, infrastructure, natural environment, health and social support, primary industry, communities and defence system[141, 142].

134 Centre for Environment, Fisheries and Aquaculture Science (Cefas). (2023). A review of Marine Spatial Planning and Spatial Prioritisation approaches internationally and in the United Kingdom. Available at: Defra_Cefas 2023_MSPri review.pdf (Accessed 04 November 2025).

135 Australian Government. Zoning. Available at: Zoning | Reef Authority (Accessed 04 November 2025).

136 Blue Economy. (2024). Marine spatial planning for a blue economy in Australia. Available at: BECRC_Marine-Spatial-Planning_A4_S_e070324.pdf ((Accessed:12 November)).

137 Australian Government and Queensland Government. (2023). 2023 Climate Change Addendum. Available at: 2023 Climate Change Addendum (Accessed 12 November 2025).

138 Australian Government. (2025). Australia is committed to global climate action at COP30. Available at: Australia is committed to global climate action at COP30 - DCCEEW (Accessed 12 November 2025).

139 Australian Government and Queensland Government. (2023). 2023 Climate Change Addendum. Available at: 2023 Climate Change Addendum (Accessed 12 November 2025).

140 Australian Government. (2025). The National Adaptation Plan. Available at: Adaptation planning - DCCEEW (Accessed 12 November 2025).

141 Australian Government. (2025). The National Adaptation Plan. Available at: Adaptation planning - DCCEEW (Accessed 12 November 2025).

142 Australian Government. (2025). Australia's first National Climate Risk Assessment. Available at: National Climate Risk Assessment | Australian Climate Service Website (Accessed 12 November 2025).

The Queensland Government has set targets to reduce the state's emissions by 30% on 2005 levels by 2030 and seek to achieve net zero emissions by 2050, supported by the state's renewable energy targets of 70% by 2032 and 80% by 2035[143]. This is aimed to be achieved by increasing renewable energy and moving away from coal-fired generation[144]. Targets and the actions required to achieve this are set out in the Queensland Climate Adaptation Strategy (Q-CAS) 2017–2030 which was under review in 2025[145].

Both the South-east Regional Marine Parks Network Management Plan and the Victoria Marine Spatial Planning Framework include climate change within their policies. Within a review of the original South–East Regional Marine Parks Network Management Plan, it was acknowledged that the use of cumulative impact assessments would be most effective to help manage the South-east network as well as monitor climate change pressures[146]. Furthermore, within a section detailing new activities and authorisations, the plan acknowledges that actions to support climate adaptation are required[147]. The final South-east Marine Parks Network Management Plan, which was published in 2025, has designated eleven new marine sanctuary areas, as well as new oil and gas titles, including that seismic blasting will be banned from all South–east marine parks, and an existing sanctuary will be opened to commercial tuna fisheries[148].

Within the Victoria Marine Spatial Planning Framework, the accompanying Marine and Coastal Strategy includes six priority actions as part of a five-year strategy plan to support sustainable use of the marine and coastal environment[149]. Under action three, there are multiple activities detailed to progress policy outcomes in response to climate change. Activities include building resilience and adaptation capability in ecosystems, understanding the impacts of climate change to help ensure that any adverse impacts from this are minimised, and incorporating quality science and knowledge to inform evidence-based decision making and the effectiveness of those decisions[150].

Coastal impacts and climate change are both integrated into the marine spatial planning framework[151] for the GBRMP plan. A key component of the GBRMP plan is the Reef 2050 Plan[152] developed by the Australian and Queensland Government that sets out an overarching, flexible framework and plan based on scientific research, analysis and lessons learnt over four decades of management[153]. This overarching framework was developed in response to the World Heritage Committee's recommendation that Australia develop a long-term plan to protect the Outstanding Universal Value of the Great Barrier

143 Australian Government and Queensland Government. (2023). 2023 Climate Change Addendum. Available at: 2023 Climate Change Addendum (Accessed 12 November 2025).

144 Australian Government and Queensland Government. (2023). 2023 Climate Change Addendum. Available at: 2023 Climate Change Addendum (Accessed 12 November 2025).

145 Queensland Government. (2025). Queensland's climate adaptation strategy. Available at: Queensland's climate adaptation strategy - QLD Treasury (Accessed 12 November 2025).

146 Sustineo. (2024). South-East Commonwealth Marine Reserves Network Management Plan Evaluation. Available at: SE Network Evaluation Summary (Accessed 12 November 2025).

147 Australian Government. (2025). South-east Marine Parks Network Management Plan. Available at: South-east Marine Parks Network Draft Management Plan 2024 (Accessed 11 November 2025).

148 Australian Conservation Society. (2025). 11 new marine sanctuary areas announced for Australia's stressed south-eastern waters. Available at: 11 new marine sanctuary areas announced for Australia's stressed south-eastern waters - Australian Marine Conservation Society (Accessed 12 November 2025).

149 Victoria State Government. (2022). Marine and coastal strategy. Available at: Marine-and-Coastal-Strategy_May-2022.pdf (Accessed 11 November 2025).

150 Victoria State Government. (2022). Marine and coastal strategy. Available at: Marine-and-Coastal-Strategy_May-2022.pdf (Accessed 11 November 2025).

151 Blue Economy. (2024). Marine spatial planning for a blue economy in Australia. Available at: BECRC_Marine-Spatial-Planning_A4_S_e070324.pdf (Accessed:12 November).

152 Australian Government and Queensland Government. (2023). Reef 2050 Long-Term Sustainability Plan. 2021 – 2025. Available at: Reef 2050 Long-Term Sustainability Plan (Accessed 12 November 2025).

153 Australian Government and Queensland Government. (2023). Reef 2050 Long-Term Sustainability Plan. 2021 – 2025. Available at: Reef 2050 Long-Term Sustainability Plan (Accessed 12 November 2025).

Reef[154] and for this to be reviewed every five years. The plan has five priority areas including to limit the impacts of climate change, reduce the impacts from land-based activities, reduce impacts from water-based activities, influence the reduction of international sources of impact and protect, rehabilitate and restore the reef[155].

Within the Reef 2050 Plan[156], goals and strategic actions are set including reducing emissions to 43% below 2005 levels by 2030, fostering partnerships for climate mitigation, local governments and community organisations to educate communities on how to adapt to climate change, developing and testing intervention options to help key habitats adapt to the effects of climate change, and improving the accessibility climate data[157].

To continue and progress with climate mitigation and adaptation measures, there are multiple supporting policies and programs such as actions plans and risk assessments that look to address climate change threats such as sea-temperature increase, altered weather patterns, sea level rise, ocean acidification and altered ocean currents[158].

C.1.5 Potential applicability to marine planning in Wales

Areas of potential applicability to marine planning in Wales include:

- In an evaluation of the previous Marine Reserves Network Management Plan 2013-2023[159], it was suggested that cumulative impact assessment is an area for necessary on-going effort for management of the Marine Reserves Network, in which climate change pressures can best be monitored. The WNMP contains a policy for proposals regarding cumulative effects (GOV_01). Consideration of cumulative effects therefore currently exists within the WNMP, but not explicitly in relation to climate change. It should be noted, however, that cumulative effects is a challenging area for assessments due to the level of uncertainty that can exist across the individual projects/components in addition to the lack of agreed methodologies for assessing cumulative impacts.
- Similarly to Wales, Australia has in place a National Climate Risk assessment. The latest UK Climate Risk Independent Assessment was published in 2021, developed by scientists, economists, government departments and stakeholders from across the UK[160]. A national summary for Wales is available[161]. The UK Government is required, under the 2008 Climate Change Act[162], to publish a Climate Change Risk Assessment (CCRA) every five years. A new CCRA is therefore due for publication in 2026. A review of the 2026 CCRA could help to inform if further policies should be included within the WNMP to target key areas of risk. Welsh

154 Australian Government and Queensland Government. (2023). Reef 2050 Long-Term Sustainability Plan. 2021 – 2025. Available at: Reef 2050 Long-Term Sustainability Plan (Accessed 12 November 2025).
155 Australian Government and Queensland Government. (2023). Reef 2050 Long-Term Sustainability Plan. 2021 – 2025. Available at: Reef 2050 Long-Term Sustainability Plan (Accessed 12 November 2025).
156 Australian Government and Queensland Government. (2023). 2023 Climate Change Addendum. Available at: 2023 Climate Change Addendum (Accessed 12 November 2025).
157 Australian Government and Queensland Government. (2023). 2023 Climate Change Addendum. Available at: 2023 Climate Change Addendum (Accessed 12 November 2025).
158 Australian Government and Queensland Government. (2023). 2023 Climate Change Addendum. Available at: 2023 Climate Change Addendum (Accessed 12 November 2025).
159 Sustineo. (2024). South-East Commonwealth Marine Reserves Network Management Plan Evaluation. Available at: SE Network Evaluation Summary (Accessed 12 November 2025).
160 UK Climate Risk. (2021). National summaries. Available at: National summaries - UK Climate Risk (Accessed 04 November 2025).
161 UK Climate Risk. (2021). Summary for Wales. Available at: Summary for Wales (CCRA3-IA) - UK Climate Risk (Accessed 04 November 2025).
162 Climate Change Act 2008

Government published a Climate Adaptation Strategy in 2024[163], which includes links to the WNMP. Due to the date of publication, the WNMP (published in 2019) does not explicitly reference the Climate Adaptation Strategy.

- Australia's marine planning is split into national and regional strategies. This allows for targeted approaches and policies, such as a focus on marine conservation in the Great Barrier Reef Marine Park. Whilst Wales has a national marine plan, parts of the WNMP have spatial specificity, such as SRAs, therefore similarly ensuring specific policy approaches can be adapted to the needs of different areas.
- The Reef Blueprint 2030[164] includes actions to support delivery of five climate change mitigation and adaptation goals: Protect the reef's resilience; Enhance the Reef Authority's capability; Co-manage Sea Country with Traditional Owners; Empower others to protect and manage; and do our part to reduce emissions. In Wales, key adaptation actions are included in the Climate Adaptation Strategy for Wales and could be signposted to within the WNMP or guidance[165].

C.2 Canada

C.2.1 Existing plan

Marine spatial planning is being advanced in five Large Ocean Management Areas (LOMAs) across Canada:

- Southern British Columbia;
- The Pacific North Coast;
- Newfoundland and Labrador Shelves;
- Scotian Shelf–Bay of Fundy; and
- Estuary and Gulf of St. Lawrence.

Canada is aiming to produce a marine spatial plan or plans per area that *identify existing, expanding, and emerging marine uses, as well as areas that may require special protection measures, and to facilitate the long-term resilience and sustainability of the marine environment'*[166]. These plans will provide a tool for governments, Indigenous Peoples, communities, and marine users to plan for the future by indicating what uses are suitable and compatible in specific areas, while also providing a mechanism to monitor, evaluate, and adapt management over the long term in alignment with their objectives[166].

The Pacific North Coast region published four sub-regional marine plans which are:

- Haida Gwaii Marine Plan 2015[167];
- North Coast Marine Plan 2015[168];
- Central Coast Marine Plan 2015[169]; and
- North Vancouver Island Marine Plan 2015[170].

163 Welsh Government. (2024). Climate Adaptation Strategy for Wales 2024. Available at: Climate Adaptation Strategy for Wales 2024 | GOV.WALES (Accessed 20 January 2026).
164 Australian Government. (2024). Reef Authority. Reef Blueprint 2030. Great Barrier Reef Blueprint for Climate Resilience and Adaptation. Available at: Reef Blueprint 2030 (Accessed 04 November 2025).
165 Welsh Government. (2024). Climate Adaptation Strategy for Wales 2024. Available at: Climate Adaptation Strategy for Wales 2024 | GOV.WALES (Accessed 04 November 2025).
166 Government of Canada (2024). Southern British Columbia Marine Spatial Planning Framework. Available at: Southern British Columbia Marine Spatial Planning Framework (Accessed 12 November 2025).
167 MaPP (2015). Haida Gwaii Marine Plan. Available at: Haida Gwaii Marine Plan (Accessed 12 November 2025).
168 MaPP (2015). North Coast Marine Plan. Available at: North Coast Marine Plan (Accessed 12 November 2025).
169 MaPP (2015). Central Coast Marine Plan. Available at: Central Coast Marine Plan (Accessed 12 November 2025).
170 MaPP (2015). North Vancouver Island Marine Plan. Available at: North Vancouver Island Marine Plan (Accessed 12 November 2025).

The Southern British Columbia and Newfoundland and Labrador Shelves areas have published two marine spatial planning frameworks as part of the marine spatial planning process but at the time of writing were yet to publish marine plans. The Estuary and Gulf of St Lawrence have released their Integrated Management Plan, and the Scotian Shelf-Bay of Fundy released their first generation Marine Spatial Plan in 2024.

C.2.2 Overview of the planning system

The implementation of marine plans within Canada is the last step of their marine spatial planning process. This is shown within Figure C1.



Figure C1 The Canadian Marine Spatial Planning Process[166]

The marine plans and planning frameworks are not legally binding. Instead, they intend to provide direction for provincial jurisdictions, inform policy and planning, support collaborative governance, and influence economic and conservation decisions.

The most developed Canadian marine plans are the four sub-regional marine plans for the North Pacific region of Canada, published in 2015. They aim to provide spatial and non-spatial recommendations for achieving ecosystem-based marine management which maintains sustainable social and cultural wellbeing and economic development[171]. They focus on providing direction for managing marine areas, uses and activities within provincial government jurisdictions. This is delivered within these documents by the creation of objectives and strategies.

[171] MaPP (2015). North Vancouver Island Marine Plan. Available at: North Vancouver Island Marine Plan (Accessed 12 November 2025).

C.2.3 Regulatory body/Government department

Marine spatial planning in Canada is a collaborative process. For example in the North Vancouver Island Marine Plan in the North Pacific region, The Marine Plan Partnership for the North Pacific Coast (MaPP) is a partnership between the Province of British Columbia, represented by the Ministry of Forests, Lands and Natural Resource Operations, and the Coastal First Nations, North Coast Skeena First Nations Stewardship Society and Nanwakolas Council, which collectively represent 18 member First Nations[170].

Each marine plan and framework within the five subregions in Canada are produced by engaging with federal, provincial and territorial governments, Indigenous governments, and stakeholders to coordinate ocean uses, integrate information, knowledge, and to advance environmental, economic, social and cultural objectives[166].

C.2.4 How climate change is considered in planning policy approaches

Canada's National Adaptation Strategy (2022) sets out federal adaptation actions with two specific ocean-related actions mentioned. These include the Marine Protected Areas Program which aims to protect 25% of Canada's oceans by 2025 and 30% by 2030. The other action is The Aquatic Climate Adaptation Services Program which supports research and monitoring activities in relation to fisheries decisions[172].

The Canada Marine Planning Atlas is a key component of marine spatial planning. It is an interactive mapping tool and includes two versions: the Atlantic and the Pacific. It provides information on how the marine space is being used to help avoid conflicts and highlights critical areas of habitats. It is thought that this particular tool will go towards helping to protect 30% of the ocean by 2023[173].

Provinces have established a regional hub called CLIMAtlantic to provide climate information and advance climate-related research and training[174]. Each province has developed a climate action plan which includes climate adaptation priorities.

Within the marine plans of the North Pacific region, the percentage of shoreline which is sensitive to climate change has been estimated for distinct areas. Further tables demonstrate the observed climate changes in the plan area, including: ocean temperature; sea level changes; run off; currents, mixing and upwelling; salinity; pH; oxygen; and storminess.

To address these climate change impacts, the marine plan documents then go further to identify Issues, Objectives and Strategies. For example, by recognising the positive and negative impacts on resource-based economies, five issues, six objectives and 14 strategies have been developed within the North Vancouver Island Marine Plan. Climate change is recognised throughout the marine plans, motivating guidance for other sectors including (but not limited to) infrastructure, pollution, conservation and protection, cultural and heritage resources, recreation and tourism, forestry operations, aquaculture, energy, fishery economy and associated values, governance and collaborative management and research education and training.

172 VanderZwaag, D., Seck, S., Graham, L., Frontain, J., Simpson, K (2023). Canada and ocean climate adaptation: tracking law and policy responses, charting future directions. *Front. Mar. Sci.* 10:1168573. doi: 10.3389/fmars.2023.1168573

173 Government of Canada. (2023). Canada Marine Planning Atlas. Available at: Canada Marine Planning Atlas (Accessed 10 November 2025).

174 CLIMAtlantic (2026). Available at: Home - Climatlantic (Accessed 05 February 2026).

Including climate change as a core focus behind decision making in these plan documents, as well as the wider frameworks produced by the other four regions, will help Canada act proactively to mitigate and adapt to climate change. As the documents were made collaboratively with a wide range of stakeholders, this works to ensure fair, equitable and sustainable ongoing resource management in the face of climate change.

C.2.5 Potential applicability to marine planning in Wales

Areas of potential applicability to marine planning in Wales include:

- A particular strength of Canada's marine spatial planning is their inclusive approach to their planning process. By including a vast array of not only government and council bodies, but also Indigenous Peoples and local groups, this collaborative approach ensures equitable and well considered decision making which will better meet the needs of society and the environment in that region. Whilst there are no recognised traditional Indigenous Groups within Wales, this inclusivity can be mirrored in working groups and engagement for the creation of Welsh documents, plans and strategies. The Wales Coasts and Seas Partnership (CaSP) launched a new initiative called 'Y Môr a Ni' aiming to grow people's relationship with the coasts and seas, hosting events that aim to engage the public in marine-themed activities to spread awareness[175]. There could be opportunity for engagement here.
- Throughout the plan documents for the North Pacific region, climate change mitigation and adaptation are discussed for many sectors within the plan. The applicability of climate change to each sector is discussed before introducing Issues, Objectives and Strategies which are then formed to address climate change as a result. The framing of climate change in this context successfully means that climate change is integrated throughout, rather than the alternative of treating climate change as its own sector, or as an add-on.

C.3 England

C.3.1 Existing plan

There are eleven marine plan areas, encompassed in six marine planning documents, covering both the inshore (out to 12 nautical miles, NM) and offshore waters (12 NM outwards to 200 NM) in England. These include the East Inshore and East Offshore Marine Plans[176], South Inshore and Offshore Marine Plan[177], North East Inshore and North East Offshore Marine Plan[178], North West Inshore and North West Offshore Marine Plan[179], South East Inshore Marine Plan[180], South West Inshore and South West Offshore Marine Plan[181].

175 Natural Resources Wales. (2025). Y Môr a Ni (The Sea and Us). Available at: Y Môr a Ni (The Sea and Us) - Natural Resources Wales Citizen Space - Citizen Space Accessed 03 December 2025).
176 MMO. (2022). East Marine Plans. Available at: East Marine Plans - GOV.UK (Accessed 04 November 2025).
177 MMO. (2022). The South Marine plans documents. Available at: The South Marine plans documents - GOV.UK (Accessed 04 November 2025).
178 MMO. (2021). The North East Marine Plans Documents. Available at: The North East Marine Plans Documents - GOV.UK (Accessed 04 November 2025).
179 MMO. (2024). North West Marine Plans. Available at: North West Marine Plans - GOV.UK (Accessed 04 November 2025).
180 MMO. (2024). South East Marine Plan. Available at: South East Marine Plan - GOV.UK (Accessed 04 November 2025).
181 MMO. (2024). South West Marine Plans. Available at: South West Marine Plans - GOV.UK (Accessed 04 November 2025).

C.3.2 Overview of the planning system

The UK MPS provides an overarching policy position on marine planning between the UK administrations. The MPS flows from the MCAA (2009), which provides the legislative framework for marine planning in UK waters[182]. The marine plans in England seek to support a range of targets and objectives set by government policies, such as those set out in the 25-Year Environment Plan[183] and the 2025 Environmental Improvement Plan[184]. Within all the English plans, there are co-existence policies to help avoid conflict and optimise space[185]. Spatial and non-spatial policies are contained in the plans. However, whilst policies may apply to a particular spatial area, they do not specify use of that area to a sector. Marine plans in England are planned for the next 20 years and are reviewed every three years for each adopted marine plan, and every six years on all marine plans together. Stakeholder engagement is relevant to all stages of the marine planning process[186].

C.3.3 Regulatory body/Government department

The MMO on behalf of Defra is responsible for preparing marine plans in England.

C.3.4 How climate change is considered in planning policy approaches

The MPS sets out a high-level consideration of climate change across sectors. Climate-smart marine spatial planning is currently limited. However, this is an evolving space and given the urgency of climate change, multiple tools and approaches are being developed.

The MSPACE programme[187], introduced in 2023, enabled the development of a decision support tool for UK planners seeking climate-smart design, based on Representative Concentration Pathways (RCP)[188] 4.5 and 8.5. This provided information on where, and for how long, environmental conditions remain favourable for selected sectors (aquaculture, fisheries, and biodiversity conservation). The MSPACE programme uses climate modelling data to map and assess areas that would be most sensitive, as well as most resilient to different climate scenarios, which can potentially be integrated into marine planning, specifically informing which areas represent climate 'bright spots'[189] and climate refuge

182 MMO. (2021). Marine planning in England. Available at: Marine planning in England - GOV.UK (Accessed 04 November 2025).

183 Defra and The Rt Hon Michael Gove. (2023). Policy paper. 25 Year Environment Plan. Available at: 25 Year Environment Plan - GOV.UK (Accessed 04 November 2025).

184 Defra. (2025). Corporate report. Environmental Improvement Plan (EIP) 2025. Available at: Environmental Improvement Plan (EIP) 2025 - GOV.UK (Accessed 05 February 2026).

185 Centre for Environment, Fisheries and Aquaculture Science (Cefas). (2023). A review of Marine Spatial Planning and Spatial Prioritisation approaches internationally and in the United Kingdom. Available at: Defra_Cefas 2023_MSPri review.pdf (Accessed 04 November 2025).

186 Marine Management Organisation. (MMO). (2021). Marine planning and development. Available at: Marine planning and development - GOV.UK (Accessed 04 November 2025).

187 Queirós *et al.* (2023) 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. 58 pp. doi: 10.14465/2023.msp02.tec Available at: MSPACE: Marine Spatial Planning Addressing Climate Effects | Marine Climate Change Impacts Partnership (Accessed 10 November).

188 As described by the Met Office (2018), RCPs are a set of scenarios to capture assumptions about the economic, social and physical changes to our environment that will influence climate change (definition from: Met Office (2018). UKCP18 Guidance: Representative Concentration Pathways Available from: https://www.metoffice.gov.uk/binaries/content/assets/metofficegovuk/pdf/research/ukcp/ukcp18-guidance---representative-concentration-pathways.pdf (Accessed: 03 December 2025).

189 "Climate bright spots" are areas where multiple habitat conditions for a given set of species is improved in the short term. This state is defined by trends that are inconsistent with the expected long term change for the area e.g., cooling where the long term trend is warming[187].

areas[190, 191]. As part of the planning process, a series of case studies are now being developed for MSPACE, including within the East Marine Plan inshore and offshore areas. The case study will provide raw model outputs and important evidence that can potentially be used in plan development.

The MCCIP initiative was established in 2005, to facilitate the communication of marine climate change science to policy makers and decision makers. The MCCIP has developed a co-ordinating framework providing guidance on adaptation advice[192]. The initiative involves a collaboration between scientific experts, planners, ministers and those responsible for policy implementation and seeks to provide advice to policy advisors and decision-makers on marine climate change impacts. As part of the business plan (2025–2030)[193] there are five key objectives detailed:

- Build on the rolling updates for the evidence base;
- A more responsive approach to changing user needs;
- A greater focus on co-developing climate action;
- Building MCCIP influence and the profile of marine climate change issues across a range of scales (local / regional / UK / Global); and
- Improving the user experience of MCCIP.

In England, incorporating climate-smart strategies in the vision and objectives is recognised by the MMO as an important goal for second generation marine plans, but there is recognition that this will be dependent on Government priorities[194]. The current UK Government priority of addressing climate change is to accelerate planning decisions for developing offshore wind[195]. The UK has an ambitious target to deliver 43–50 gigawatts (GW) of offshore wind by 2030[196]. Programmes such as Defra's Marine Spatial Prioritisation Programme and The Crown Estate's Marine Delivery Routemap[197] are seeking to take a holistic approach to deliver targets alongside tackling biodiversity loss and nature recovery.

The MMO are reviewing marine planning approaches as part of the forthcoming update to the East Marine Plans[198]. The marine plans published in 2021, such as the North West Marine Plan, more strongly address climate change than earlier published plans. For example, the North West Marine Plan[199] has three policies categorised under the climate change sector, 15 policies directly mention climate change, and 11 policies that could have climate change implications. In contrast, the East Marine Plans[200]

190 ICES. (2024). ICES Annual Science Conference 2024. Theme Session I – Accounting for climate change in marine spatial planning: Experiences and lessons learnt. Available at: ASC 2024 - Theme session I report.pdf (Accessed: 07 November 2025).

191 "Climate refuge" is an area expected to be more resilient to climate change.

192 MCCIP. (n.d.). Phase V MCCIP business plan (2025-2030). Available at: MCCIP Phase V Business Plan 2025-2030 - FINAL.pdf (Accessed: 07 November 2025).

193 MCCIP. (n.d.). Phase V MCCIP business plan (2025-2030). Available at: MCCIP Phase V Business Plan 2025-2030 - FINAL.pdf (Accessed: 07 November 2025).

194 ICES. (2024). ICES Annual Science Conference 2024. Theme Session I – Accounting for climate change in marine spatial planning: Experiences and lessons learnt. Available at: ASC 2024 - Theme session I report.pdf (Accessed: 07 November 2025).

195 Defra. (2025). Summary of responses and government response to offshore wind: environmental compensatory measures reforms. Available at: https://www.gov.uk/government/consultations/offshore-wind-environmental-compensation-reforms/outcome/summary-of-responses-and-government-response (Accessed: 04 December 2025).

196 RenewableUK. (2025). Offshore wind. Available at: https://www.renewableuk.com/our-work/offshore-wind/ (Accessed: 04 December 2025).

197 The Crown Estate. (2026). Marine Delivery Routemap. Available at: Marine Delivery Routemap | The Crown Estate (Accessed 06 February 2026).

198. MMO. (2024). Climate Adaptation Report. Available at: https://assets.publishing.service.gov.uk/media/673c63b7f2eda558e9494e5d/MMO_CCA_Report_Round_4_-_Nov_2024v2.pdf (Accessed 04 November 2025).

199 Defra, (2024). North West Marine Plans. Available at: North West Marine Plans - GOV.UK (Accessed 04 November 2025).

200 Defra, (2014). East Marine Plans. Available at: East Marine Plans - GOV.UK (Accessed 04 November 2025).

(published in 2014) have two policies categorised under climate change sector, ten policies that directly mention climate change, and seven policies that could have climate change implications.

The MMO evidence project 'Understanding the impacts of climate change that can be directly addressed by marine plans[201] aimed to identify climate change impacts pertinent to the East Marine Plan areas that can be managed through marine planning interventions and is planned to be published in May 2026. The study analysed 27 industrial and environmental sectors and reviewed current marine planning approaches in the UK and the Netherlands. The study found that sectors intrinsically linked to the productivity and distribution of marine living resources are affected by the largest number of different climate change pressures (e.g., marine ecology and biodiversity, MPAs, and Highly Protected Marine Areas). Other sectors that use marine space, but whose activities mainly depend on the non-living components of the marine environment, such as ports and shipping, and marine aggregates, are affected by fewer major climate change pressures (mostly physical pressures related to sea level rise and increased storminess). Twelve potential interventions were identified, including the introduction of plan policies, 'cross-cutting' interventions (i.e., applying to more than one sector), and several sector-specific interventions (for aquaculture, fisheries, and oil and gas).

C.3.5 Potential applicability to marine planning in Wales

Areas of potential applicability to marine planning in Wales include:

- The North West Marine Plan includes sector specific climate change policies, such as for fisheries, air quality and emissions, marine protected areas (MPAs), and biodiversity. The MMO evidence project[202] also identifies potential sector specific interventions/policies. Conversely, the WNMP contains overarching climate change policies.
- MSPACE is potentially applicable to all the UK administrations. To support adaptive management, outputs of MSPACE relating to Wales (e.g., identified bright spots and refugia) are included on DataMapWales[203]. While further consideration is needed to understand the degree of confidence which can be applied to these outputs, they could help inform future decision making and development of proposals. Case studies have been developed for the East Marine Plans to provide recommendations for incorporation into plan development.
- MCCIP have collaborated and brought together scientific experts with planners, ministers and those responsible for policy implementation which is an integral component for decision making and putting objectives forward. Outputs from MCCIP provide a valuable evidence source for marine planning in Wales.
- The second generation of marine plans in England is seeking to incorporate climate-smart approaches into the plan vision and objectives. The WNMP currently contains a Plan Objective relevant to climate change, and the vision references the Welsh marine area making a strong contribution to energy security and climate change emission targets.
- The Crown Estate's Marine Delivery Routemap covers Welsh waters and seeks to highlight where potential overlap in sectors may exist, helping to understand potential challenges and opportunities. The Routemap considers 'opportunities for nature' and could therefore be a

201 MMO (In Press). Understanding the impacts of climate change that can be directly addressed by marine plans. A report produced for the Marine Management Organisation, MMO Project No: 1350, November 2025. Marine Management Organisation.

202 MMO (In Press). Understanding the impacts of climate change that can be directly addressed by marine plans. A report produced for the Marine Management Organisation, MMO Project No: 1350, November 2025. Marine Management Organisation.

203 Welsh Government. (2025). Marine Spatial Planning Addressing Climate Effects (MSPACE): climate change hotspots/refugia. Available at: Marine Spatial Planning Addressing Climate Effects (MSPACE): climate change hotspots/refugia | DataMapWales (Accessed: 10 November 2025).

useful tool to inform marine policy development in Wales for nature-based solutions and ecosystem restoration in support of climate resilience and emissions reduction. The intention is for the Routemap to develop to consider future climate change scenarios[204].

C.4 Republic of Ireland

C.4.1 Existing plan

The current marine plan for the Republic of Ireland is the National Marine Planning Framework (NMPF)[205]. The scale of the plan covers internal waters, territorial waters, the Exclusive Economic Zone (EEZ) and the continental shelf[206].

C.4.2 Overview of the planning system

The NMPF uses an ecosystem approach across marine activities to ensure the sustainable use of marine resources to 2040[207]. As with UK marine plans, a Strategic Environmental Assessment (SEA) and Appropriate Assessment (AA) were included. As part of Ireland's marine spatial planning, a single web map portal is available, displaying marine activities as well as information about the environmental, economic and social sections of the NMPF's overarching marine planning policies[208].

C.4.3 Regulatory body/Government department

The authority responsible for Ireland's marine spatial planning is Department of Climate, Energy and the Environment and Communications (DCEE). The NMPF was originally launched by the Department for Housing, Local Government and Heritage in 2021 before being transferred to the DCEE.

C.4.4 How climate change is considered in planning policy approaches

Ireland has adopted several frameworks detailing plans and actions to prepare for the current and future impacts of climate change[209]. The Climate Action Plan to tackle climate breakdown[210] highlights the critical role of marine planning in national climate action efforts in terms, for example, of realising renewable energy targets through planning for the delivery of offshore renewable energy, carbon capture and sequestration.

Climate action is embedded as a key theme throughout the NMPF through the application of a number of Overarching Marine Planning Policies (OMPPs), specifically aimed at ensuring that marine regulatory bodies and decision makers must take account of climate action when considering any proposal for marine use or activity (including port development, aquaculture, shipping etc.). Planning policies relevant to climate change exist for individual 'sectors' (protected marine sites, aquaculture and

204 The Crown Estate. (2026). Coastal Futures Presentation.

205 Government of Ireland. (2024). National Marine Planning Framework. Available at: National Marine Planning Framework (Accessed: 07 November 2025).

206 Centre for Environment, Fisheries and Aquaculture Science (Cefas). (2023). A review of Marine Spatial Planning and Spatial Prioritisation approaches internationally and in the United Kingdom. Available at: Defra_Cefas 2023_MSPri review.pdf (Accessed 04 November 2025).

207 Department of Climate, Energy and the Environment. (DCEEE). (2024). National Marine Planning Framework. Available at: National Marine Planning Framework (Accessed: 07 November 2025)).

208 Irish Government. (n.d.). Marine Spatial Planning in Ireland. Available at: marineplan.ie (Accessed 12 November 2025).

209 Green Horizons. (2025). Building a Climate-Resilient Future: Insights from Ireland's National Adaptation Framework (NAF). Available at: Ireland's National Adaptation Framework: Insights & Aims | AIS (Accessed: 07 November 2025)).

210 Department of Climate, Energy and the Environment (DCEEE). (2019). Climate Action Plan 2019. Available at: Climate Action Plan 2019 (Accessed 04 November 2025).

fisheries) as well as for climate change as an overarching policy area. Overarching climate change policies include:

- Climate Change Policy 1: Proposals should demonstrate how they:
    - avoid contribution to adverse changes to physical features of the coast;
    - enhance, restore or recreate habitats that provide a flood defence or carbon sequestration ecosystem services where possible;
    - Where potential significant adverse impacts upon habitats that provide a flood defence or carbon sequestration ecosystem services are identified, these must be in order of preference and in accordance with legal requirements:
        a) avoided;
        b) minimised;
        c) mitigated;
        d) if it is not possible to mitigate significant adverse impacts, the reasons for proceeding must be set out; and
    - This policy should be included as part of statutory environmental assessments where such assessments are required.
- Climate Change Policy 2: For the lifetime of the proposal, the following climate change matters must be demonstrated:
    - estimation of likely generation of greenhouse gas emissions, both direct and indirect;
    - measures to support reductions in greenhouse gas emissions where possible;
    - likely impact of climate change effects upon the proposal from factors including but not limited to: sea level rise, ocean acidification, changing weather patterns;
    - measures incorporated to enable adaptation climate change effects;
    - likely impact upon climate change adaptation measures adopted in the coastal area relevant to the proposal and/or adaptation measures adopted by adjacent activities; and
    - where likely impact upon climate change adaptation measures in the coastal area relevant to the proposal and/or adaptation measures adopted by adjacent activities is identified, these impacts must be in order of preference and in accordance with legal requirements:
        a) avoided;
        b) minimised;
        c) mitigated;
        d) if it is not possible to mitigate significant adverse impacts, the reasons for proceeding must be set out.

In recognition of Ireland's government developing a natural capital asset register and national natural capital accounts, the NMPF contains a biodiversity policy relating specifically to natural capital assets recognised by government. The NMPF supports the establishment of MPAs and has also incorporated spatial data to map Ireland's marine natural capital including hotspots for carbon storage. Specifically, to help mitigate climate change, the NMPF includes advice on the location and regulation of uses of marine areas where the seafloor has high natural carbon content[211]. This is achieved through the

[211] Queirós *et al.* (2025). The opportunity for climate action through climate-smart Marine Spatial Planning. Available at: https://www.researchgate.net/publication/391560692_The_opportunity_for_climate_action_through_climate-smart_Marine_Spatial_Planning (Accessed: 07 November 2025)).

application of Climate Change Policy 1 across the plan area, and the use of indicative maps to demonstrate where sediments are present that have a higher storage of carbon[212].

In 2024, under the Climate Action and Low Carbon Development (Amendment) Act 2021[213], the Republic of Ireland's second statutory National Adaptation Framework (NAF) was published to replace the original NAF published in 2018[214]. The framework identified 13 priority sectors under seven lead departments that are required to prepare sectoral adaptation plans (SAPs) under the Climate Act[215]. These include biodiversity, water quality, communication networks, electricity and gas networks, flood risk management, built environment and planning, transport infrastructure, built and archaeological heritage and health (grouped under the built environment and infrastructure), built and archaeological heritage and health under the human theme and agriculture, forestry, seafood and tourism (grouped under the economy theme). These SAPs will assess risks, set adaptation measures and integrate nature-based solutions which will then be shared across other sectors to ensure coherence across measures[216].

The framework places emphasis on the importance of aligning national policy, sectoral planning and local action, as well as building engagement between multiple stakeholders to share knowledge and solutions[217]. The NAF also seek to use finance mechanisms as well as encourage the use of climate services to enable adaptation and help make the Republic of Ireland a more climate resilient country. These include services such as the National Framework for Climate Services (NFCS)[218] and the Climate Ireland portal which seeks help the Republic of Ireland adapt to the changing climate via a multitude of services such as analysing existing scientific data, creating awareness of climate adaptation and acting as a portal of information about climate change[219]. This framework builds upon the National Climate Change Adaptation Framework (NCCAF) which aims to ensure that adaptation actions are undertaken across key sectors[220].

Additionally, under the Climate Action and Low Carbon Development (Amendment) Act 2021, a 'Climate Action Plan 2025' was published outlining a roadmap to halve emissions by 2030 and achieve climate neutrality by 2050[221]. As part of this, currently, the Republic of Ireland is in the process of implementing its maritime spatial plan which includes the designation of MPAs and provision for the development of Offshore Wind Farms (OWF)[222].

In May 2024, The Future Framework for Offshore Renewable Energy was published outlining the Republic of Ireland's long-term ambitions of achieving 20 GW of installed offshore renewable energy

212 Marineplan.ie. (2026). Overarching Marine Planning Policies – Environmental. Climate Change. Policy 1. Available at: Climate Change | marineplan.ie (Accessed: 05 February 2026)

213 Climate Action and Low Carbon Development (Amendment) Act 2021

214 Department of Climate, Energy and the Environment. (DCEE). (2025c). National Adaptation Framework (NAF). Available at: National Adaptation Framework (NAF) (Accessed: 07 November 2025)).

215 Department of Climate, Energy and the Environment. (DCEE). (2025c). National Adaptation Framework (NAF). Available at: National Adaptation Framework (NAF) (Accessed: 07 November 2025)).

216 Green Horizons. (2025). Building a Climate-Resilient Future: Insights from Ireland's National Adaptation Framework (NAF). Available at: Ireland's National Adaptation Framework: Insights & Aims | AIS (Accessed: 07 November 2025)).

217 Green Horizons. (2025). Building a Climate-Resilient Future: Insights from Ireland's National Adaptation Framework (NAF). Available at: Ireland's National Adaptation Framework: Insights & Aims | AIS (Accessed: 07 November 2025)).

218 World Meteorological Organization. (n.d.) National Framework for Climate Services. Available at: NCFS-Factsheet (Accessed 12 November 2025).

219 Climate Ireland. (2023). What is Climate Ireland? Available at: EPA Climate Ireland | What is Climate Ireland? (Accessed 12 November 2025).

220 Department of Climate, Energy and the Environment (DCEE). (2021). National Climate Change Adaptation Framework (NCCAF). Available at: National Climate Change Adaptation Framework (NCCAF) (Accessed: 07 November 2025)).

221 Government of Ireland. (202 b). Climate Action Plan 2025. Available at: DCEE_Climate_Action_Plan_2025_Main_Report_-_Final_Web.pdf (Accessed: 07 November 2025)).

222 European Marine Spatial Plan Platform. Ireland. Maritime Spatial Plan(s). Available at: Ireland | The European Maritime Spatial Planning Platform (Accessed 13 November 2025)).

(ORE) by 2040 and 37 GW by 2050[223]. A 29-action plan was established to kick-start this[224]. To assist with this goal, The DCEE published the Designated Maritime Area Plan (DMAP) which is a strategic plan outlining the development and management of offshore renewable energy resources off the Republic of Ireland's coast[225]. The DMAP is part of a plan-led framework to designate renewable energy sites (including fixed, floating and floating demonstration locations) around the Republic of Ireland's coast and in November 2025, the first of four sites called 'Tonn Nua' will go to auction to secure 900 MW of capacity[226].

The next 'Future Framework' is anticipated to focus on specifying the ORE policy required to enable project development within future DMAP sites and will be closely aligned with upcoming marine spatial planning decisions. A 2025-2026 action plan builds on the 'Future Framework for Offshore Renewable Energy', detailing 14 actions to deliver and nine ongoing commitments with a focus on achieving Ireland's 20 GW target by 2040[227].

The Republic of Ireland has the potential to 'be a world leader in ORE'[228]. Using a collaborative approach, the Republic of Ireland is seeking to continue growing indigenous green growth, optimising emerging export market opportunities as well as progressing renewable energy to ensure that they reach their target of making the EU-climate-neutral by 2050 in line with the Paris agreement[229]. This growth will be important for climate change mitigation, and climate-smart marine planning through the policies within the NMPF will assist in considering the placement of ORE and how other sectors may be affected.

C.4.5 Potential applicability to marine planning in Wales

Areas of potential applicability to marine planning in Wales include:

- Ireland's NMPF contains overall and sector-specific, climate change policies. Conversely, the WNMP contains overarching climate change policies.
- The Republic of Ireland is committed to integrating natural capital into decision-making processes and has developed a natural capital policy within their marine plan (Biodiversity Policy 3). In Wales, under the Environment (Wales) Act, the Sustainable Management of Natural Resources (SMNR) is the leading approach, placing a more holistic focus on ecosystem services and benefits. Both countries therefore recognise in their planning systems the assets and services that the sea provides.
- Both the Republic of Ireland's and Wales' national marine plans recognise the importance of transitioning to low carbon marine energy and contain policies in support of this.
- Recognising the important role that habitats can provide for flood defence or carbon sequestration ecosystem services, the Republic of Ireland's marine plan includes a climate change policy for proposals to demonstrate how they will enhance or restore these habitats.

223 Department of Climate, Energy and the Environment. (DCEE). (2025). Future Framework for Offshore Renewable Energy. Available at: Future Framework for Offshore Renewable Energy (Accessed: 07 November 2025)).

224 Gov. ie. (2025). Future Framework for Offshore Renewable Energy. Available at: Future Framework for Offshore Renewable Energy (Accessed 11 November 2025)

225 Department of Climate, Energy and the Environment. (DCEE). (2025). Government progresses renewable energy agenda with publication of National Designated Maritime Area Plan Proposal. Available at: Government progresses renewable energy agenda with publication of National Designated Maritime Area Plan Proposal (Accessed: 07 November 2025)).

226 Department of Climate, Energy and the Environment. (DCEE). (2025). Government progresses renewable energy agenda with publication of National Designated Maritime Area Plan Proposal. Available at: Government progresses renewable energy agenda with publication of National Designated Maritime Area Plan Proposal (Accessed: 07 November 2025)).

227 Government of Ireland. (2025). Future Framework for Offshore Renewable Energy. 2025 Review. Available at: Future_Framework_for_Offshore_Renewable_Energy__2025_Review.pdf (Accessed: 07 November 2025)).

228 Department of Climate, Energy and the Environment. (DCEE). (2025). Future Framework for Offshore Renewable Energy. Available at: Future Framework for Offshore Renewable Energy (Accessed: 07 November 2025)).

229 United Nations. (n.d.) The Paris Agreement. Available at: The Paris Agreement | UNFCCC (Accessed 11 November 2025).

The WNMP contains a policy that encourages proposals that contribute to the protection, restoration and/or enhancement of marine ecosystems (ENV_01: Resilient marine ecosystems).

- The Republic of Ireland has a single portal to display activities information and policies. In Wales, information is contained within two portals: the Wales Marine Planning Portal[230] and DataMapWales[231].

C.5 Norway

C.5.1 Existing plan

The current Norwegian plan is captured in Norway's Integrated Ocean Management Plan 2023 - 2024[232]. This white paper is the second in a four-year cycle of management plans for all Norway's ocean areas which covers the marine spatial plans for the Barents Sea - Lofoten area[233], the Norwegian Sea[234], and the North Sea and Skagerrak[235].

C.5.2 Overview of the planning system

Norway was one of the first countries to implement marine spatial management plans[236] which have been used to develop one large-scale marine plan. This provides guidance of how to manage different marine sectors through sector-specific management laws and processes[237]. There is no legal requirement to adopt the marine plan, however, it is regarded as an important policy developed by the Norwegian Ministry for the Environment[238].

The marine spatial plan for Norway uses a sector-based approach, that includes a framework for the development of emerging industries such as offshore wind power, extraction of minerals from the seabed, carbon storage below the seabed and hydrogen production[239]. It aims to achieve holistic and ecosystem-based management for Norway's marine areas with the purpose of providing a framework for value creation[240]. The management plans cover the marine area along the coast and extending offshore[241].

230 Welsh Government. (2025). Wales Marine Planning Portal. Available at: Wales Marine Planning Portal (Accessed 04 November 2025).

231 Welsh Government. (2025). DataMapWales. Available at: Home | DataMapWales (Accessed 04 November 2025).

232 Government.no. (2024). Norway's integrated ocean management plans. Available at: Meld. St. 21 (2023–2024) Report to the Storting (white paper) (Accessed 05 February 2026).

233 Government.no. (n.d). First update of the Integrated Management Plan for the Marine Environment of the Barents Sea–Lofoten Area. Available at: Meld. St. 10 (2010–2011) - regjeringen.no (Accessed: 10 November 2025).

234 Government.no. (n.d). Integrated Management of the Marine Environment of the Norwegian Sea. Available at: Report No. 37 to the Storting (2008-2009) - regjeringen.no (Accessed: 10 November 2025).

235 Government.no. (n.d.). Integrated Management of the Marine Environment of the North Sea and Skagerrak (Management Plan) Meld. St. 37 (2012-2013) - regjeringen.no (Accessed: 10 November 2025).

236 Ehler. (2021). Two decades of progress in Marine Spatial Planning. Available at: Two decades of progress in Marine Spatial Planning - ScienceDirect (Accessed 05 November 2025).

237 Marine Alliance for Science and Technology (MAST-S). (2020). Using marine planning to balance competing demands on the marine environment: International comparisons. Available at: 406057.pdf (Accessed 12 November 2025).

238 Marine Alliance for Science and Technology (MAST-S). (2020). Using marine planning to balance competing demands on the marine environment: International comparisons. Available at: 406057.pdf (Accessed 12 November 2025).

239 Marine Alliance for Science and Technology (MAST-S). (2020). Using marine planning to balance competing demands on the marine environment: International comparisons. Available at: 406057.pdf (Accessed 12 November 2025).

240 Marine Alliance for Science and Technology (MAST-S). (2020). Using marine planning to balance competing demands on the marine environment: International comparisons. Available at: 406057.pdf (Accessed 12 November 2025).

241 Centre for Environment, Fisheries and Aquaculture Science (Cefas). (2023). A review of Marine Spatial Planning and Spatial Prioritisation approaches internationally and in the United Kingdom. Available at: Defra_Cefas 2023_MSPri review.pdf (Accessed 04 November 2025).

C.5.3 Regulatory body/Government department

The Norwegian Parliament (called the Storting) is responsible for approving and integrating ecosystem-based management plans for all Norwegian sea areas[242].

C.5.4 How climate change is considered in planning policy approaches

Under the Paris Agreement, Norway has made a commitment to reduce greenhouse gas emissions by at least 70% to 75% by 2035, compared to 1990 levels. It is intended that this target will be included in the Climate Change Act and will be formally submitted as a Nationally Determined Contribution (NDC) under the Paris Agreement, after Norwegian Parliament approval[243]. Within the marine spatial planning management plans, the government lays out ambitions to gather more information on strategies for a green transition in marine industries such as offshore renewables and as such acknowledge that this is an area that needs to be developed[244]. In a study assessing the feasibility of achieving net-zero emissions for 2030, it was acknowledged that Norway has a large capacity for CO_2 storage in aquifers and depleted offshore oil and gas reservoirs which could be adapted to help reduce greenhouse gas emissions[245].

In 2021, Norway released a Climate Action Plan[246] seeking to achieve these targets which noted that a major restructuring to the country's economy is required to substantially cut emissions[247]. This includes the phasing out of fossil fuels by 2040, and a proposal to substantially increase the CO_2 tax, which will lead to higher prices for domestic aviation, fuel costs and increased costs for both private households and business. It is anticipated that the price of CO_2 emissions from the oil and gas industry will more than double by 2030[248]. In addition, the Norwegian Government is seeking to replace fossil fuels with sustainable biofuels for various forms of transport[249].

In 2023, the Norwegian Environment Agency launched the report 'Climate measures in Norway towards 2030' which analyses 85 different measures from all sectors to achieve Norway's 2030 Climate goals[250]. To achieve the climate and environmental goals, these are split into six areas, these are: biodiversity; cultural heritage and the cultural environment; outdoor recreation; pollution; climate; and the polar regions[251]. As part of the climate goals, there were five environmental targets set out which included: Norway committing to reducing greenhouse gas emissions by at least 55% by 2030 compared with the 1990 level; a statutory goal of becoming a low-emission society by 2050; Norway committing to

242 Meld. St. 20. (2019-2020). Report to the Storting (white paper). Norway's integrated ocean management plans. Barents Sea–Lofoten area; the Norwegian Sea; and the North Sea and Skagerrak. Available at: Meld. St. 20 (ENG) (2019–2020) (Accessed 04 November 2025).

243 Government.no. (2025). Proposing a new ambitious climate target for Norway. Available at: Proposing a new ambitious climate target for Norway - regjeringen.no (Accessed 13 November 2025)).

244 Queirós *et al.* (2025). The opportunity for climate action through climate-smart Marine Spatial Planning. Available at: https://www.researchgate.net/publication/391560692_The_opportunity_for_climate_action_through_climate-smart_Marine_Spatial_Planning (Accessed: 07 November 2025)).

245 Bye, B., Fæhn, T., Gulbrandsen, L., Kaushal, K.R., Mohr, C.W., Søgaard, G., Torvanger, A., Wettestad, J. and Øistad, K., 2025. Norway's Net-zero Emissions Target for 2030: Too Ambitious to be True? (No. 11834). CESifo Working Paper. Available at: s11027-025-10229-6.pdf (Accessed 12 November 2025).

246 Meld. St. 13 (2020–2021)

247 United States Department of Agriculture. (2021). Government of Norway Publishes Comprehensive Climate Report. Available at: DownloadReportByFileName (Accessed 11 November 2025).

248 Life in Norway. (2025). Norway's Climate Plan to Halve Emissions by 2030. Available at: Norway's Climate Plan to Halve Emissions by 2030 - Life in Norway (Accessed 11 November 2025).

249 United States Department of Agriculture. (2021). Government of Norway Publishes Comprehensive Climate Report. Available at: DownloadReportByFileName (Accessed 11 November 2025).

250 Norwegian Environment Agency. (2023). Climate measures in Norway towards 2030. Available at: M2539-1.pdf (Accessed 11 November 2025).

251 Miljostatus. (n.d.) Norway's climate and environmental goals. Available at: Norway's climate and environmental objectives - State of the Environment - Norway's climate and environmental objectives (Accessed 11 November 2025).

becoming climate neutral from 2030 onwards; a contribution to reduced and reversed loss of tropical forests[252] resulting in a more stable climate; a more sustainable development and to preserve biodiversity; and climate change adaptation[253].

A report to the Norwegian Government, published by the Ministry of Climate and Environment, 'A changing climate – united for a climate resilient, 2022-2023' specifically outlines Norway's efforts and plans to prepare and adapt nature and society to climate change, with the aim of creating a climate resilient society[254]. Alongside this, Norway's second Adaptation Communication was published, highlighting how Norway should adapt to climate change such as using planning tools, incorporating Indigenous Peoples within the planning process and adapting the process of food production to prevent any damage from climate change[255].

C.5.5 Potential applicability to marine planning in Wales

Areas of potential applicability to marine planning in Wales include:

- There are similarities between the Norwegian marine spatial plan and the WNMP. The structure of the Norwegian marine spatial plan is similar to the WNMP in that both follow an ecosystem-based sector focused approach which facilitates the creation of sector-based policies and goals.
- The marine spatial plan for Norway covers emerging industries such as hydrogen production and the use of biofuels in vehicles to aid their ambitions to mitigate climate change. These industries are not mentioned within the WNMP as at the time of writing, they were not emerging within Wales. It is likely that the need for nascent industries may be picked up in the regular monitoring of the WNMP, and Norway's marine spatial plan could give an example of how these industries could be incorporated into the Welsh marine planning policy landscape.
- A feature of the Norwegian marine spatial plans (published between 2008 and 2012) is the section on 'The Assessment of cumulative environmental effects and progress towards goals' which clearly embeds climate change considerations into each sector, demonstrating the forward-thinking nature of the marine plans. This section outlines future projections of each sector up until 2025. This information is further used to subsequently inform the sector-specific recommendations. The plans have been updated in the four-year reviews of Norway's Integrated Ocean Management Plan.

252 The Climate and Forest Initiative is Norway's largest international climate and nature initiative. The initiative has helped to safeguard natural forests, such as in Brazil.

253 Miljostatus. (n.d.) Norway's climate and environmental goals. Available at: Norway's climate and environmental objectives - State of the Environment - Norway's climate and environmental objectives (Accessed 11 November 2025).

254 Meld.St.26. (2023). A changing climate – united for a climate-resilient society. Report to the Storting (white paper). Available at: Meld. St. 26 (2022–2023) - regjeringen.no (Accessed: 11 November)).

255 Norwegian Ministry of Climate and Environment. (2023). Norway's second Adaptation Communication. Available at: Norway's second Adaptation Communication (Accessed 12 November 2025).

C.6 Scotland

C.6.1 Existing plan

The current Scottish National Marine Plan[256] (NMP) covers both inshore (out to 12 NM) and offshore waters (12 NM outwards to 200 NM). This is regulated under two separate 'Marine Acts'- the Marine (Scotland) Act 2010[257], regulating the inshore Scottish regional plans, and the MCAA (2009)[258], covering the offshore waters. The NMP includes both sectoral objectives and planning policies.

C.6.2 Overview of the planning system

The Scottish Government marine planning system includes; a system of national marine planning (which led to the adoption of Scotland's first National Marine Plan in 2015); the scope to prepare subsidiary regional marine plans in defined marine regions, where this is seen as desirable (a regional marine plan has been produced for Shetland Islands[259] and a draft plan for Clyde[260] and Orkney[261]); and a sectoral marine planning process for which a number of plans have been adopted (or are in the process of being developed with a view to adoption), particularly in relation to offshore wind.

Scottish Ministers are required, under Part 3 of the Marine (Scotland) Act (2010), to prepare and adopt a national marine plan for the Scottish marine area, and to keep the plan under review. Since its adoption in 2015, the current NMP has been reviewed twice, in line with the statutory requirements to monitor and report on: the effects of the plan's policies; the effectiveness of those policies in securing the plan's objectives; its progress in securing its objectives and any other relevant matters. The second review, published in 2021, suggested that the urgent need to tackle the twin crises of climate change and biodiversity loss, amongst other factors, had become core drivers for the development of a new plan.

In addition to the NMP, the Scottish Government is updating the Sectoral Marine Plan for Offshore Wind Energy[262] which will identify spatial opportunities for the future development of offshore wind deployment. The Sectoral Marine Plan for Offshore Wind Energy is a separate plan to the marine spatial plan for Scotland and is currently in review. In Scotland, the Crown Estate is devolved, with Crown Estate Scotland leading leasing for offshore wind, guided by the Sectoral Marine Plan for Offshore Wind Energy. An updated draft of the Sectoral Marine Plan for Offshore Wind Energy was published in May 2025[263].

256 Scottish Government. (2015). Scotland's National Marine Plan. Available at: Scotland's National Marine Plan - gov.scot (Accessed 04 November 2025).

257 Marine (Scotland) Act 2010

258 Marine and Coastal Access Act 2009

259 Scottish Government. (2025). Shetland Islands Regional Marine Plan. Available at: Shetland Islands Regional Marine Plan - gov.scot (Accessed 05 February 2026).

260 Clyde Marine Planning Partnership. (2019). Clyde Regional Marine Plan Pre-consultation Draft. Available at: Pre-consultation-draft-Clyde-Regional-Marine-Plan-18-March-2019.pdf (Accessed 05 February 2026).

261 Orkney Islands Council. (2024). Orkney Island Regional Marine Plan Consultation Draft. Available at: orkney-islands-regional-marine-plan-consultation-draft-final-2.pdf (Accessed 05 February 2026).

262 Scottish Government. (2025). Offshore wind energy - draft updated Sectoral Marine Plan 2025: consultation. Available at: Offshore wind energy - draft updated Sectoral Marine Plan 2025: consultation - gov.scot (Accessed 04 November 2025).

263 Scottish Government. (2025). Draft Updated Sectoral Marine Plan for Offshore Wind Energy. Available at: Draft Updated Sectoral Marine Plan for Offshore Wind Energy (Accessed: 04 November 2025).

C.6.3 Regulatory body/Government department

The Scottish Ministers are the leading authority for the Scotland National Marine Plan.

C.6.4 How climate change is considered in planning policy approaches

In October 2022, the Scottish Ministers announced their intention to update the NMP. An engagement strategy[264] and SPP[265] have been published to support the process. Work has commenced on the preparation of National Marine Plan 2 (NMP2), delivered by the Scottish Government's Marine Planning and Policy team in the Marine Directorate. The NMP2 Planning Position Statement[266] (PPS) sets out a proposal for the NMP2 to have a High Level Objective (HLO) of 'Mitigate and adapt to the impacts of climate change in Scotland's seas'. Alongside this, consideration is being given to dedicated policies on climate change mitigation and adaptation, including giving significant weight to the climate and nature crises (bringing alignment with Scotland's NPF4[267] Policy 1), and setting out a policy that requires proposals for activities or developments to demonstrate climate change mitigation and adaptation in their design and/or siting. A consultation was held on the NMP2 PPS. The consultation analysis[268] showed that while there were a variety of views with regards to exact wording and policy for climate change mitigation and adaptation, the intention to align NMP2 with NPF4 and give significant priority to climate change was welcomed. NMP2 is proposed to be adopted in Summer 2027[269].

The current NMP takes climate change into consideration with coastal erosion and offshore wind being of focus. To assess the condition of Scotland's seas, the Scottish Government developed Scotland's Marine Atlas[270] which provides baseline information, data and analysis of Scotland's seas and was used to develop the NMP. Some parts of Scotland's Marine Atlas are published on Marine Scotland Maps National Marine Plan Interactive (NMPi)[271]. The mapping tool contains layers for climate change, including UKCP09 (e.g., increase in air temperature, rise in relative sea level, change in significant wave height).

264. Scottish Government. (2022). National marine plan 2: engagement strategy. Available at: https://www.gov.scot/publications/scotlands-national-marine-plan-2/pages/2/ (Accessed 04 November 2025).
265 Scottish Government. (2024). National Marine Plan 2: stakeholder engagement strategy and statement of public participation. Available at: National Marine Plan 2: stakeholder engagement strategy and statement of public participation - gov.scot (Accessed 04 November 2025).
266 Scottish Government. (2024). National Marine Plan 2 - Planning Position Statement. Available at: National Marine Plan 2: Planning Position Statement (Accessed 04 November 2025).
267 Scottish Government. (2023). National Planning Framework 4. Available at: National Planning Framework 4 - gov.scot (Accessed 04 November 2025).
268 Scottish Government. (2025). National Marine Plan 2 - planning position statement: consultation analysis. Available at: National Marine Plan 2 - planning position statement: consultation analysis - gov.scot (Accessed 04 November 2025).
269 Scottish Government. (2024). Scottish National Adaptation Plan 2024 – 2029. Available at: Scottish National Adaptation Plan (2024-2029) (Accessed 04 November 2025).
270 Scottish Government. (n.d). Scotland's Marine Atlas. Available at: Scotland's Marine Atlas | marine.gov.scot (Accessed 04 November 2025).
271 Scottish Government. (2017). Marine science: open data network. Available at: Marine Scotland Maps NMPI - Marine science: open data network - gov.scot (Accessed 04 November 2025).

The Climate Change (Emissions Reduction Targets) (Scotland) Act 2019 sets out a legally binding target of net zero greenhouse gas emissions economy-wide by 2045[272]. In 2019, the first Scottish Climate Change Adaptation Programme (SCCAP) was published[273]. An assessment by Scottish Government in 2020[274] highlighted the urgency to tackle global climate change and the need for further actions to be implemented[275]. As a result, three areas have been highlighted to help Scotland achieve net zero by 2045: marine renewable energy, carbon capture utilisation and storage, and blue carbon habitats[276].

In response to this, the Scottish National Adaptation Plan, published in 2024, set out the actions that the Scottish Government will take to respond and adapt to climate change[277]. This details how the Scottish Government seek to make public services, communities, natural environment and Scotland's economy more resilient to the damage of climate change[278]. This includes five long-term outcomes, 23 shorter-term objectives and over 200 policies to build resilience in Scotland in response to climate change[279].

In 2022, the Scottish Government introduced funding for Coastal Change Adaptation (CCA) for local authorities to help with plans to mitigate against the impacts of coastal flooding[280]. As a result, in 2023, the Scottish Government published guidance in response to sea level rise and coastal flooding called 'Coastal Change Adaptation Plan'. As part of this, the guidance recommends a trigger based Dynamic Adaptive Pathways approach to enable authorities to be flexible in their response to future climate change[281].

In terms of regional plans, the Orkney Islands Regional Marine Plan integrates climate change mitigation and adaptation in the vision, objectives, and policies[282]. The plan highlights the importance of collating and sharing data with partners, restoring natural environment such as peatland restoration, implementing Coastal Change Adaptation Plans (CCAP)[283] and the growth of renewable energy to meet net zero targets.

272 Scottish Government. (2021). National Marine Plan Review 2021: Three Year Report on the effectiveness of Scotland's National Marine Plan. Available at: national_marine_plan_review_2021.pdf (Accessed 04 November 2025).

273 Scottish Government. (2019). Climate ready Scotland: Second Scottish Climate Change Adaptation Programme 2019-2024. Available at: Climate Ready Scotland: Second Scottish Climate Change Adaptation Programme 2019-2024 (Accessed 04 November 2025).

274 Scottish Government. (2020). Marine Scotland Assessment 2020. Available at: Scotland's Marine Assessment 2020 | Scotland's Marine Assessment 2020 (Accessed 04 November 2025).

275 Scottish Government. (2021). National Marine Plan Review 2021: Three Year Report on the effectiveness of Scotland's National Marine Plan. Available at: national_marine_plan_review_2021.pdf (Accessed 04 November 2025).

276 Scottish Government. (n.d.) Opportunities for climate change mitigation. Available at: Opportunities for climate change mitigation | Scotland's Marine Assessment 2020 (Accessed 04 November 2025).

277 Scottish Government. (2024). Scottish National Adaptation Plan. Available at: Scottish National Adaptation Plan (2024-2029) (Accessed 04 November 2025).

278 Scottish Government. (2024). Scottish National Adaptation Plan. Available at: Scottish National Adaptation Plan (2024-2029) (Accessed 04 November 2025).

279 Sustainable Scotland Network. (2024). Scottish National Adaptation Plan (SNAP3). Available at: Scottish National Adaptation Plan (SNAP3) - The Sustainable Scotland Network (Accessed 04 November 2025).

280 Climate Change. (2024). Planning for coastal change adaptation in Scotland. Available at: Planning for coastal change adaptation in Scotland. (Accessed 04 November 2025).

281 Scottish Government. (2021). Coastal Change Adaptation Plan Guidance. Available at: Coastal Change Adaptation Plan Guidance. (Accessed 04 November 2025).

282 MCCIP. (2026). A roadmap towards Climate-Smart Marine Spatial Planning in the UK Overseas Territories. Available at: *UKOTs_CSMP_Roadmap_2026 (Accessed 06 March 2026).

283 Orkney Islands Council. (n.d). Orkney Island Coastal Change Adaptation Plan Consultation. Available at: Orkney Island Coastal Change Adaptation Plan Consultation (Accessed 04 November 2025).

C.6.5 Potential applicability to marine planning in Wales

Areas of potential applicability to marine planning in Wales include:

- Updating the Sectoral Marine Plan for Offshore Wind Energy in Scotland will identify spatial opportunities for the future development of offshore wind deployment. Unlike Wales, seabed leasing is devolved in Scotland to Crown Estate Scotland, which will guide leasing through the Sectoral Marine Plan. Whilst the approach for offshore wind is therefore not directly applicable to Wales, the identification of spatial areas for renewable energy development is. SRAs have been developed in Wales for tidal stream energy with an MPN issued, therefore ensuring them to be a relevant material consideration in determinations taken by public authorities under Section 58 of the MCAA (2009). The development of a sectoral marine plan in Wales could be considered for other renewable energy sectors. However, if aligning with approaches in Scotland, this would be a non-statutory document.
- Scotland's NMPi includes layers for climate change, including UKCP09 projections. DataMapWales[284] currently contains MSPACE outputs but does not include UKCP09 projections.
- Both plans consider climate change adaptation and mitigation at a high level. The NMP2 is considering inclusion of a HLO of 'Mitigate and adapt to the impacts of climate change in Scotland's seas'. The WNMP contains a Plan Objective to 'Improve understanding and enable action supporting climate change adaptation and mitigation'.
- Scotland's NP4 (and potentially NMP2) contains a direct statement as the first policy that 'When considering all development proposals significant weight will be given to the global climate and nature crises'. The WNMP and Planning Policy Wales both consider climate change throughout but do not give a steer for 'significant weight' to be given.

C.7 Seychelles

C.7.1 Existing plan

The Seychelles Marine Spatial Plan[285] (SMSP) was officially launched in 2025. Currently, the SMSP is the second largest in the world by area and will be the first comprehensive marine spatial plan in the Western Indian Ocean[286]. The plan is government-led using a multi-sector and zonal approach, with the aim to support and sustain the long-term use of the Seychelles' ocean waters[287].

C.7.2 Overview of the planning system

The SMSP envisages that by 2030, 30% of the Seychelles' EEZ will be under marine protection with more than eleven marine sectors inputting into the SMSP. These sectors include fishing, tourism, marine charters, biodiversity conservation, renewable and non-renewable energy, port authority and maritime safety[288].

284 Welsh Government. (2025). DataMapWales. Available at: Home | DataMapWales (Accessed 04 November 2025).

285 Government of Seychelles. 2025. Seychelles Marine Spatial Plan. Ministry of Agriculture, Climate Change and Environment, Mahé, Seychelles. (Version 1.1). 142 pages. Available at: SMSP_PLAN-WEB.pdf (Accessed 11 November 2025).

286 Marine Spatial Planning. (2025). Seychelles MSP. Available at: Seychelles MSP – Marine Planning (Accessed: 11 November)).

287 Republic of Seychelles. (2015). Seychelles marine spatial planning on the leading edge of marine conservation and climate adaptation. Available at: soiom-2016-01-seychelles-02-en.pdf (Accessed: 07 November 2025).

288 Republic of Seychelles. (2015). Seychelles marine spatial planning on the leading edge of marine conservation and climate adaptation. Available at: soiom-2016-01-seychelles-02-en.pdf (Accessed: 07 November 2025).

The SMSP is a result of the Seychelles government-led Debt-for-Nature swap that has led to the development of the Seychelles Conservation & Climate Adaptation Trust (SeyCCAT). This funding approach helps to support planning and implementation in the Seychelles[289]. The funds from this will be used for climate change adaptation work, to support marine conservation and to implement the marine plan[290].

The SMSP focuses on marine conservation due to high rates of species endism, United Nations Educational, Scientific and Cultural Organization (UNESCO) World Heritage Sites, unique biodiversity, and economically important tuna fisheries[291]. The SMSP uses a zonal approach, designating MPAs into three zone categories: zone 1 (high protection of marine biodiversity), zone 2 (medium protection of biodiversity and sustainable uses) and zone 3 (multiple use areas)[292]. The Sustainable Use Areas adhere to the medium biodiversity protection objectives while allowing sustainable allowable activities such as resource extraction, commercial fishing harvest, tourism, shipping and transport, seabed disturbance and economic development. Multiple use areas include areas designated for various activities, only within the EEZ.

C.7.3 Regulatory body/Government department

The Government of Seychelles is the lead authority for the SMSP and The Ministry of Environment, Energy and Climate Change (MEECC) are the lead ministry for the SMSP. This is supported by The Nature Conservancy (TNC)[293] and additional partners such as the Government of Seychelles, the United Nations Development Programme (UNDP), the Global Environment Facility (GEF), the Programme Coordinating Unit, and SeyCCAT[294].

C.7.4 How climate change is considered in planning policy approaches

Within the Seychelles MSP, three objectives are highlighted: expand marine protection to 30% of the EEZ; support and advance the Blue Economy; and address climate change adaptation[295]. The SMSP utilises planning tools which include a spatial data catalogue, compatibility matrix, participatory mapping, decision-support tools, an overview of the SMSP Atlas, climate change risk mapping, and Marcan analysis for biodiversity and fisheries prioritisation[296].

289 Queiros *et al.*, (2026). A roadmap towards climate-smart marine spatial planning in UK Overseas Territories. Marine Climate Change Impacts Partnership. DOI: 10.14465/2026.csp.01.rd. Available at: UKOTs_CSMP_Roadmap_2026 (Accessed 20 March 2026).

290 The Commonwealth. (2021). Case Study: Seychelles – Using Marine Spatial Planning to Meet the 30 Per Cent Marine Protected Areas Target. Available at: Case Study: Seychelles – Using Marine Spatial Planning to Meet the 30 Per Cent Marine Protected Areas Target | Commonwealth (Accessed: 07 November 2025).

291 soiom-2016-01-seychelles-02-en.pdf

292 The Commonwealth. (2021). Case Study: Seychelles – Using Marine Spatial Planning to Meet the 30 Per Cent Marine Protected Areas Target. Available at: Case Study: Seychelles – Using Marine Spatial Planning to Meet the 30 Per Cent Marine Protected Areas Target | Commonwealth (Accessed 11 November 2025).

293 Republic of Seychelles. (2015). Seychelles marine spatial planning on the leading edge of marine conservation and climate adaptation. Available at: soiom-2016-01-seychelles-02-en.pdf (Accessed: 07 November 2025).

294 Marine Spatial Planning. (2025). Seychelles Marine Spatial Plan. Available at: Seychelles MSP – Marine Planning (Accessed: 11 November).

295 Seychelles Marine Spatial Plan. (2025). Seychelles Marine Spatial Plan Initiative. Supporting healthy oceans, communities, and the Blue Economy. Available at: Seychelles Cabinet approves Marine Spatial Plan - Seychelles Marine Spatial Plan Initiative (Accessed: 10 November 2025).

296 Government of Seychelles. 2025. Seychelles Marine Spatial Plan. Ministry of Agriculture, Climate Change and Environment, Mahé, Seychelles. (Version 1.1). 142 pages. Available at: SMSP_PLAN-WEB.pdf (Accessed 11 November 2025).

The SMSP highlights the importance of The Blue Economy which is crucial for Seychelles to support sustainable development goals and address climate change adaptation and ocean management[297, 298]. One of the goals for the SMSP was climate change adaptation with the objective to develop climate change risk mapping for coral reef habitats. This included an analysis of sea surface temperatures and chlorophyll signatures to inform the zoning design process and to identify climate refuges in the zoning plans[299, 300]. The Seychelles MSP zoning design was informed using monthly mean sea surface temperature (SST) anomalies that identified persistently cool areas or thermal refugia[301]. The plan acknowledges that this was a pilot analysis to test the integration of climate-smart methods with existing marine spatial planning databases at a time when climate was still a new objective for global marine spatial planning efforts.

The SMSP has also contributed to Seychelles' Nationally Determined Contributions (NDC)[302]. NDCs reflect the efforts by each country to reduce national emissions and adapt to the impacts of climate change[303] and is part of the Paris Agreement's objectives[304].

As part of Seychelles commitment with the NDC, the Seychelles Seagrass and Carbon Assessment Project was initiated to map the full extent of the blue carbon seagrass and mangrove ecosystems within its waters, as well as measuring their carbon stock values[305]. As a result, a total of 99.5 % of seagrass habitat was mapped within designated MPAs, covering almost 160,000 ha in area. It is estimated to store 18.9 million tonnes of organic carbon. The Seychelles Seagrass Mapping and Carbon Assessment states a recommendation of 'Spatial protection measures must be supported through robust commitments to regulation and licencing of specific activities which directly or indirectly impact the seabed. For example, establishing development and planning processes and safeguards specific to seagrass, and a requirement for Environmental Impact Assessment (EIA) in areas where seagrass habitat is known or is likely to occur. Accounting for any loss or gain associated with any extraction or seabed alteration will facilitate the commitment to include seagrass ecosystems within the Seychelles NGGI by 2025'.

The SMSP looks to implement spatial protection measures, supported through robust commitments to regulation and licensing of specific activities which directly or indirectly impact the seabed. Tables of 'Allowable Activities' were developed using information from stakeholders, published studies, and experts on each activity's environmental impact and the potential for compatibility or conflict with the

297 Republic of Seychelles. (2015). Seychelles marine spatial planning on the leading edge of marine conservation and climate adaptation. Available at: soiom-2016-01-seychelles-02-en.pdf (Accessed: 07 November 2025).

298 Republic of Seychelles. (2018). Seychelles Blue Economy: Strategic Policy Framework and Roadmap Charting the future (2018-2030). Available at: Blue_Economy_Road_Map.pdf (Accessed 11 November 2025).

299 Government of Seychelles. (2025). Seychelles Marine Spatial Plan. Ministry of Agriculture, Climate Change and Environment, Mahé, Seychelles. (Version 1.1). 142 pages. Available at: SMSP_PLAN-WEB.pdf (Accessed 11 November 2025).

300 Plymouth Marine Laboratory. (2025). Accelerating climate action through marine spatial planning: the opportunity lies ahead. Available at: Accelerating climate action through marine spatial planning: the opportunity lies ahead - Plymouth Marine Laboratory (Accessed: 11 November).

301 Seychelles Marine Spatial Plan Initiative. (2022). Using climate change risk mapping to zone for marine protection goals in the in the SEYCHELLES Marine Spatial Plan. Available at: SEYMSP_ClimateRiskMapping_WIOMSA_10Oct2022.pdf (Accessed 11 November 2025).

302 Seychelles Marine Spatial Plan Initiative. (n.d.). The Seychelles' Marine Spatial Plan. Available at: One-Pager_0418-editedApr09-2024.pdf (Accessed: 11 November).

303 United Nations. (n.d). Nationally Determined Contributions (NDCs). Available at: Nationally Determined Contributions (NDCs) | UNFCCC (Accessed 11 November 2025).

304 United Nations. (n.d). Nationally Determined Contributions (NDCs). Available at: Nationally Determined Contributions (NDCs) | UNFCCC (Accessed 11 November 2025). https://unfccc.int/process-and-meetings/the-paris-agreement/nationally-determined-contributions-ndcs

305 Rowlands GP , Antat S , Baez SK , Cupidon A , Faure A , Harlay J , Lee CB , Martin LEC , Masque P , Morgan M , Mortimer JA, Traganos D. (2024). The Seychelles Seagrass Mapping and Carbon Assessment. A report to be submitted to the Government of Seychelles, Ministry of Agriculture, Climate Change and Environment (MACCE). Available at: Seychelles_Seagrass_MACCE_report-1.pdf (Accessed 11 November 2025).

objective of each area. These include actions such as EIA being required, and permits/licenses required for certain activities.

By 2026, it is anticipated that the SMSP will have approved management plans for all zones, developed a monitoring programme to report on effective management of MPAs and will continue to co-ordinate and sustainably manage all marine activities[306].

C.7.5 Potential applicability to marine planning in Wales

Areas of potential applicability to marine planning in Wales include:

- The Seychelles identify climate refuges in the zoning plans. Similarly for the UK and Wales, the MSPACE programme[307] uses climate modelling data to map and assess areas that would be most sensitive, as well as most resilient to different climate scenarios. Within the Seychelles the identified areas are embedded within the marine plan.
- The Seychelles marine plan focuses on a zonal approach to planning. Similarities exist in Wales through the development of SRAs and the designation of MPAs[308] which are then recognised within the planning framework and have specific policies applied to them within the WNMP. 'High Biodiversity Protection Zones' in the Seychelles are sufficiently large to ensure ecological resilience and climate change adaptation[309].
- Recognising the valuable carbon stocks of some habitats, the Seychelles have extensively mapped key habitats, such as seagrass. Within Wales, habitats are mapped and monitored by Natural Resources Wales (NRW) as part of MPA condition monitoring. Known locations of key habitats are available on DataMapWales[310], including seagrass beds.

C.8 Sweden

C.8.1 Existing plan

Sweden has adopted three distinct marine spatial plans for its territorial waters and EEZ. These include a marine spatial plan for the Gulf of Bothnia, one for the Baltic Sea and another for the Skagerrak/Kattegat[311]. These were published as a single document in 2022.

C.8.2 Overview of the planning system

Sweden adopted its marine spatial plans in 2022, covering territorial waters and Sweden's EEZ[312]. Within the marine spatial plans, 13 uses are specified including electricity transmission, energy extraction, sand extraction etc. Instead of stating policies, the plans set out 'guidance and considerations' and indicate

306 Seychelles Marine Spatial Plan. (n.d.). THE SEYCHELLES' MARINE SPATIAL PLAN. Available at: One-Pager_0418-editedApr09-2024.pdf (Accessed: 11 November).

307 Queirós *et al.* (2023) 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. 58 pp. doi: 10.14465/2023.msp02.tec Available at: MSPACE: Marine Spatial Planning Addressing Climate Effects | Marine Climate Change Impacts Partnership (Accessed 10 November).

308 It should be noted that MPAs are not designated or managed explicitly through marine planning in Wales.

309 Government of Seychelles. (2025). Seychelles Marine Spatial Plan. Available at: SMSP_PLAN-WEB.pdf (Accessed 04 November 2025).

310 Welsh Government. (2025). DataMapWales. Available at: Home | DataMapWales (Accessed 04 November 2025).

311 Swedish Agency Marine and Water Management (SwAM). (2023). Marine Spatial Plans. Available at: Marine Spatial Plans - Publications - Swedish Agency for Marine and Water Management (Accessed: 07 November 2025).

312 European Marine Spatial Plan Platform. (n.d.) Sweden. Maritime Spatial Plans. Available at: Sweden | The European Maritime Spatial Planning Platform (Accessed: 07 November 2025).

areas where particular focus is required. These include areas of high natural value, high cultural landscape value, and areas that are important to Sweden's military defence[313].

The Swedish marine spatial plans incorporate the co-existence of and synergies between different activities and uses[314]. In 2025, The Swedish Agency for Marine and Water Management (SwAM) were responsible for submitting amended marine spatial plans to Government which included proposals such as assigning more areas for offshore wind, more energy areas and energy extraction areas[315].

C.8.3 Regulatory body/Government department

The National marine spatial plan authority is the Ministry of Climate and Enterprise[316]. SwAM is the government agency responsible for the delivery of marine spatial planning[317].

C.8.4 How climate change is considered in planning policy approaches

Sweden aims to achieve climate neutrality by 2050 and the long-term goal of net zero by 2045[318]. In 2024, an annual report by the Swedish Climate Policy concluded that the action plan presented by Government was not on track to reach climate targets[319]. To reach the net zero target, amended spatial plans are looking to designate more areas for offshore wind and aiming to increase electricity production to enable the production of an additional 90 Terawatt hour (TWh) in addition to the 30 TWh included in the current marine spatial plans[320].

Sweden's marine spatial plans include climate change within the vision, stating '*Climate change has been slowed and we have adapted to altered circumstances*'[321]. Climate change is also captured in one of the marine plan goals to prepare for possible future need for carbon capture and storage.

The ClimeMarine project was developed as a recommendation and model for marine spatial planners in Sweden. The project promotes ecosystem-based management of Swedish seas with climate change considerations via close contact with stakeholders and decision makers[322]. The Swedish Meteorological and Hydrological Institute (SMHI) have developed a cumulative impact assessment tool called 'Symphony' which is used by the SwAM for marine spatial planning and will be further developed by

313 Swedish Agency Marine and Water Management (SwAM). (2023). Marine Spatial Plans. Available at: Marine Spatial Plans - Publications - Swedish Agency for Marine and Water Management (Accessed: 07 November 2025).

314 Centre for Environment, Fisheries and Aquaculture Science (Cefas). (2023). A review of Marine Spatial Planning and Spatial Prioritisation approaches internationally and in the United Kingdom. Available at: Defra_Cefas 2023_MSPri review.pdf (Accessed 04 November 2025).

315 Swedish Agency Marine and Water Management (SwAM). (2025). Proposals for amended marine spatial plans, 2025. Available at: Proposals for amended marine spatial plans, 2025 - Marine Spatial Planning - Swedish Agency for Marine and Water Management (Accessed: 07 November 2025).

316 European Marine Spatial Plan Platform. (n.d.). Sweden. Maritime Spatial Plan(s). Available at: Sweden | The European Maritime Spatial Planning Platform (Accessed: 07 November 2025).

317 Swedish Agency Marine and Water Management (SwAM). (n.d.). Marine Spatial Planning. Available at: Marine Spatial Planning - Swedish Agency for Marine and Water Management (Accessed: 07 November 2025).

318 European Parliament. (2024). Sweden's climate action strategy. Available at: Sweden's climate action strategy (Accessed: 07 November 2025).

319 Swedish Climate Policy. (2024). Report of the Swedish Climate Policy Council. Available at: Klimatpolitiska rådets rapport 2024 (Accessed: 07 November 2025).

320 Swedish Agency Marine and Water Management. (2023). Development of proposals for amended marine spatial plans. Available at: Development of proposals for amended marine spatial plans - Marine Spatial Planning - Swedish Agency for Marine and Water Management (Accessed 11 November 2025).

321 Swedish Agency Marine and Water Management. (2022). Marine Spatial Plans for the Gulf of Bothnia, the Baltic Sea and the Skagerrak/Kattegat. Available at: Marine Spatial for the Gulf of Bothnia, the Baltic Sea and the Skagerrak/Kattegat (Accessed 04 November 2025).

322 Swedish Meteorological and Hydrological Institute (SMHI). (2025). ClimeMarine – Climate change predictions for Marine Spatial Planning. Available at: ClimeMarine – Climate change predictions for Marine Spatial Planning — SMHI (Accessed: 07 November 2025).

incorporating the latest climate model data. Symphony can be used to indicate how climate change may affect different marine regions in the future. This is undertaken by adding pressure maps representing expected changes in parameters, such as temperature, salinity, and ice cover. The maps are based on the latest climate models of the Baltic Sea region. Whilst the modelling uses best available data, it is recognised that there are uncertainties, such as the level of detail for mapped 'natural values[323]. It is anticipated that this tool will be utilised in the Swedish marine spatial plans and associated decision making[324].

A study in 2023 looked at potential climate refugia for vulnerable marine species and habitats in Sweden to inform marine spatial planning[325]. Sweden's marine spatial plan recognises that sustainable management is needed for climate refugia. For example, climate refugia for ringed seal have been identified adjacent to the marine spatial planning area along parts of the northern coast[326]. Recognising publication of the plan in 2023, and the refugia study at the same time, this appears to be a developing area in Sweden's marine spatial planning.

C.8.5 Potential applicability to marine planning in Wales

Areas of potential applicability to marine planning in Wales include:

- Sweden has developed the tool 'Symphony' which incorporates climate model data as well as marine spatial planning data to inform national planning decisions. The programme includes close engagement with stakeholders and decision-makers. Symphony is also used to objectively compare the cumulative environmental impact from different marine spatial planning options, ensuring marine spatial plans are developed with an ecosystem approach[327]. Wales applies an ecosystem approach to the WNMP, and in the future could incorporate climate model data in marine spatial planning.
- Both the WNMP and Sweden's national marine plans visions include consideration of climate change. For the WNMP, this focuses more on the achievement of climate change emission targets, whilst Sweden's marine spatial plans vision also considers adaptation.

323 Swedish Agency for Marine and Water Management. (2025). Symphony – a tool for ecosystem-based marine spatial planning. Available at: Symphony – a tool for ecosystem-based marine spatial planning (Accessed 04 November 2025).

324 Swedish Meteorological and Hydrological Institute (SMHI). (2025). ClimeMarine – Climate change predictions for Marine Spatial Planning. Available at: ClimeMarine – Climate change predictions for Marine Spatial Planning — SMHI (Accessed: 07 November 2025).

325 Strömberg, E., (2023). Incorporation of climate effects in marine spatial planning. Possible Climate Refugia on the Swedish West Coast Based on Two Climate Scenarios. Available at: Incorporation of climate effects in marine spatial planning. Possible Climate Refugia on the Swedish West Coast Based on Two Climate Scenarios (Accessed 11 November 2025).

326 Swedish Agency Marine and Water Management (SwAM). (2023). Marine Spatial Plans. Available at: Marine Spatial Plans - Publications - Swedish Agency for Marine and Water Management (Accessed: 07 November 2025).

327 Swedish Agency Marine and Water Management. (2020). Symphony – a tool for ecosystem-based marine spatial planning. Available at: Symphony – a tool for ecosystem-based marine spatial planning - Marine Spatial Planning - Swedish Agency for Marine and Water Management (Accessed 04 November 2025).

D Welsh National Marine Plan Policies

Table D1 displays the policies from the WNMP.

Table D1 Policies from the Welsh National Marine Plan

Policy Name	Policy Detail
GEN_01: Planning policy	There is a presumption in favour of the sustainable development of the plan area in order to contribute to Wales' well-being goals.
GEN_02: Planning policy	Relevant public authorities should take a proportionate, risk-based approach to application of relevant marine planning policies in decision making.
ECON_01: Sustainable economic growth	Proposals for economically sustainable activities are encouraged, particularly where they contribute to: ▪ The sustainable management of natural resources thereby supporting ecosystem resilience; ▪ A more resilient economy; ▪ Employment opportunities particularly for coastal communities; ▪ Protecting and creating employment at all skill levels; ▪ Maintaining communities with a high-density of Welsh speakers; and/or ▪ Tackling poverty by supporting deprived coastal communities.
ECON_02: Coexistence	Proposals should demonstrate how they have considered opportunities for coexistence with other compatible sectors in order to optimise the value and use of the marine area and marine natural resources.
SOC_01: Access to the marine environment	Proposals that maintain or enhance access to the marine environment are encouraged.
SOC_02: Well-being of coastal communities	Proposals that contribute to the well-being of coastal communities are encouraged.
SOC_03: Marine pollution incidents	Proposals should demonstrate how they minimise their risk of causing or contributing to marine pollution incidents.
SOC_04: Welsh language and culture	Proposals that contribute to the promotion and facilitation of the use of the Welsh language and culture are encouraged.

Policy Name	Policy Detail
SOC_05: Historic assets	Proposals should demonstrate how potential impacts on historic assets and their settings have been taken into consideration and should, in order of preference: a) avoid adverse impacts on historic assets and their settings; and/or b) minimise impacts where they cannot be avoided; and/or c) mitigate impacts where they cannot be minimised. If significant adverse impacts cannot be avoided, minimised or mitigated, proposals must present a clear and convincing case for proceeding. Opportunities to enhance historic assets are encouraged.
SOC_06: Designated landscapes	Proposals should demonstrate how potential impacts on the purposes and special qualities for which National Parks or Areas of Outstanding Natural Beauty have been designated have been taken into consideration and should, in order of preference: a) avoid adverse impacts on designated landscapes; and/or b) minimise impacts where they cannot be avoided; and/or c) mitigate impacts where they cannot be minimised. If significant adverse impacts cannot be avoided, minimised or mitigated, proposals must present a clear and convincing case for proceeding. Opportunities to enhance designated landscapes are encouraged.
SOC_07: Seascapes	Proposals should demonstrate how potential impacts on seascapes have been taken into consideration and should, in order of preference: a) avoid adverse impacts on seascapes; and/or b) minimise impacts where they cannot be avoided; and/or c) mitigate impacts where they cannot be minimised. If significant adverse impacts cannot be avoided, minimised or mitigated, proposals must present a clear and convincing case for proceeding. Opportunities to enhance seascapes are encouraged.
SOC_08: Resilience to coastal change and flooding	Proposals should demonstrate how they are resilient to coastal change and flooding over their lifetime.

Policy Name	Policy Detail
SOC_09: Effects on coastal change and flooding	Proposals should demonstrate how they: ▪ avoid significant adverse impacts upon coastal processes; and ▪ minimise the risk of coastal change and flooding; Proposals that align with the relevant Shoreline Management Plan(s) and its policies are encouraged.
SOC_10: Minimising climate change	Proposals should demonstrate how they, in order of preference: a) avoid the emission of greenhouse gases; and/or b) minimise them where they cannot be avoided; and/or c) mitigate them where they cannot be minimised. Where significant emission of greenhouse gases cannot be avoided, minimised or mitigated, proposals for regulated activities must present a clear and convincing case for proceeding.
SOC_11: Resilience to climate change	Proposals should demonstrate that they have considered the impacts of climate change and have incorporated appropriate adaptation measures, taking into account Climate Change Risk Assessments for Wales. Proposals that contribute to climate change adaptation and/or mitigation are encouraged.
ENV_01: Resilient marine ecosystems	Proposals should demonstrate how potential impacts on marine ecosystems have been taken into consideration and should, in order of preference: a) avoid adverse impacts; and/or b) minimise impacts where they cannot be avoided; and/or c) mitigate impacts where they cannot be minimised. If significant adverse impacts cannot be avoided, minimised or mitigated, proposals must present a clear and convincing case for proceeding. Proposals that contribute to the protection, restoration and/or enhancement of marine ecosystems are encouraged.

Policy Name	Policy Detail
ENV_02: Marine Protected Areas	Proposals should demonstrate how they: ▪ avoid adverse impacts on individual Marine Protected Areas (MPAs) and the coherence of the network as a whole; ▪ have regard to the measures to manage MPAs; and ▪ avoid adverse impacts on designated sites that are not part of the MPA network.
ENV_03: Invasive non-native species	Proposals should demonstrate how they avoid or minimise the risk of introducing and spreading invasive non-native species. Where appropriate, proposals should include biosecurity measures to reduce the risk of introducing and spreading of invasive non-native species.
ENV_04: Marine litter	Proposals should demonstrate how they: ▪ avoid the deliberate introduction of litter into the marine plan area; and ▪ minimise the risk of accidental release of litter.
ENV_05: Underwater noise	Proposals should demonstrate that they have considered man-made noise impacts on the marine environment and, in order of preference: a) avoid adverse impacts; and/or b) minimise impacts where they cannot be avoided; and/or c) mitigate impacts where they cannot be minimised. If significant adverse impacts cannot be avoided, minimised or mitigated, proposals must present a clear and convincing case for proceeding.
ENV_06: Air and water quality	Proposals should demonstrate that they have considered their potential air and water quality impacts and should, in order of preference: a) avoid adverse impacts; and/or b) minimise adverse impacts where they cannot be avoided; and/or c) mitigate adverse impacts where they cannot be minimised. If significant adverse impacts cannot be avoided, minimised or mitigated, proposals must present a clear and convincing case for proceeding.

Policy Name	Policy Detail
ENV_07: Fish Species and Habitats	Proposals potentially affecting important feeding, breeding (including spawning and nursery) and migration areas or habitats for key fish and shellfish species of commercial or ecological importance should demonstrate how they, in order of preference: a) avoid adverse impacts on those areas; and/or b) minimise adverse impacts where they cannot be avoided; and/or c) mitigate adverse impacts where they cannot be minimised. If significant adverse impacts cannot be avoided, minimised or mitigated, proposals must present a clear and convincing case for proceeding.
GOV_01: Cumulative effects	Proposals should demonstrate that they have assessed potential cumulative effects and should, in order of preference: a) avoid adverse effects; and/or b) minimise effects where they cannot be avoided; and/or c) mitigate effects where they cannot be minimised. If significant adverse effects cannot be avoided, minimised or mitigated, proposals must present a clear and convincing case for proceeding. Proposals that contribute to positive cumulative effects are encouraged.
GOV_02: Cross-border and plan compatibility	Relevant public authorities, in making their decisions, should have regard to: ▪ any applicable policy in a relevant marine plan; ▪ any applicable policy in relevant terrestrial development plans or related documents; ▪ the Natural Resources Policy; ▪ any relevant local well-being plan(s) (including the local well-being assessment); and ▪ evidence in any relevant Area Statement(s) produced by Natural Resources Wales (NRW).

Policy Name	Policy Detail
SCI_01: Risk-based decision making	Relevant public authorities should make decisions using sound evidence and a risk-based, proportionate approach. Where appropriate they should apply the precautionary principle and consider opportunities to apply adaptive management.
DEF_01: Defence (safeguarding)	Proposals that: ▪ potentially affect Ministry of Defence (MOD) Danger Areas, Exercise Areas or strategic defence interests; and/or ▪ potentially interfere with communication, surveillance and navigation facilities necessary for defence and national security; should only be authorised with the agreement of MOD.
SAF_01: Safeguarding existing activity	a) Proposals likely to have significant adverse impacts upon an established activity covered by a formal application or authorisation must demonstrate how they will address compatibility issues with that activity. Proposals unable to demonstrate adequate compatibility must present a clear and convincing case for the proposal to progress under exceptional circumstances. b) Proposals likely to have significant adverse impacts upon an established activity not subject to a formal authorisation must demonstrate how they will address compatibility issues with that activity. Proposals unable to demonstrate adequate compatibility must present a clear and convincing case for proceeding. Under SAF 01 a and b, compatibility should be demonstrated through, in order of preference: ▪ Avoiding significant adverse impacts on those activities, and/or ▪ Minimising significant adverse impacts where these cannot be avoided; and/or ▪ Mitigating significant adverse impacts where they cannot be minimised.

Policy Name	Policy Detail
SAF_02: Safeguarding strategic resources	Proposals which may have significant adverse impacts upon the prospects of any sector covered by this plan to engage in sustainable future strategic resource use (of resources identified by an SRA) must demonstrate how they will address compatibility issues with that potential resource use. Proposals unable to demonstrate adequate compatibility must present a clear and convincing case for proceeding. Compatibility should be demonstrated through, in order of preference: ▪ Avoiding significant adverse impacts on this potential strategic resource use, and/or ▪ Minimising significant adverse impacts where these cannot be avoided; and/or ▪ Mitigating significant adverse impacts where they cannot be minimised.
AGG_01: Aggregates (supporting)	AGG_01 a: Proposals for new aggregate extraction will be supported, within any tonnage limits, where they contribute to the objectives of this plan. Proposals should comply with the relevant general policies and sector safeguarding policies of this plan and any other relevant considerations. AGG_01 b: Relevant public authorities and the sector are encouraged, in liaison with other interested parties, to collaborate to understand opportunities: ▪ for the sustainable use of wider marine aggregate natural resources; ▪ to define and, once in place, further develop and refine Strategic Resource Areas for aggregates; in order to support the sustainable development of the aggregate sector through marine planning.
AQU_01: Aquaculture (supporting)	AQU_01 a: Proposals for new aquaculture developments will be supported where they contribute to the objectives of this plan. Proposals should comply with the relevant general policies and sector safeguarding policies of this plan and any other relevant considerations. AQU_01 b: Relevant public authorities and the sector are encouraged, in liaison with other interested parties, to collaborate to understand opportunities for the sustainable use of aquaculture resources including the identification of: ▪ natural resources that provide aquaculture potential ▪ opportunities to define and, once in place, further develop and refine Strategic Resource Areas for aquaculture in order to support the sustainable development of the aquaculture sector through marine planning.

Policy Name	Policy Detail
D&D_01: Dredging and Disposal (supporting)	Proposals that maintain navigable channels and long term access to open at-sea disposal sites for appropriate material will be supported where they contribute to the objectives of this plan. Proposals should comply with the relevant general policies and sector safeguarding policies of this plan and any other relevant considerations.
ELC_01: Low carbon energy (supporting) wind	ELC_01 a: Proposals for offshore wind energy generation will be supported where they contribute to the objectives of this plan. Proposals should comply with the relevant general policies and sector safeguarding policies of this plan and any other relevant considerations. Proposals for wind >350MW will be considered by UK Government in accordance with relevant national policy. In determining an NSIP for a wind proposal, the decision maker will have regard to this plan. Any determination in relation to energy developments of any scale will be taken in accordance with this plan alongside any other relevant considerations. ELC_01 b: In order to understand future opportunities for offshore wind development, including floating technologies, this plan supports strategic planning for the sector. Relevant public authorities and the sector are encouraged, in liaison with other interested parties, to collaborate to understand opportunities for the sustainable use of wind energy resources including identification of: ▪ natural resources that provide potential opportunity for future use; ▪ evidence to de-risk consenting for the sector; and Welsh National Marine Plan. ▪ opportunities to define and, once in place, further develop and refine Strategic Resource Areas for offshore wind energy resource safeguarding; in order to support the sustainable development of the sector through marine planning. Relevant public authorities should make appropriate evidence available to support planning and decision making in order to support the sustainable development of the sector through marine planning, where it is appropriate to do so.

Policy Name	Policy Detail
ELC_02: Low carbon energy (supporting) wave	ELC_02 a: Proposals for wave energy generation will be supported where they contribute to the objectives of this plan. Proposals should comply with the relevant general policies and sector safeguarding policies of this plan and any other relevant considerations. ELC_02 b: In order to understand future opportunities for wave energy development, relevant public authorities and the sector are encouraged, in liaison with other interested parties, to collaborate to understand opportunities for the sustainable use of wave energy resources including identification of: ▪ natural resources that provide potential opportunity for future use; ▪ evidence to de-risk consenting for the sector; and ▪ opportunities to define and, once in place, further develop and refine Strategic Resource Areas for wave energy resource safeguarding; in order to support the sustainable development of the sector through marine planning. Relevant public authorities should make appropriate evidence available to support planning and decision making in order to support the sustainable development of the sector through marine planning, where it is appropriate to do so.
ELC_03: Low carbon energy (supporting) tidal stream	ELC_03 a: Proposals for tidal stream energy generation will be supported where they contribute to the objectives of this plan. Proposals should comply with the relevant general policies and sector safeguarding policies of this plan and any other relevant considerations. ELC_03 b: In order to understand future opportunities for tidal stream energy development, relevant public authorities and the sector are encouraged, in liaison with other interested parties, to collaborate to understand opportunities for the sustainable use of tidal stream energy resources including identification of: ▪ natural resources that provide potential opportunity for future use; ▪ evidence to de-risk consenting for the sector; and ▪ opportunities to define and, once in place, further develop and refine Strategic Resource Areas for tidal stream energy resource safeguarding; in order to support the sustainable development of the sector through marine planning. Relevant public authorities should make appropriate evidence available to support planning and decision making in order to support the sustainable development of the sector through marine planning, where it is appropriate to do so.

Policy Name	Policy Detail
ELC_04 Low carbon energy (supporting) tidal range	ELC_04: In order to understand future opportunities for tidal range development, strategic planning for the sector is encouraged. Relevant public authorities and the sector are encouraged, in liaison with other interested parties, to collaborate to: ▪ collect evidence to support understanding of environmental constraints and opportunities for the sustainable use of the tidal range resource; ▪ support understanding of the optimal siting of tidal lagoon developments across Wales as part of a wider, UK perspective; and ▪ identify opportunities to define and, once in place, further develop and refine Strategic Resource Areas for tidal lagoon safeguarding purposes. Relevant public authorities should make appropriate evidence available to support planning and decision making in order to support the sustainable development of the sector through marine planning, where it is appropriate to do so.
O&G_01: Oil and gas (supporting)	O&G_01 a: Proposals that maximise the economic recovery of oil and gas sustainably will be supported where they comply with the objectives of this plan, and fully meet the environmental safeguards contained within the statutory processes of awarding production licences and subsequent activity-specific approvals. Proposals should comply with the relevant general policies and sector safeguarding policies of this plan and any other relevant considerations. O&G_01 b: Welsh Government policy is to avoid the continued extraction of fossil fuels in intertidal areas and estuaries and coastal inlet waters that fall within the Welsh onshore licence area. Applications for new petroleum licenses in these areas should not be supported, unless required for mine safety or scientific purposes. Proposals for the development and extraction of oil and gas in these areas with land based elements must provide robust and credible evidence to demonstrate how they conform to the Planning Policy Wales Energy Hierarchy for Planning, including how they make a necessary contribution towards decarbonising the energy system.
O&G_02: Oil and gas (supporting)	Proposals that support the long-term development of carbon capture and storage technology will be supported where they contribute to the objectives of this plan. Proposals should comply with the relevant general policies and sector safeguarding policies of this plan and any other relevant considerations.

Policy Name	Policy Detail
FIS_01: Fisheries (supporting)	FIS_01 a: Proposals that support and enhance sustainable fishing activities will be supported where they contribute to the objectives of this plan. Proposals should comply with the relevant general policies and sector safeguarding policies of this plan and any other relevant considerations. FIS_01 b: Relevant public authorities and the sector are encouraged, in liaison with other interested parties, to collaborate to understand opportunities to develop a strategic evidence base to improve understanding of opportunities for the sustainable development of fisheries in order to support the sustainable development of the fisheries sector through marine planning.
P&S_01: Ports and Shipping (supporting)	P&S_01 a: Proposals for ports, harbours and shipping activities will be supported where they contribute to the objectives of this plan. Proposals should comply with the relevant general policies and sector safeguarding policies of this plan and any other relevant considerations. P&S_01 b: Relevant public authorities and the sector are encouraged, in liaison with other interested parties, to collaborate to understand opportunities to support the sustainable development of the ports and shipping sector through marine planning.
P&S_02: Ports and Shipping (supporting)	Proposals that provide for the maintenance, repair, development and diversification of port and harbour facilities will be supported where they contribute to the objectives of this plan. Proposals should comply with the relevant general policies and sector safeguarding policies of this plan and any other relevant considerations.
CAB_01: Subsea cabling (supporting)	Proposals that facilitate the growth of digital communications networks and/or the optimal distribution of electricity will be supported where they contribute to the objectives of this plan. Proposals should comply with the relevant general policies and sector safeguarding policies of this plan and any other relevant considerations.

Policy Name	Policy Detail
T&R_01: Tourism and recreation (supporting)	T&R_01 a: Proposals that demonstrate a positive contribution to tourism and recreation opportunities and policy objectives (for the sector) around the Welsh coast will be supported where they contribute to the objectives of this plan. Proposals should comply with the relevant general policies and sector safeguarding policies of this plan and any other relevant considerations. T&R_01 b: Relevant public authorities and the sector are encouraged, in liaison with other interested parties, to collaborate to understand opportunities for sustainable tourism and recreation around the Welsh coast, including: a. developing a strategic evidence base to improve understanding of current and potential tourism and recreation activities, including eco-tourism and other low impact activities; and b. opportunities to define areas of future opportunity for tourism and recreation; in order to support the sustainable development of the tourism and recreation sector through marine planning.

E Welsh Marine Planning Framework Review

This appendix provides findings of the SWOT analysis for the four key stages of the planning process: pre-plan; plan; implementation; and monitoring and evaluation. The review and analysis considered:

- The extent of incorporation of climate change into policy and guidance across the planning stages, identifying strengths and limitations (Section E.1);
- Degree of commonality with the Climate Adaptation Strategy for Wales[328] and Planning Policy Wales[329] (Section E.2);
- How the WNMP has supported climate change adaptation and mitigation, considering the WNMP monitoring report and technical assessments[330] (Section E.3); and
- Sector-specific issues (Section E.4)

To inform the study, the below sections assess the marine planning approach in Wales in relation to climate change, as set out in Sections E.1 to E.4. Key findings inform the SWOT analysis in Section E.5.

E.1 Extent of incorporation of climate change into policy and guidance across the planning stages

The key planning stages have been summarised as pre-plan, plan, implementation, and monitoring and evaluation. The incorporation of climate change in the WNMP in each stage of the planning process is considered below.

E.1.1 Pre-plan

In Wales, stakeholder engagement is key to pre-plan development. To support this, an SPP[331] was released, furthered by targeted engagement with stakeholders, such as the MPSRG. Whilst the SPP has minimal reference to climate change, the 2017 report 'Marine Planning: understanding the benefits and opportunities'[332] captures the role the WNMP can play in achieving climate change adaptation and mitigation. Climate change is also recognised in the 7 Well-being Goals outlined by the Wellbeing of Future Generations Act. One question outlined in the 'Marine Planning: understanding the benefits and opportunities' report considered how the WNMP should support ecosystem resilience, which covered the topic of climate change. The report stated 'The plan can encourage proposals which include ways to achieve climate change adaptation and mitigation. The plan should include clear direction that all proposals coming forward should demonstrate how they contribute to the protection, restoration and enhancement of marine ecosystems'.

328 Welsh Government, (2024). Climate Adaptation Strategy for Wales 2024. Available at: Climate Adaptation Strategy for Wales 2024 | GOV.WALES (Accessed 19 November 2025).

329 Welsh Government (2024). Planning Policy Wales. Edition 12. February 2024. Available at: Planning Policy Wales - Edition 12 (Accessed 19 November 2025).

330 Welsh Government (2022). Welsh National Marine Plan Monitoring and Technical Assessments. Available at: Welsh National Marine Plan monitoring 2019 to 2022 | GOV.WALES (Accessed 19 November 2025).

331 Welsh Government. (2018). Statement of Public Participation for the Welsh National Marine Plan. Available at: Statement of Public Participation for the Welsh National Marine Plan (Accessed: 19 November 2025).

332 Welsh Government. (2017). Marine Planning: understanding the benefits and opportunities. Available at: MARINE PLANNING: UNDERSTANDING THE BENEFITS AND OPPORTUNITIES (Accessed: 19 November 2025).

At the pre-plan stage, the 2015 Marine Evidence Report[333] collated and summarised the available evidence base to inform the drafting of the WNMP. Climate change is considered extensively throughout the report, ensuring an understanding of the key issues for Wales and development of the WNMP. Mitigation and adaptation are both considered. The report acknowledges that limited data are available on climate scenarios specifically for the marine environment. At the time of publication of the 2015 Marine Evidence Report, UKCP09 only provided one marine scenario, which arose from one model run and one future time horizon (2070-2099). Climate change models therefore appear to have informed the development of the WNMP to a limited extent.

During development of the WNMP, a Sustainability Appraisal (SA) was undertaken[334]. The SA assessed whether the climate change objectives were being met, and therefore climate change was heavily incorporated into the SA. Significant positive effects were identified for 11 policies in relation to climate change, including six sector-specific policies. The significant positive effects identified from the sector policies demonstrates that whilst sector policies do not explicitly incorporate climate change into their wording, they can still have a positive effect on climate change.

To further support development of the plan, a HRA was carried out. The focus of HRA is to assess whether a plan or project is likely to have a significant effect on any Special Area of Conservation (SAC) or Special Protection Area (SPA). HRA is therefore very targeted in its assessment and climate change was not significantly considered.

After consultation on the WNMP, Welsh Government published a summary of changes to the draft WNMP[335]. Climate change policies were included in the draft WNMP, and following consultation amendments were made to the policies. This involved re-focussing a policy to encourage proposals that contribute to climate change resilience.

E.1.2 Plan

The WNMP is the key marine planning document for Wales. Within the WNMP, climate change is included within the Plan Vision in terms of deployment of low carbon technologies contributing to climate change emission targets. Broader consideration of climate change is included through Objective 8 (Improve understanding and enable action supporting climate change adaptation and mitigation) of the WNMP. The objective has four directly supporting policies:

- SOC_08: Resilience to coastal change and flooding;
- SOC_09: Effects on coastal change and flooding;
- SOC_10: Minimising climate change; and
- SOC_11: Resilience to climate change.

Sector-specific climate change policies are not included within the WNMP. However, additional policies, not specific to climate change, can support climate change adaptation and mitigation. For example, ENV_01 (Resilient marine ecosystems) can support climate change mitigation due to the role that blue carbon ecosystems, such as seagrass, can have in carbon sequestration[336].

333 Welsh Government (2015). Wales' Marine Evidence Report. Available at: wales-marine-evidence-report-wmer.pdf (Accessed 19 November 2025).

334 Welsh Government (2019). Welsh National Marine Plan: sustainability appraisal. Available at: Welsh National Marine Plan: sustainability appraisal | GOV.WALES (Accessed 19 November 2025).

335 Welsh Government (2019). Summary of Changes to the Draft Welsh National Marine Plan. Available at: WNMP Summary of Changes (Accessed 19 November 2025).

336 Krause, J.R., Cameron, C., Arias-Ortiz, A. *et al.* Global seagrass carbon stock variability and emissions from seagrass loss. Nat Commun 16, 3798 (2025). Available at: https://doi.org/10.1038/s41467-025-59204-4 (Accessed: 19 November 2025).

Ten broader policies have been identified that could directly assist with mitigation and adaptation to climate change (ECON_01, ENV_01, ENV_02, SAF_02, ELC_01, ELC_02, ELC_03, ELC_04, O&G_02, FIS_01). Other policies (e.g., GEN_02 Planning policy and SCI_01 Risk-based decision making) are designed to be used in conjunction with the climate change polices and could therefore also strengthen their application. See Table D1 for full details of policy wording.

E.1.3 Implementation

There are several documents to support implementation of the WNMP, including formal planning guidance which clarifies policy intent and guides the practical application of WNMP policy. Formal planning guidance is a material consideration in decision making, and includes:

- WNMP Implementation Guidance[337];
- Formal implementation guidance for Strategic Resource Areas (SRAs)[338];
- Marine Planning Notice (MPN) for the 'Introduction of Strategic Resource Areas and Activation of Safeguarding Policy for Tidal Stream Energy'[339]; and
- Marine Cabinet Statements[340].

Formal planning guidance is complemented with additional materials/tools to aid implementation, including Technical Statements[341], Sector Locational Guidance[342], the Wales Marine Planning Portal[343], DataMapWales[344], webinars[345], and infographics[346]. These documents, alongside the WNMP, may be considered by applicants and decision makers when making authorisations, such as a marine licence.

The inclusion of climate change within implementation is influenced by the degree of inclusion of climate change within the WNMP policies. Implementation Guidance directly considers climate change through policies SOC_09 (Effects on coastal change and flooding) and SOC_10 (Minimising climate change). The deployment of low carbon energy sources is supported through formal implementation guidance for SRAs and the MPN for the 'Introduction of Strategic Resource Areas and Activation of Safeguarding Policy for Tidal Stream Energy'.

Technical Statements have been published for safeguarding recreational boating, ports and shipping and subsea cabling, as well as for protecting and enhancing marine ecosystem resilience. The Technical Statements are tied to specific WNMP policies and therefore have very limited consideration of climate change.

337 Welsh Government. (2020). Welsh National Marine Plan. Implementation Guidance. Available at: welsh-national-marine-plan-implementation-guidance.pdf (Accessed: 19 November 2025).

338 Welsh Government. (2025). Implementation guidance: Policy SAF_02 – Strategic Resource Areas – working draft. Available at: Implementation guidance: Policy SAF_02 – Strategic Resource Areas – working draft | GOV.WALES (Accessed: 19 November 2025).

339 Welsh Government. (2025). Welsh National Marine Plan: Marine Planning Notice - Introduction of Strategic Resource Areas and Activation of Safeguarding Policy for Tidal Stream Energy. Available at: Welsh National Marine Plan: Marine Planning Notice (Accessed 19 November 2025).

340 Please note that at the time of writing, no Marine Cabinet Statements have been published.

341 Welsh Government. (2025). Marine planning technical statements. Available at: Marine planning technical statements | GOV.WALES (Accessed 19 November 2025).

342 Welsh Government. (2022). Sector locational guidance. Available at: Sector locational guidance | GOV.WALES (Accessed 19 November 2025).

343 Welsh Government. (2025). Wales Marine Planning Portal. Available at: Wales Marine Planning Portal (Accessed: 19 November 2025).

344 Welsh Government. (2025). DataMapWales. Available at: Home | DataMapWales (Accessed 04 November 2025).

345 Welsh Government. (2023). Webinars covering aspects of marine planning. Available at: Marine Planning in Wales - YouTube (Accessed: 19 November 2025).

346 Welsh Government. (2021). Considering marine plans in terrestrial planning permission: infographic. Available at: Considering marine plans in terrestrial planning permission: infographic | GOV.WALES (Accessed: 19 November 2025).

Sector Locational Guidance is published for tidal stream energy, wave energy, and aquaculture. Tidal Stream Locational Guidance[347] and Wave Energy Sectoral Locational Guidance[348] recognise the opportunities that tidal stream and wave energy can bring to climate change mitigation. They also both reference WNMP policy SOC_10 (Minimising climate change), recognising the potential to contribute to Welsh Government climate change and renewable energy objectives. Climate change is not referenced in the Aquaculture Sector Locational Guidance[349].

The Wales Marine Planning Portal is an interactive mapping tool for data relating to marine planning in Wales. The portal displays the plan policies from the WNMP, issued marine licences, and key marine planning spatial information (e.g., protected areas and sector information). Climate change data is not displayed on the Wales Marine Planning Portal, but is available on DataMapWales. Layers of relevance include:

- MSPACE: climate change hotspots/refugia;
- Flood and Coastal Erosion Risk Management;
- Flood Map for Planning;
- Flood Hazard Maps;
- Surface water temperature, daily maximum temperature, relative humidity, and annual precipitation;
- Coastal Flood Boundaries; and
- Climate Projections (these however only cover the terrestrial).

E.1.4 Monitoring and evaluation

Monitoring and reporting are a statutory requirement of the MCAA (2009) and an important step in the planning process. Welsh Government review and report at least every three years on the effects of the policies in the WNMP. Key relevant documents in the Welsh marine planning framework include:

- The WNMP monitoring and reporting framework[350];
- The WNMP development of indicators for monitoring and reporting[351];
- The 2020 update to Wales' Marine Evidence Report[352].
- The WNMP Monitoring Report 2019 – 2022[353];
- The WNMP Monitoring Report 2019 – 2022 Technical Assessments[354]; and
- The WNMP Monitoring Report 2022 – 2025[355].

347 Welsh Government. (2021). Sector Locational Guidance: Enabling Evidence for Sustainable Development. Tidal Stream Energy. Available at: Sectoral Locational Guidance: Enabling evidence for sustainable development. Tidal Stream Energy (Accessed 19 November 2025).

348 Welsh Government. (2021). Sector Locational Guidance. Enabling Evidence for Sustainable Development. Wave Energy. Available at: Sectoral Locational Guidance: Enabling evidence for sustainable development. Wave Energy (Accessed 19 November 2025).

349 Welsh Government. (2021). Sector Locational Guidance. Enabling Evidence for Sustainable Development. Aquaculture. Available at: Sectoral Locational Guidance: Enabling evidence for sustainable development. Aquaculture (Accessed 19 November 2025).

350 Welsh Government. (2020). Welsh National Marine Plan. Monitoring and Reporting Framework. Available at: Wales' Marine Evidence Report (WMER) (Accessed: 19 November 2025).

351 Welsh Government. (2020). Development of Indicators. For Monitoring and Reporting of the Welsh National Marine Plan. Available at: Development of Indicators (Accessed: 19 November 2025).

352 Welsh Government. (2020). Update to Wales' Marine Evidence Report Welsh National Marine Plan. Available at: Wales' Marine Evidence Report (WMER) (Accessed: 19 November 2025).

353 Welsh Government. (2022). Welsh National Marine Plan – Monitoring Report 2019-2022. Available at: Welsh National Marine Plan - Monitoring Report 2019-2022 (Accessed: 19 November 2025).

354 Welsh Government. (2022). Welsh National Marine Plan Monitoring – Technical Assessments. Available at: Welsh National Marine Plan Monitoring - Technical Assessments (Accessed: 19 November 2025).

355 Welsh Government. (2025). Welsh National Marine Plan monitoring report 2022 to 2025. Available at: gov.wales/sites/default/files/publications/2025-11/welsh-national-marine-plan-monitoring-report-2022-to-25.pdf (Accessed 19 November 2025).

Climate change is incorporated throughout these documents, to varying degrees. The monitoring and reporting framework explains how the monitoring process will take place, including for the climate change policies and objectives. The development of indicators discusses how the indicators were chosen to assess the WNMP. Eight indicators are identified of relevance to the climate change policies. These are:

- Guidance in place;
- Effective application of policy;
- Stakeholder views via user survey;
- Public funding availability;
- Data use;
- Numbers of renewable energy proposals;
- Conformance with SMP policies; and
- Cost of coastal flooding.

Monitoring and evaluation captured within the 2019 – 2022 report and technical assessments is predominantly qualitative. Case studies and a general evaluation are included. There is limited direct mention of climate change within the document (one indicator explicitly captures climate change), although the seven other indicators are of relevance to climate change. The report does not include recommendations of how climate change policies or monitoring can be strengthened.

The 2020 update to Wales's Marine Evidence Report[356] considers climate change evidence that has developed since the initial 2015 evidence report. The updated report captures the latest climate change predictions (UKCP18), and emerging evidence programmes, such as from the MCCIP. The report includes a specific section that details the improvement to the climate change evidence base and how this has impacted plan policies. It considers the impacts of sea level rise, coastal erosion, ocean acidification, reduction in water quality and movement of species which are important considerations for Marine Planning.

E.2 Degree of commonality with the Climate Adaptation Strategy for Wales and Planning Policy Wales

E.2.1 The Climate Adaptation Strategy

The Climate Adaptation Strategy for Wales[357] sets out what the Welsh Government is doing now, and in the future, to respond to a changing climate. The Strategy was published in 2024 and the WNMP (published in 2019) therefore does not directly consider the Strategy. However, specific goals and policies for climate change within the WNMP will help to action the priorities within the Climate Adaption Strategy. The WNMP is directly referenced within the Climate Adaptation Strategy.

The Climate Adaptation Strategy sets out a series of cross-sector adaptation action plans which capture asks of the general public, strategic partner bodies, the public sector, UK Government, and Welsh business and industry. Within these cross-cutting adaptation action plans, some policies in the WNMP are specifically captured, e.g., SOC_11 (Resilience to climate change). Actions are also contained that relate to WNMP policies (e.g., SOC_08 and SOC_09 in relation to flood risk and ENV_01 regarding resilient marine ecosystems).

356 Welsh Government (2020). Wales' Marine Evidence Report. Available at: Wales' Marine Evidence Report (WMER) (Accessed 19 November 2025).

357 Welsh Government. (2024). Climate Adaptation Strategy for Wales 2024. Available at: Climate Adaptation Strategy for Wales 2024 | GOV.WALES (Accessed 19 November 2025).

Both the WNMP and the Climate Adaptation Strategy aim to help meet climate change obligations, such as commitments to achieve net zero. The SA for the WNMP ensured that climate goals for Wales were incorporated into the WNMP, therefore bringing commonality between the WNMP and the Climate Adaptation Strategy.

Both documents recognise similar levers for helping to address the challenges of climate change, such as SMPs. Similar sectors are covered in the WNMP and Climate Adaptation Strategy. An ecosystem-based approach is taken in both, and consideration is given to the impacts of climate change on the environment as well as communities.

E.2.2 Planning Policy Wales

PPW [358] is the national policy document for land use planning in Wales, which extends to mean low water springs (MLWS) and therefore overlaps with the WNMP's remit. The WNMP and PPW both consider climate change throughout. The WNMP cross references to PPW in sections (e.g., Energy and Ports and Shipping) to capture key points of relevance, and shows how the WNMP fits with the wider planning policy context (including PPW). Similarly, PPW cross-references to the WNMP, highlighting the need for development plans and marine plans to work together to support integrated decision making and collaboration across marine and terrestrial interfaces.

PPW captures that a key environmental consideration in the assessment process of planning authorities is whether the causes and impacts of climate change will be fully taken into account through location, design, build, operation, decommissioning and restoration. This aligns well with the WNMP policies SOC_10 and SOC_11, which aim to minimise climate change and encourage adaptation to climate change.

Both policy documents focus on a need to transition to low carbon energy sources. Strong commonality exists regarding policy and approaches to encourage decarbonisation. The Energy Hierarchy for Planning is set out in the WNMP and PPW, stating that the planning system should:

- Focus on reducing energy demand and using energy efficiently;
- Facilitate renewable and low carbon energy development;
- Minimise the carbon impact of energy generation; and
- Minimise the extraction of energy minerals, the burning of which is carbon intensive.

Both PPW and the WNMP consider coastal communities. The WNMP contains a policy (SOC2: Well-being of coastal communities) that encourages proposals that contribute to the well-being of coastal communities. The policy is broad and could include proposals that adapt to or mitigate climate change effects on coastal communities. PPW is more explicit, stating 'Enabling adaptation to change, including climate change, will be a key consideration and measures to both reduce vulnerabilities and seek opportunities to build resilience in communities should be identified particularly as part of preparing development plans'.

Flood risk and coastal change are recognised in PPW and the WNMP. The WNMP contains policies to specifically address this area (SOC_08 and SOC_09). PPW states that 'Development should reduce, and must not increase, flood risk arising from river and/or coastal flooding on and off the development site itself'. There is therefore strong commonality in this area between the WNMP and PPW. Consideration is also given to the Flood Map for Planning [359] which supports national planning policy TAN15:

[358] Welsh Government (2024). Planning Policy Wales. Edition 12. February 2024. Available at: Planning Policy Wales - Edition 12 (Accessed 19 November 2025).

[359] NRW (2025). Flood map for planning. Available at: Natural Resources Wales / Flood map for planning (Accessed 05 February 2026).

Development, flooding and coastal erosion[360]. Whilst not referenced in the WNMP, it is available on DataMapWales[361] and therefore available to inform marine planning proposals.

The WNMP and PPW draw on the State of Natural Resources Report[362] (SoNaRR) published by NRW. The SoNaRR assesses Wales's sustainable management of natural resources and sets out a range of opportunities for action. The evidence in the SoNaRR, coupled with relevant policy context, was used to help identify key issues for marine planning in Wales and helped to shape policies set out in the WNMP. PPW highlights that the SoNaRR is a key piece of evidence which must be taken into account in development plan preparation. The inclusion of SoNaRR in both the WNMP and PPW helps to align planning approaches at a high level for improving the resilience of ecosystems, and therefore their role in adapting to and mitigating climate change impacts.

E.3 How the WNMP has supported climate change adaptation and mitigation

The WNMP includes an objective to 'Improve understanding and enable action supporting climate change adaptation and mitigation'. The WNMP Monitoring Report 2019 – 2022 Technical Assessments[363] evaluate progress in policy implementation/progress towards achieving this WNMP objective. An RAG status of green/amber with medium confidence is given in the report. Key points for the rating include:

- No oil and gas activity has been consented in waters falling within the Welsh inshore licence area;
- No marine carbon capture projects had been delivered;
- Good evidence of ongoing work to support implementation of relevant policies, for example via the 'Nature-based solutions and adaptation at the coast' theme of the Marine Area Statement; and
- Some evidence of policies taking effect through decision making, e.g., conformance of marine licence decisions with SMPs and reference to WNMP policies in recently adopted Local Development Plans.

Since publication of the 2019 – 2022 monitoring report, SRAs for tidal stream energy have been introduced which further support climate change adaptation and mitigation.

The WNMP Monitoring Report 2022 – 2025[364] has a specific indicator for climate change assessed (Public funding schemes for projects addressing climate change adaptation/resilience at the coast refer to the WNMP). This indicator is more contextual in nature, with the report stating with a medium confidence 'that there is no new evidence available that plan policies are guiding public funding schemes'. However, as outlined in Section E.1.4, there are a broad range of other indicators relevant to the climate change policies, many of which show progress since the last reporting period. For example,

360 Welsh Government (2025). Planning Policy Wales. Technical Advice Note 15 Development, flooding and coastal erosion. Available at: Technical Advice Note 15: Development, flooding and coastal erosion (Accessed 05 February 2026).

361 Welsh Government (2022). DataMapWales. Flood Map for Planning TAN15 Defended Zones. Available at: Flood Map for Planning (FMfP) TAN15 Defended Zones | DataMapWales (Accessed 05 February 2026).

362 NRW (2024). State of Natural Resources Report (SoNaRR) for Wales 2020. Available at: Natural Resources Wales / State of Natural Resources Report (SoNaRR) for Wales 2020 (Accessed 19 November 2025).

363 Welsh Government. (2022). Welsh National Marine Plan Monitoring – Technical Assessments. Available at: Welsh National Marine Plan Monitoring - Technical Assessments (Accessed: 19 November 2025).

364 Welsh Government. (2025). Welsh National Marine Plan monitoring report 2022 to 2025. Available at: gov.wales/sites/default/files/publications/2025-11/welsh-national-marine-plan-monitoring-report-2022-to-25.pdf (Accessed 19 November 2025).

the reporting period has seen continued growth and investment in fixed and floating offshore wind development, as shown in Figure E1.

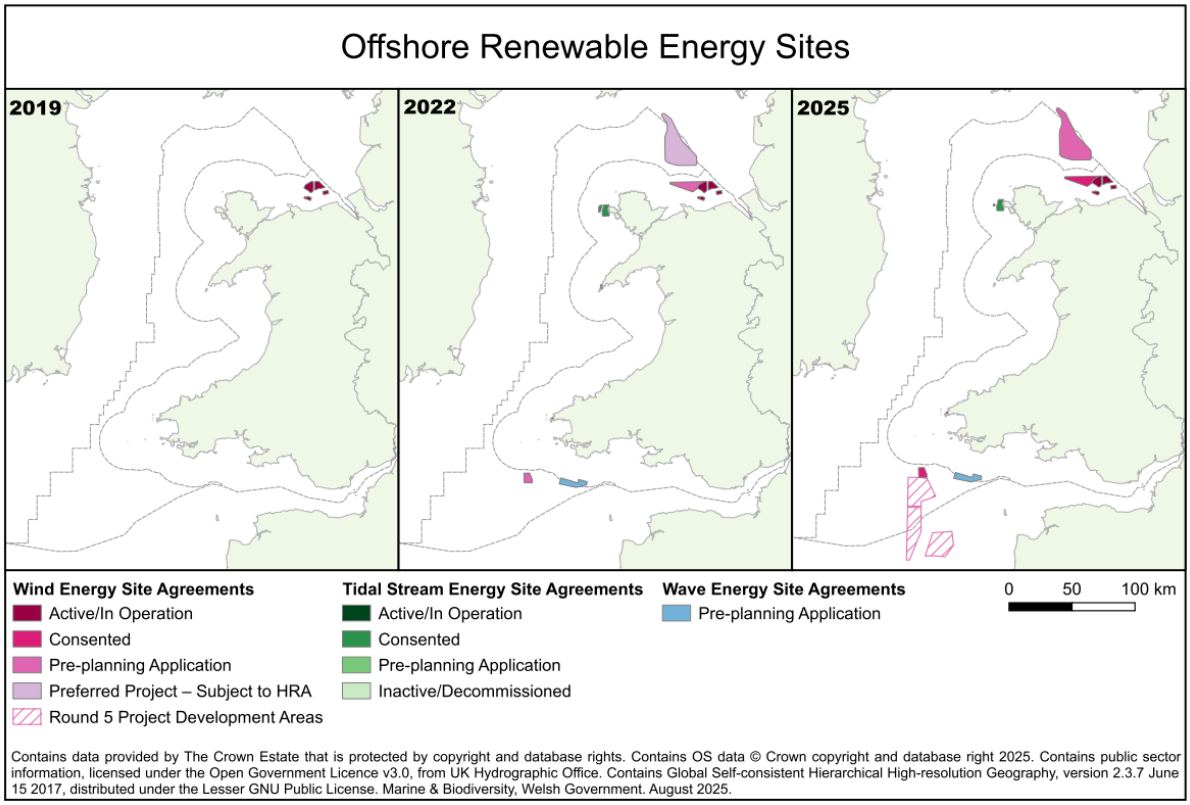


Figure E1 Maps showing location of marine renewable energy developments, leases and demonstration zones 2019, 2022 and 2025 [365]

E.4 Sector-specific issues

In alignment with the MPS, the WNMP covers a wide variety of sectors with corresponding plan policies. Nascent sectors which are not included are hydrogen energy and biofuels. Whilst ecosystem restoration/improvement is not treated in isolation, it is covered under the environmental policies. Nuclear energy is also not included as an individual sector but is relevant to marine planning due to impacts it can have on the marine environment (e.g., through extraction or release of water). It is noted that surface water management and wastewater treatment and disposal has a sector objective and a related safeguarding policy, but no supporting policy. Carbon capture and storage is mentioned within the WNMP's plan policies for oil and gas, but this could also be incorporated as a standalone sector.

Sectors can be impacted by a range of climate change pressures. Sectors that are intrinsically linked to the productivity and distribution of marine living resources (e.g., marine ecology and biodiversity, MPAs, fisheries, aquaculture, and environmental restoration) are affected by the largest number of different climate change pressures [366]. Other sectors that use marine space, but whose activities mainly depend on the non-living components of the marine environment, such as ports and shipping, and marine

365 Welsh Government. (2025). Welsh National Marine Plan monitoring report 2022 to 2025. Available at: gov.wales/sites/default/files/publications/2025-11/welsh-national-marine-plan-monitoring-report-2022-to-25.pdf (Accessed 19 November 2025).

366 MMO (In Press). Understanding the impacts of climate change that can be directly addressed by marine plans. A report produced for the Marine Management Organisation, MMO Project No: 13570, August 2025, 270pp

aggregates, are affected by fewer major climate change pressures (mostly physical pressures related to sea level rise and increased storminess)[367].

Sectors have the potential to both contribute to climate change impacts (through greenhouse gas emissions), and to mitigate them (through renewable energy, restoration of blue carbon habitats and cultivation of carbon-sequestering species, for example)[368]. SRAs have currently only been mapped for tidal stream energy, which will help to support climate change mitigation in Welsh waters. SRAs, where introduced, are intended to guide related sector safeguarding policy.

The 2020 Marine Evidence Report[369] recognises that both planning and MPA policy needs to be adaptive to encompass changes in marine species distribution due to climate change. This will be a particular point to consider for the commercial fisheries, MPAs, invasive non-native species, fish species and habitats and aquaculture sectors. Other sectors that may be at risk from climate change include those which are susceptible to coastal flooding due to physical assets being placed at risk of erosion or damage. These include (but are not limited to) historic assets; defence; aggregates; oil and gas; ports and shipping; subsea cabling and tourism and recreation. Should species or activities have to move to minimise exposure to climate change pressures or to adapt to them, SRA and MPA boundaries may have to be reconsidered as a result. SRAs sit under the remit of marine planning, whilst MPAs sit under the remit of the Marine Biodiversity team.

It is noted within the WNMP sustainability appraisal addendum that although strengthened support for offshore wind development will assist with climate change mitigation, this may have the potential for adverse landscape/seascape character and visual impacts.

E.5 SWOT Analysis

This section presents an initial SWOT analysis (Table E2 to Table E5) of the Welsh marine planning framework. This evaluates the strengths, limitations, opportunities and threats in relation to climate change mitigation and adaptation, drawing on a review of the Wales marine planning framework documents (Section E.6) and analysis presented in Sections E.1 to E.4. Findings of Objective 1 additionally inform the SWOT analysis.

367 MMO (In Press). Understanding the impacts of climate change that can be directly addressed by marine plans. A report produced for the Marine Management Organisation, MMO Project No: 13570, August 2025, 270pp

368 MMO (In Press). Understanding the impacts of climate change that can be directly addressed by marine plans. A report produced for the Marine Management Organisation, MMO Project No: 13570, August 2025, 270pp

369 Welsh Government (2020). Wales' Marine Evidence Report. Available at: Wales' Marine Evidence Report (WMER) (Accessed 19 November 2025).

Table E2 SWOT analysis – Strengths of Wales marine planning framework in relation to climate change

Strengths
Pre Plan ▪ SA is carried out to assess proposed plan policies against a range of socio-economic and environmental criteria, and to help ensure that sustainable development is integrated into the emerging plan. Climate change is an objective within the SA, therefore ensuring climate change is considered within the assessment. As a result, the WNMP is developed with some consideration of climate change. ▪ The SA assessed 21 policies as having a positive contribution to climate change, with none having a negative impact, only nine having a neutral impact, and one with unknown impact, therefore demonstrating the positive effect that the WNMP can potentially have on climate change. ▪ The consultation welcomed the inclusion of supporting Good Environmental Status (GES) and protecting and enhancing marine biodiversity, with Objective 8 of the draft WNMP updated to better reflect this. This update to the Objective highlights the positive impact that the consultation phase can have on collating feedback to improve the quality of documents such as the WNMP. ▪ Established mechanisms of stakeholder engagement (such as through the MPSRG) enables discussion of planning priorities, helping to evolve the marine planning framework in Wales and facilitating alignment with wider climate change and planning policy. This makes the WNMP more effective. **Plan** ▪ Climate change is recognised in the seven Well-being Goals of the Wellbeing of Future Generations Act, therefore ensuring that climate change is considered within key Welsh Government plans and policies. ▪ The WNMP contributes towards the achievement of the 7 Well-Being goals, two of which (a prosperous Wales and a globally responsible Wales) directly mention climate change, with one that could indirectly aid climate change mitigation and adaptation (a resilient Wales). ▪ The existing WNMP contains one objective (Objective 8) that directly addresses climate change, and four supporting policies (SOC_08, SOC_09, SOC_10, and SOC_11) which should be considered by all proposals. Ten broader policies could directly assist with mitigation and adaptation to climate change (ECON_01, ENV_01, ENV_02, SAF_02, ELC_01, ELC_02, ELC_03, ELC_04, O&G_02, FIS_01). Projects following these policies in the WNMP have the ability to assist in climate change adaptation and mitigation. ▪ Actions in the Climate Adaptation Strategy for Wales directly reference WNMP climate change policies, therefore helping to strengthen delivery of the WNMP and climate change adaptation and mitigation measures. ▪ The WNMP is clear in defining the spatial extent of policies by highlighting where they are applicable; policies such as O&G_01b apply to intertidal areas, estuaries and coastal inlet waters for instance. This helps to ensure that impacts on a wide range of environments and ecosystems have been considered as part of proposals to avoid degradation. This could help to protect habitats that contribute to climate change mitigation and adaptation. ▪ The SRAs for tidal stream energy safeguard the potential for the sustainable development of this sector in specific areas of Welsh waters, assisting with climate change mitigation.

Strengths

- The WNMP outlines some newly emerging sectors such as Natural Capital. This ecosystem-focused marine management approach could further contribute to mitigation efforts, alongside the leading principle of SMNR.

Implementation

- If a proposal is deemed to have significant adverse effects, they must demonstrate how policy SOC_10 'Minimising climate change' will be adhered to. As per the policy wording, projects can demonstrate how they will be avoiding the emission of greenhouse gases, minimising them where they cannot be avoided and mitigating them where they cannot be minimised.
- Proposals may be favoured if they specifically comply with policies including SOC_11 'Resilience to climate change' and ENV_01 'Resilient marine ecosystems' which have direct or indirect influence on climate change mitigation and adaptation.
- For prospective developers, the Wales Marine Planning Portal shows existing projects and the spatial extent of the WNMP policies. This may help similar projects understand which policies apply to them, meaning they can consider climate change mitigation and adaptation through the overarching policies.
- There is easily accessible information surrounding the plan with documents such as post-adoption statements clearly explaining how contributions have been considered. This means that the public and organisations may be more likely to engage with the planning process in the future if they can see that their contributions have been worthwhile, improving the climate change evidence base for the WNMP.
- For the public, the animation explaining marine planning 'Marine Planning in Wales'[370], the webinars[371], and the 'Considering marine plans in terrestrial planning permission' infographic help to explain common policies and raise awareness of marine planning. The purpose and objectives of the plan are clearly communicated to the public meaning they might be more likely to engage in the future, contributing what they may like to see for climate change mitigation and adaptation.

Monitoring and Evaluation

- The WNMP monitoring framework contains tangible indicators to assess progress made on policies directly or indirectly influencing climate change efforts.
- Plan policies are supporting the delivery of plan objectives and climate change mitigation, specifically through marine renewable energy deployment as described in the WNMP Monitoring Reports from 2019–2022 and 2022–2025.
- Monitoring and evaluation show broad progress in the achievement of objectives, and specifically continued growth and investment in fixed and floating offshore wind development for climate change mitigation.
- The three-yearly review process creates the opportunity to highlight when climate change content and policies need updating. There is a further obligation to report on the WNMP's intentions every six years to ensure the plan remains relevant and effective.

370 Welsh Government (2019). Marine Planning in Wales. Available at: Marine Planning in Wales (accessed 20 March 2026).

371 Welsh Government (2019). Marine Planning in Wales. Available at: (23) Marine Planning in Wales - YouTube (accessed 20 March 2026).

Table E3 SWOT analysis – Limitations of Wales marine planning framework in relation to climate change

Limitations
Pre Plan ▪ Climate change scenarios for the marine environment were limited at the time of development of the WNMP and the WNMP was therefore only informed by these to a minor extent. ▪ There are existing data gaps where the need for improved modelling of sea level rise and coastal flooding has been identified in the Update to Wales' Marine Evidence Report. There is also a need to better understand the interactions between different stressors, e.g. ocean warming and ocean acidification, and their cumulative impact on the marine environment in order to create robust plan policies. **Plan** ▪ There are no sector-specific climate change policies, so the WNMP misses the opportunity to highlight sector specific climate-related risks such as the need for fisheries to be able to operate in new areas as a result of shifting stocks. Explicitly stating these risks ensures that new proposals have to acknowledge and adapt to these more prescriptive policies, allowing for climate change adaptation. ▪ Newly emerging sectors such as hydrogen energy are missing within the current WNMP document so bespoke climate-smart policies cannot be applied. ▪ The WNMP contains a policy for proposals regarding cumulative effects (GOV_01). Consideration of cumulative effects therefore currently exists within the WNMP (policy GOV_01), but not explicitly in relation to climate change. ▪ When explaining how the policies should be adhered to, 'should' is used instead of 'must' within the WNMP, which is less binding for the project developers. **Implementation** ▪ Currently published Technical Statements have very limited consideration of climate change. ▪ Climate change is not referenced in the Aquaculture Sector Locational Guidance, but aquaculture has the potential to be vulnerable to climate change pressures and associated impacts. **Monitoring and Evaluation** ▪ There is limited evidence of public funding schemes for projects addressing climate change adaptation or resilience at the coast that refer to the WNMP, as outlined in the WNMP Monitoring Reports 2019 - 2022, and 2022 - 2025. There is also limited evidence of public funding schemes for ecosystem restoration and enhancement projects referring to the WNMP. ▪ The WNMP was only published in 2019. While there is growing awareness of the plan amongst the marine community and decision makers (for example, as shown in the Monitoring Report 2022 - 2025), more can be done. A lack of awareness risks impacting the uptake of projects in compliance with climate change related policies.

Table E4 SWOT analysis – Opportunities of Wales marine planning framework in relation to climate change

Opportunities
Pre Plan ▪ New climate models have been developed since the publication of the WNMP and its supporting evidence base. Climate projections and models, such as that from MSPACE, could be used to help inform marine plan policies and SRAs to suggest where sectors may or may not be able to perform best under different climate scenarios to aid in climate-smart planning and development. This would help to align with approaches in Sweden where a cumulative impact assessment tool has been developed to indicate how climate change may affect regions in the future[372]. It is important however to ensure that limitations of studies are suitably understood. ▪ Outputs from programmes such as The Crown Estate's 'Whole Seabed Approach' could be considered within the marine planning framework for Wales to help understand how climate change mitigation and adaptation can be best supported through the WNMP. ▪ Incorporation of climate change in the marine planning process could be raised as a dedicated agenda point with working groups and the MPSRG to gather targeted feedback to make the WNMP more climate-smart. ▪ Questions surrounding climate change and its inclusion in the WNMP could be asked in marine planning public consultations or wider consultations relevant to climate change. This would ensure that climate change related feedback is received and included in the marine planning process which may not otherwise be gathered without prompting. ▪ Should there be a formal re-planning exercise to update the WNMP in line with the MCAA (2009), the marine planning framework could consider newly emerging sectors such as hydrogen production and the use of biofuels in vehicles, as currently captured in Norway's marine planning documentation in a revised edition of the WNMP. ▪ Membership of working groups like the MPSRG could be reviewed regularly to capture emerging sectors such as hydrogen energy, therefore ensuring representative views on how climate change should be incorporated into the WNMP. **Plan** ▪ Incorporation of the Climate Adaptation Strategy within the WNMP could be achieved either through direct inclusion in the WNMP (if it is updated through a formal re-planning exercise) or through the production of a Marine Planning Technical Statement, connected with marine plan policy 'SOC_11: Resilience to climate change'. Aligning with approaches in Canada[373], the applicability of climate change to each sector could be discussed before introducing Issues, Objectives and Strategies which are then formed to address climate change as a result. The framing of climate change in this context would mean that climate change is integrated throughout. ▪ If the WNMP is updated, the following opportunities could be considered: o The SPP could emphasise an ambition for the plan to become climate-smart and the desire to gather stakeholder views on this.

372 Swedish Agency for Marine and Water Management. (2025). Symphony – a tool for ecosystem-based marine spatial planning. Available at: Symphony – a tool for ecosystem-based marine spatial planning (Accessed 04 November 2025).

373 Government of Canada (2024). Southern British Columbia Marine Spatial Planning Framework. Available at: Southern British Columbia Marine Spatial Planning Framework (Accessed 12 November 2025).

Opportunities

- The WNMP vision could be updated to consider explicitly climate change adaptation, such as with the approach in the vision for Sweden's marine spatial plan.
- The WNMP could outline future projections for each sector (where possible). This could include climate change model projections to incorporate into plan policies (for example as carried out in Norway and Scotland) to make them better adapted for mitigation and adaptation.
- Newly emerging sectors could have their own plan policies so that they can contribute to climate-smart development within Wales.
- To complement overarching climate change polices, Wales could implement sector-specific climate change policies. Sector specific policies could be informed by good practice promoted across other parts of the UK, such as England's North West Marine Plan.
- Within the WNMP, the use of 'should' could be changed to 'must' so that projects have a more enforced responsibility to adhere to plan policies such as those for climate change

Implementation

- Aligning with developing approaches in Scotland[374], consideration could be given to stating that significant weight should be given to the climate and nature crises.
- Consideration could be given to production of a Technical Statement to provide further detail and evidence to ensure the effective and consistent implementation of the climate change policies within the WNMP. This could also help to strengthen delivery of the Climate Adaptation Strategy for Wales.
- Aquaculture Sector Locational Guidance could be updated to consider implications of climate change to the sector, drawing on latest research from MSPACE.
- Whilst maps for SRAs are based upon technical feasibility (as one of several considerations), current and future SRAs could include climate models to assist in planning decisions. SRAs could further be expanded to cover additional sectors as the knowledge base for climate-smart marine planning develops.
- DataMapWales currently contains MSPACE outputs but does not include UKCP projections (which are included in Scotland's NMPi). This additional information could help planners who use the site to make more informed sustainable decisions based on this climate data.
- DataMapWales could incorporate information regarding marine natural capital, such as hotspots for carbon storage, aligning with approaches in the Republic of Ireland.
- Dissemination materials such as infographics and webinars could be publicised and made easily accessible in a range of formats for the public and prospective developers to view and understand the latest information regarding climate-smart marine planning.
- Newsletters could be sent out and include any planned updates to the planning framework, minutes from recent steering group meetings, open consultations or new videos and webinars. This may encourage further public and developer participation through increased understanding of climate-smart marine planning.
- New videos such as the webinars could be made to show case examples of new projects and their experiences of the planning process or what climate change policies they abided by to help future developments of similar types to better assist in climate change mitigation or adaptation.

374 Scottish Government. (2025). National Marine Plan 2 - planning position statement: consultation analysis. Available at: National Marine Plan 2 - planning position statement: consultation analysis - gov.scot (Accessed 04 November 2025).

Opportunities

Monitoring and Evaluation

- Recognising that climate change policies are monitored across a range of indicators, monitoring reports could collate findings across indicators to provide a targeted view on if individual policy aims are being met.
- Monitoring reports could provide recommendations for how monitoring and delivery can be improved for climate change policies.
- Cumulative impact assessment could be a potential area where climate change pressures could be monitored, aligning with approaches being explored in Australia[375]. It should be noted, however, that cumulative effects is a challenging area for assessments due to the level of uncertainty that can exist across the individual projects/components and lack of agreed methodologies for the assessments.
- A review of the Climate Change Risk Assessment (due for publication in 2026) could help to inform if further policies should be included within the WNMP, if it is updated, to target key areas of risk. This would complement current understanding of climate change risk for Wales outlined in the Climate Adaptation Strategy for Wales.

375 Sustineo. (2024). South-East Commonwealth Marine Reserves Network Management Plan Evaluation. Available at: SE Network Evaluation Summary (Accessed 12 November 2025).

Table E5 SWOT analysis – Threats of Wales marine planning framework in relation to climate change

Threats
Pre Plan ▪ In public consultations (should a formal re-planning process be undertaken to update the WNMP), if the questions are not tailored enough there is a risk that insufficient or irrelevant information may be received. This would affect the quality of the final revised WNMP. For example, without questions explicitly asking for views on topics such as climate change, this information may not be provided. ▪ Without a full range of sector representatives in working groups like the MPSRG, sector viewpoints for climate change adaptation and mitigation incorporation could be missed and therefore not implemented in potential revisions to the WNMP. ▪ Additionally, if climate change mitigation and adaptation are not raised as agenda items with stakeholders, their input and steer on these issues for inclusion within a revised WNMP would also be missed and the document may not achieve its climate-smart planning objectives as a result. **Plan** ▪ Climate change has the potential to result in changes to marine ecosystems, bringing the threat that the marine plan and related guidance are no longer adequate for the distribution of habitats, species, or sector activities (e.g., shifting fish stocks impacting locations of fishing activity). Similarly, climate change will bring increased pressures to sectors (e.g., storminess), and the threat that the WNMP in its current form cannot sufficiently support mitigation and adaptation. This will have knock on consequences to coastal sectors, coastal communities, socio-economics and marine resources. ▪ The intertidal and nearshore areas within the WNMP are congested, with the potential for multiple activities and sectors to compete. This may limit opportunities for restoration activities such as the restoration of seagrass or the introduction of kelp, reducing climate change mitigation potential. Activities which are likely to take place in other areas and depths may be unaffected, such as offshore wind. **Implementation** ▪ If dissemination materials such as webinars or the 'Considering marine plans in terrestrial planning permission' infographic are not accessible in relevant channels and locations, their intention of signposting both the public and project developers will not be achieved, and applicants may have less awareness of climate change policies. Developments may then progress without a full consideration of the climate change overarching policies, and climate change mitigation and adaptation may not be achieved or reach their full potential. **Monitoring and Evaluation** ▪ The data needed to form the evaluation of how policies are progressing can take significant time to gather or become measurable. For example, progress against indicators 4 and 5 (which support climate change adaptation and resilience, and ecosystem restoration and enhancement) may take time to take effect due to timescales for funding scheme documentation updates (as noted within the WNMP Monitoring Report 2019 - 2022 Technical Assessments).

Threats
▪ Relating to the WNMP and the development of indicators for monitoring and reporting, assumptions and uncertainties have been identified for each indicator. There is a risk that, if there are significant or major uncertainties, indicator data may be flawed and insufficient for evaluation. If climate change policies cannot be fully assessed for efficacy, there is less chance for policy improvement to better adapt to and mitigate climate change. However, the recognition of the assumptions and uncertainties and how the data can be used regardless of this minimises the threat.

E.6 Marine Planning Framework Documents Reviewed

Welsh Government. (2025). Welsh National Marine Plan monitoring report 2022 to 2025. Available at: gov.wales/sites/default/files/publications/2025-11/welsh-national-marine-plan-monitoring-report-2022-to-25.pdf (Accessed 19 November 2025).

Welsh Government. (2025). Implementation guidance: Policy SAF_02 – Strategic Resource Areas – working draft. Available at: Implementation guidance: Policy SAF_02 – Strategic Resource Areas – working draft | GOV.WALES (Accessed: 19 November 2025).

Welsh Government. (2025). Implementation guidance: Policy SAF_02 – Strategic Resource Areas – working draft. Available at: Implementation guidance: Policy SAF_02 – Strategic Resource Areas – working draft | GOV.WALES (Accessed: 19 November 2025).

Welsh Government. (2025). Marine Planning Stakeholder Reference Group. Available at: Marine Planning Stakeholder Reference Group | GOV.WALES (Accessed: 19 November 2025).

Welsh Government. (2025). Wales Marine Planning Portal. Available at: Wales Marine Planning Portal (Accessed: 19 November 2025).

Welsh Government (2023). Animation explaining the marine planning process. Available at: Marine Planning in Wales (Accessed: 19 November 2025).

Welsh Government. (2023). Marine Planning Technical Statement Recreational Boating – Sector Safeguarding. Available at: National Marine Planning Technical Statement Recreational Boating - Sector Safeguarding (Accessed: 19 November 2025).

Welsh Government. (2023). Newsletter. Available at: Subscribe to marine planning newsletter | GOV.WALES (Accessed: 19 November 2025).

Welsh Government. (2023). Webinars covering aspects of marine planning. Available at: Marine Planning in Wales - YouTube (Accessed: 19 November 2025).

Welsh Government. (2022). Welsh National Marine Plan – Monitoring Report 2019-2022. Available at: Welsh National Marine Plan - Monitoring Report 2019-2022 (Accessed: 19 November 2025).

Welsh Government. (2022). Welsh National Marine Plan Monitoring – Technical Assessments. Available at: Welsh National Marine Plan Monitoring - Technical Assessments (Accessed: 19 November 2025).

Welsh Government. (2021). Considering marine plans in terrestrial planning permission: infographic. Available at: Considering marine plans in terrestrial planning permission: infographic | GOV.WALES (Accessed: 19 November 2025).

Welsh Government. (2020). Development of Indicators. For Monitoring and Reporting of the Welsh National Marine Plan. Available at: Development of Indicators (Accessed: 19 November 2025).

Welsh Government. (2020). Mitigation and Compensation Opportunity in Marine Consenting. Available at: Mitigation and Compensation Opportunity in Marine Consenting (Accessed: 19 November 2025).

Welsh Government. (2020). Sustainable Management of Marine Natural Resources. Ecological Constraints and Opportunities. Available at: Sustainable Management of Marine Natural Resources (Accessed: 19 November 2025).

Welsh Government. (2020). Welsh National Marine Plan. Monitoring and Reporting Framework. Available at: Wales' Marine Evidence Report (WMER) (Accessed: 19 November 2025).

Welsh Government. (2020). Welsh National Marine Plan. Implementation Guidance. Available at: welsh-national-marine-plan-implementation-guidance.pdf (Accessed: 19 November 2025).

Welsh Government. (2020). Update to Wales' Marine Evidence Report Welsh National Marine Plan. Available at: Wales' Marine Evidence Report (WMER) (Accessed: 19 November 2025).

Welsh Government. (2019). Welsh National Marine Plan. Available at: Welsh National Marine Plan (Accessed: 19 November 2025).

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F Stakeholder Survey Quantitative Responses

F.1 Introduction

A survey was undertaken by ABPmer on behalf of Welsh Government to explore with stakeholders how climate change is considered in marine planning in Wales, and options to further develop marine planning to support climate change adaptation and mitigation. Overall, 17 questions were asked, with a spread of 13 quantitative and four qualitative questions.

Nine pre-defined sectors responded to the survey, with an additional five sectors also providing a response (see Section F.18). The results of the survey are shown below in Sections F.2 to F.17.

This appendix details the quantitative results of the questionnaire, where the qualitative results have been included in the report findings in Section 4. An email response was received from a government agency to flag that they felt that the survey was outside of their remit. No specific insights to the survey questions were received beyond those who responded via the online platform.

F.2 Effectiveness of current marine planning policy in Wales in response to climate change

For Question 1, stakeholders were asked 'Do you feel that marine planning policy, in its current state, can effectively address/respond to climate change in Wales?'. Seventeen quantitative responses and 16 qualitative responses were received to the question. Results of the quantitative responses are shown in Table F1 and Figure F1.

Table F1 Responses to Question 1 of the stakeholder survey

Answer choices	Number of responses	Percentage
No, not effective	2	12%
Somewhat not effective	6	35%
Neither effective nor ineffective	1	6%
Somewhat effective	6	35%
Yes, very effective	0	0%
Don't know	2	12%

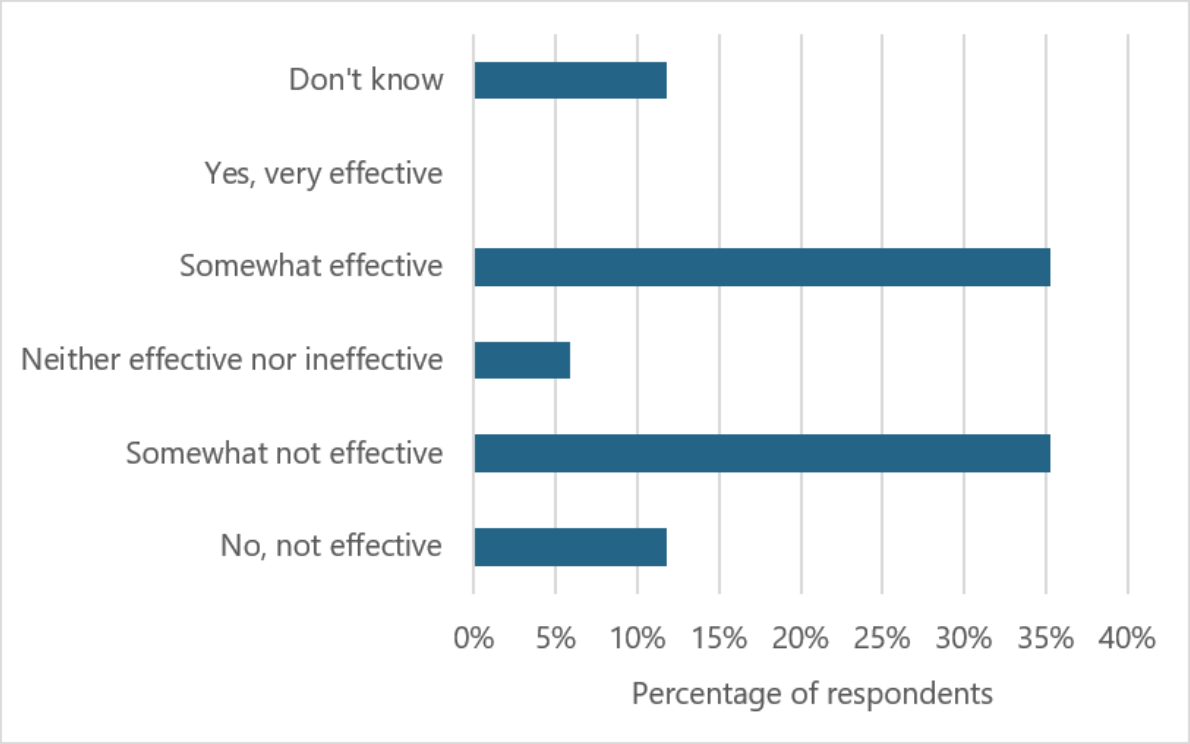


Figure F1 Quantitative results of Question 1 of the stakeholder survey asking 'Do you feel that marine planning policy in its current state can effectively address/respond to climate change in Wales?'

F.3 Resources used when developing a proposal, authorisation decision, commenting on applications, or assisting with projects to promote marine ecosystem resilience.

For Question 2, stakeholders were asked 'Which of the below do you consider when developing a proposal (e.g., for developers), making an authorisation decision (e.g., for regulators), commenting on applications (e.g., for consultees), or assisting with projects to promote marine ecosystem resilience (e.g., for NGOs) and to tick all that applied'. Fourteen quantitative responses and nine qualitative responses were received to the question. Results of the quantitative responses are shown in Table F2 and Figure F2.

Table F2 Responses to Question 2 of the stakeholder survey

Answer choices	Number of responses	Percentage
The Welsh National Marine Plan	11	79%
The Welsh National Marine Plan Implementation Guidance	7	50%
Marine Planning Notices	6	43%
Marine Cabinet Statements[376]	5	36%
Technical Statements	7	50%
Sector Locational Guidance	4	29%
The Marine Planning Portal	8	57%
DataMapWales	10	71%
Planning Policy Wales	8	57%
The Climate Adaptation Strategy for Wales	9	64%

[376] Marine Planning Cabinet Statements* relate to or clarify the intent of Welsh National Marine Plan policy. These are formal considerations in marine planning. Marine Planning Cabinet Statements may be issued by the appropriate Cabinet Secretary or Minister.

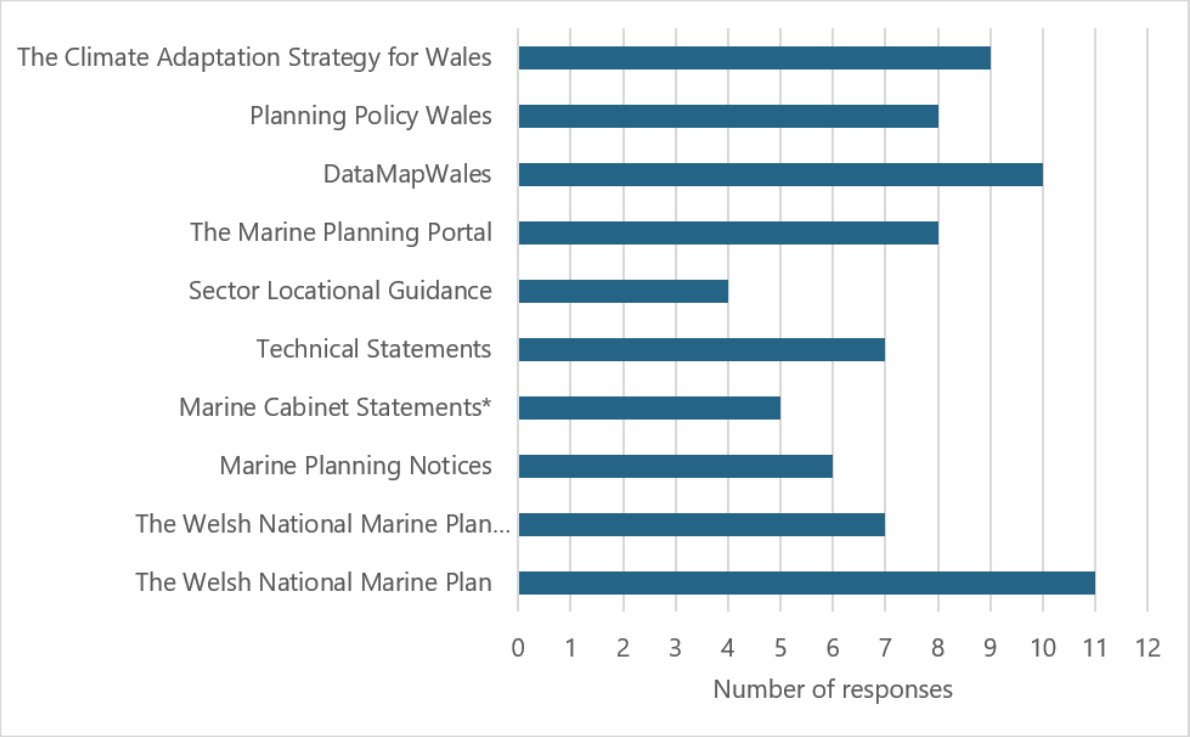


Figure F2 **Quantitative results of Question 2 of the stakeholder survey asking 'Which resources do you consider when developing a proposal (e.g., for developers), making an authorisation decision (e.g., for regulators), commenting on applications (e.g., for consultees), or assisting with projects to promote marine ecosystem resilience (e.g., for NGOs) and to tick all that applied'**

F.4 Support from the WNMP towards climate change adaptation and mitigation measures

For Question 3, it was asked 'Do you think The Welsh National Marine Plan and its application to the consenting process has supported climate change adaptation and mitigation measures to date?' Seventeen quantitative responses and 11 qualitative responses were received to the question. Results of the quantitative responses are shown in Table F3 and Figure F3.

Table F3 Responses to Question 3 of the stakeholder survey

Answer choices	Number of responses	Percentage
Yes	6	35%
No	4	24%
Don't know	7	41%

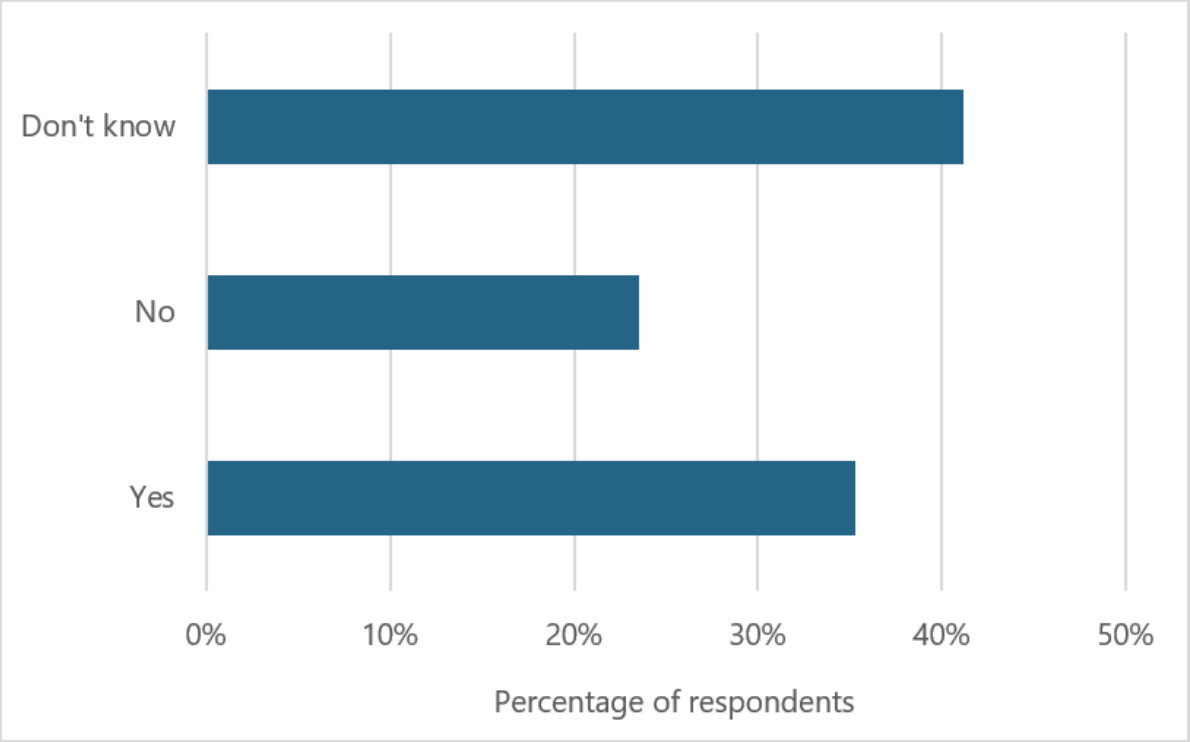


Figure F3 Quantitative results of Question 3 of the stakeholder survey asking 'Do you think The Welsh National Marine Plan and its application to the consenting process has supported climate change adaptation and mitigation measures to date?'

F.5 Potential implications of climate change for existing marine planning policy in Wales

For Question 4, it was asked 'To what extent do you agree or disagree that the statements below are potential implications of climate change for existing marine planning policy and tools in Wales?'. Seventeen quantitative responses and six qualitative responses were received to the question. Results of the quantitative responses are shown in Table F4 and Figure F4.

Table F4 Responses to Question 4 of the stakeholder survey

Answer choices	1	2	3	4	5	Total	Weighted average
Climate change will cause challenges for cooperation between sectors due to shifting spatial needs and marine spatial squeeze	0	0	2	3	12	17	4.59
There is a need for new evidence on the impacts of climate change to be incorporated into the marine planning framework	0	1	2	2	12	17	4.47
The existing marine plan policies require amendment to afford greater consideration to climate change	0	2	4	7	4	17	3.76
There is a need for individual sectors to have targeted climate change policies	2	2	3	6	4	17	3.47
Spatially defined areas need to be adjusted to account for changing distributions of habitats, species or resources	0	1	5	4	7	17	4.00
There is a potential need for the relocation of some sector activity due to impacts of climate change	0	1	6	8	2	17	3.65
Areas of current and potential future use for sectors (including nature) need safeguarding	1	0	0	6	10	17	4.41
The indicators used for monitoring and evaluation of the Welsh National Marine Plan require updating to understand if climate change policies are meeting their aims (Eight indicators are currently identified of relevance to climate change policies. These are: Guidance in place; Effective application of policy; Stakeholder views via user survey; Public funding availability; Data use; Numbers of renewable energy proposals; Conformance with SMP policies; and Cost of coastal flooding)	0	0	8	5	3	16	3.69
Support is needed through marine planning for habitats and species that can help climate change adaptation and/or mitigation	0	1	2	4	10	17	4.35
There is a need to strengthen delivery of climate change actions through marine planning	0	2	2	6	7	17	4.06

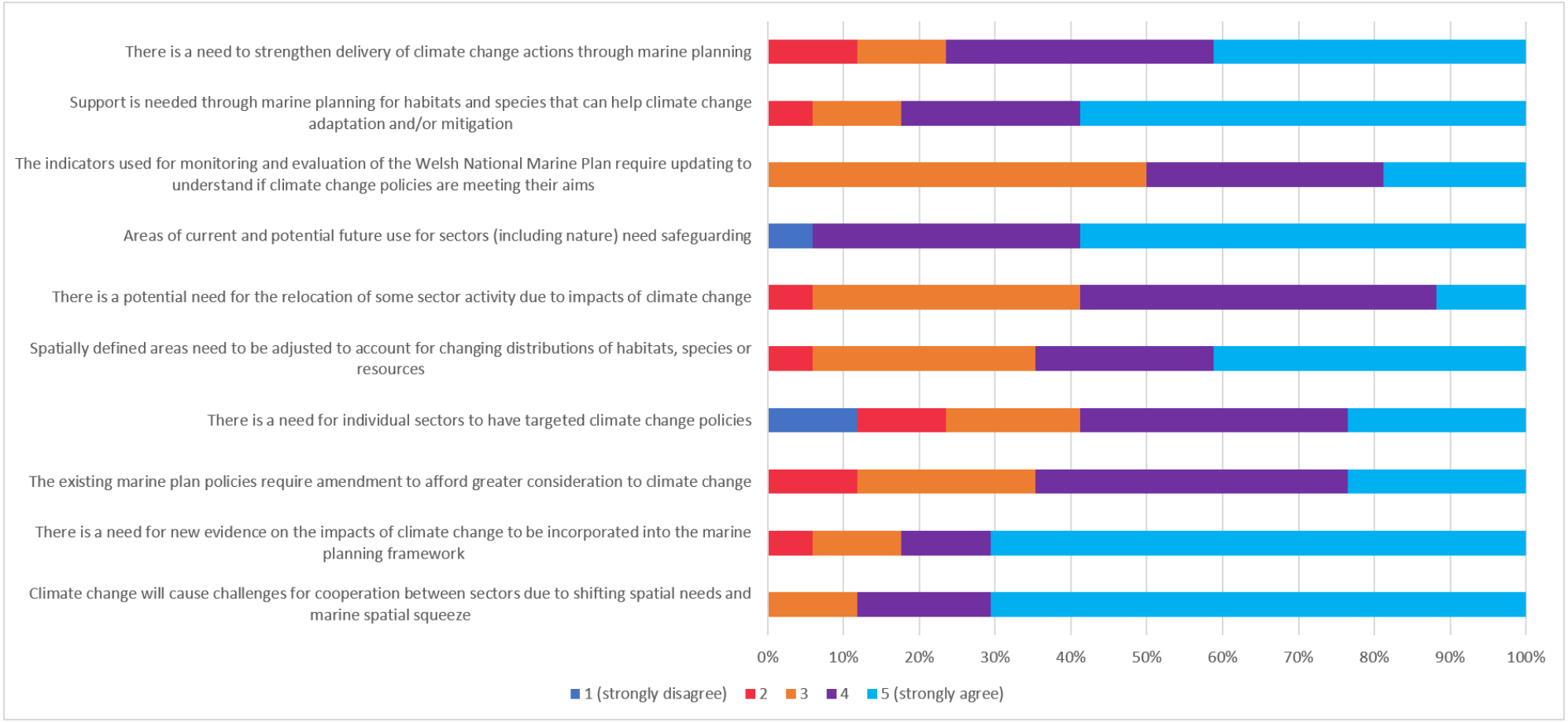


Figure F4 **Quantitative results of Question 4 of the stakeholder survey. Stakeholders were asked 'To what extent do you agree or disagree that the statements below are potential implications of climate change for existing marine planning policy and tools in Wales? Please select a number between 1 and 5, where 1 is strongly disagree and 5 is strongly agree'**

F.6 Actions to best support the delivery of climate change adaptation or mitigation measures through marine planning in Wales

For Question 5, the question asked 'Through an initial review of the marine planning framework in Wales and approaches in other countries, the below potential actions have been identified. Please select your top five actions that you think could best support delivery of climate change adaptation or mitigation measures through marine planning in Wales'. Fifteen quantitative responses and four qualitative responses were received to the question. Results of the quantitative responses are shown in Table F5 and Figure F5.

Table F5 Responses to Question 5 of the stakeholder survey

Answer choice	Number of responses	Percentage
Uploading of evidence to data portals (e.g., climate change data onto DataMapWales	8	53%
Embedding future projections for sectors in the Welsh National Marine Plan to inform marine plan policies and where sectors may be able to best perform.	10	67%
Updating of the Welsh National Marine Plan vision to explicitly capture climate change adaption.	4	27%
Monitoring reports to collate findings across indicators to provide a targeted view on if individual climate change policy aims are being met.	5	33%
Updating existing guidance to support implementation of existing policies	3	20%
Strengthening monitoring of existing policies	3	20%
Stating in the marine planning framework that significant weight must be given to the climate and nature crises	5	33%
Strengthened wording in the Welsh National Marine Plan – changing wording from 'should' to 'must' for climate change policies	6	40%
Developing a marine planning technical statement to support implementation of climate change policies in the Welsh National Marine Plan	7	47%
Incorporating the Climate Adaptation Strategy within the Welsh National Marine Plan or associated guidance	5	33%
Safeguarding blue carbon habitats	9	60%
Introducing sector specific climate change policies	6	40%
Other potential actions	4	27%

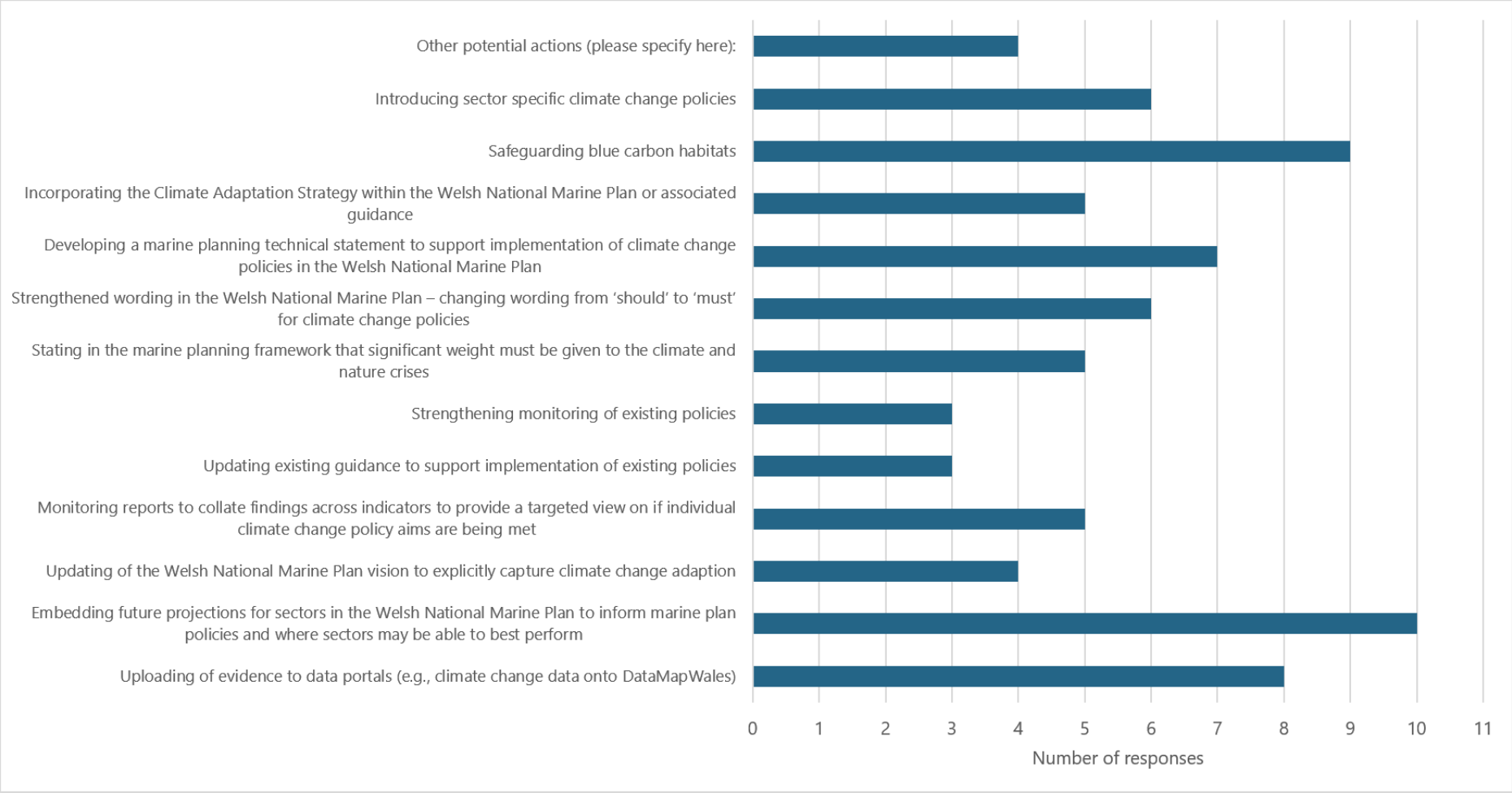


Figure F5 **Quantitative results of Question 5 of the stakeholder survey asking asked 'Through an initial review of the marine planning framework in Wales and approaches in other countries, the below potential actions have been identified. Please select your top five actions that you think could best support delivery of climate change adaptation or mitigation measures through marine planning in Wales'**

F.7 Opportunities to further develop or improve marine planning policy in Wales in relation to climate change

For Question 6, it was asked 'Do you have any further comments, or other suggestions for opportunities to further develop or improve marine planning policy in Wales in relation to climate change?'. In response to this question, ten qualitative responses were received (see Section 3.3). There was no quantitative element to the question on which to report.

F.8 Existing data that could help to support climate change adaptation and mitigation in marine planning if made available on DataMapWales

For Question 7, stakeholders were asked 'Is there existing data that could help to support climate change adaptation and mitigation in marine planning if made available on DataMapWales (that is not already included)?'. Fifteen quantitative responses and seven qualitative responses were received to the question. Results of the quantitative responses are shown in Table F6 and Figure F6.

Table F6 Responses to Question 7 of the stakeholder survey

Answer choices	Number of responses	Percentage
Yes	6	40%
No	0	0%
Do not know	9	60%

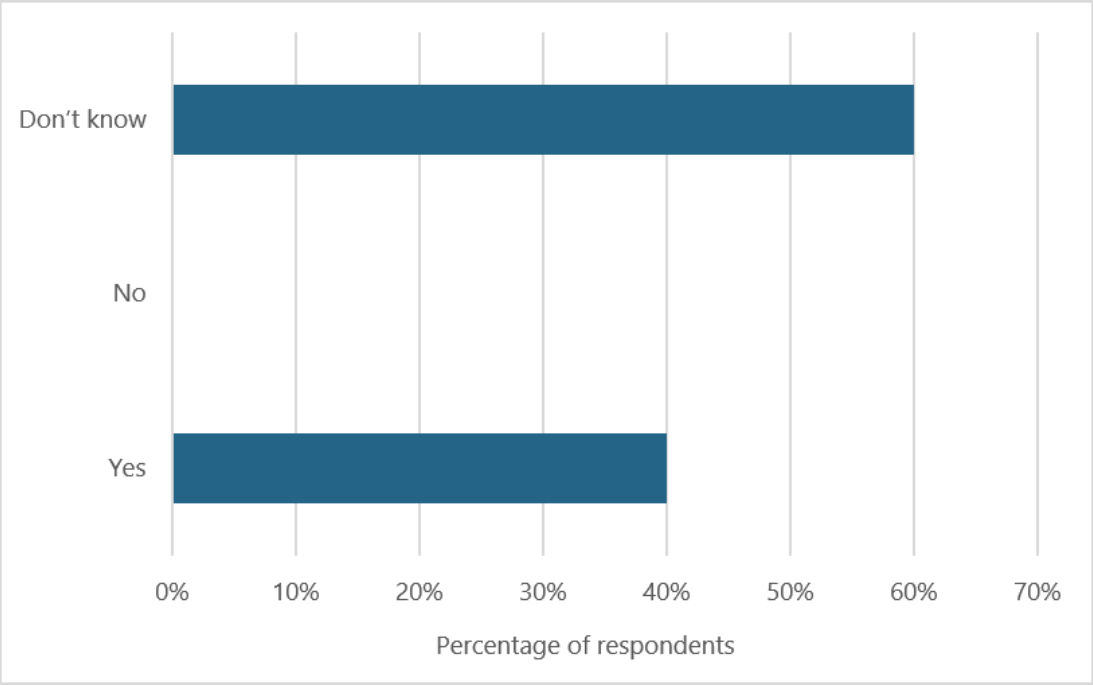


Figure F6 Quantitative results of Question 7 of the stakeholder survey. Stakeholders were asked 'Is there existing data that could help to support climate change adaptation and mitigation in marine planning if made available on DataMapWales (that is not already included)?'

F.9 Sectors that should be included within the Welsh National Marine Plan that would assist with the delivery of climate change adaptation or mitigation actions

For Question 8, stakeholders were asked 'Do you think the inclusion of the below sectors as individual sectors with supporting policies within the Welsh National Marine Plan would assist with the delivery of climate change adaptation or mitigation actions?'. Fifteen quantitative responses and twelve qualitative responses were received to the question. Results of the quantitative responses are shown in Table F7 and Figure F7.

Table F7 Responses to Question 8 of the stakeholder survey

Answer responses	Yes	No	Don't know	Total
Hydrogen energy and biofuels	7	0	6	13
Desalination	2	1	10	13
Environmental restoration/improvement	14	0	1	15
Nuclear energy	2	2	8	12
Surface water management and wastewater treatment and disposal	11	0	2	13
Carbon capture and storage	7	1	5	13

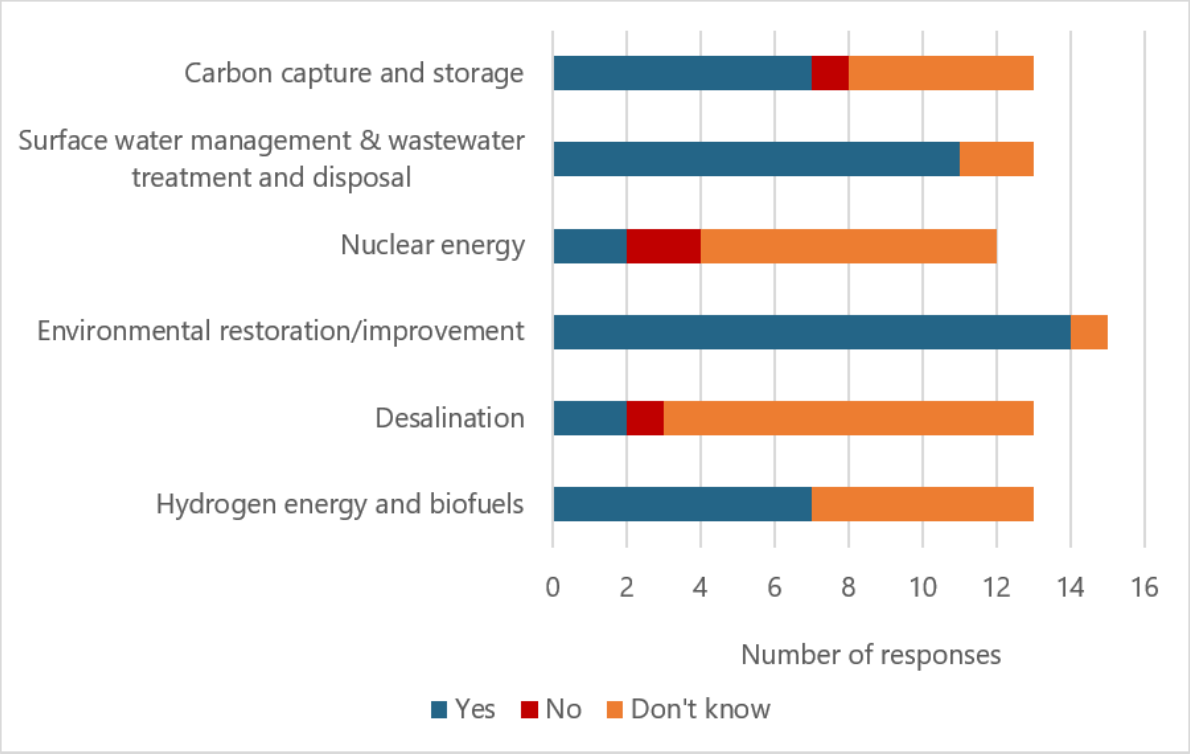


Figure F7 Responses to Question 8 of the stakeholder survey, asking 'Do you think the inclusion of the below sectors as individual sectors with supporting policies within the Welsh National Marine Plan would assist with the delivery of climate change adaptation or mitigation actions?'

F.10 Suggestions for how marine planning policy and tools can maintain their effectiveness in light of potential climate change impacts

For Question 9, stakeholders were asked 'Do you have suggestions for how marine planning policy and tools can maintain their effectiveness in light of potential climate change impacts?'. In response to this question, ten qualitative responses were received (see Section 3.3). There was no quantitative element to the question on which to report.

F.11 The main risks of climate change to sectors

For Question 10, it was asked 'What do you think are the main risks of climate change to sectors (including the environment), stating whether there is a risk that is relevant to a specific sector or is cross-cutting to a number of sectors'. In response to this question, 13 qualitative responses were received (see Section 3.2.5 and 4.5). There was no quantitative element to the question on which to report.

F.12 Measures for climate change adaptation or mitigation in marine projects

For Question 11, it was asked 'Are you aware of any measures for climate change adaptation or mitigation in marine projects (e.g., in developments or environmental projects)?' Fourteen quantitative responses and eight qualitative responses were received to the question. Results of the quantitative responses are shown in Table F8 and Figure F8.

Table F8 Responses to Question 11 of the stakeholder survey

Answer choices	Number of responses	Percentage
Yes	7	50%
No	2	14%
Don't know	5	36%

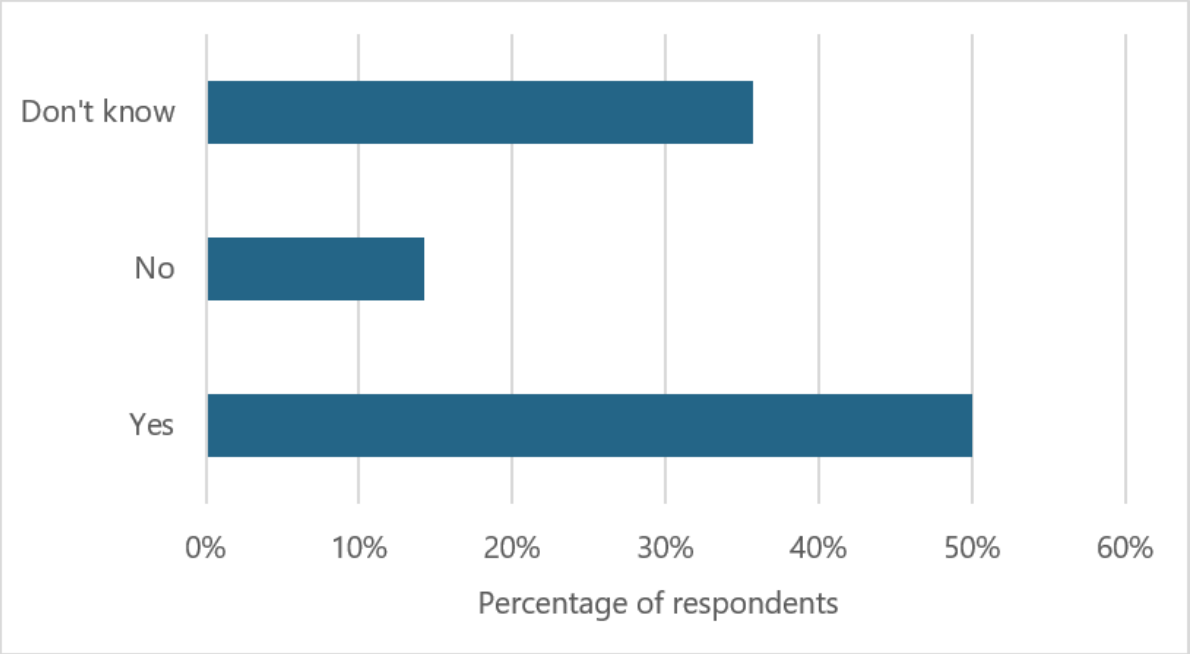


Figure F8 Responses to Question 11 of the stakeholder survey. Stakeholder participants were asked 'Are you aware of any measures for climate change adaptation or mitigation in marine projects (e.g., in developments or environmental projects)?'

F.13 Challenges to implementing climate change adaptation or mitigation measures within the project

For Question 12, it was asked 'Thinking about completed projects you are familiar with, were there any challenges to implementing climate change adaptation or mitigation measures within the project?' Fourteen quantitative responses and four qualitative responses were received to the question. Results of the quantitative responses are shown in Table F9 and Figure F9.

Table F9 Responses to Question 12 of the stakeholder survey

Answer choices	Number of responses	Percentage
Yes	2	14%
No	0	0%
Do not know	7	50%
Not applicable	5	36%

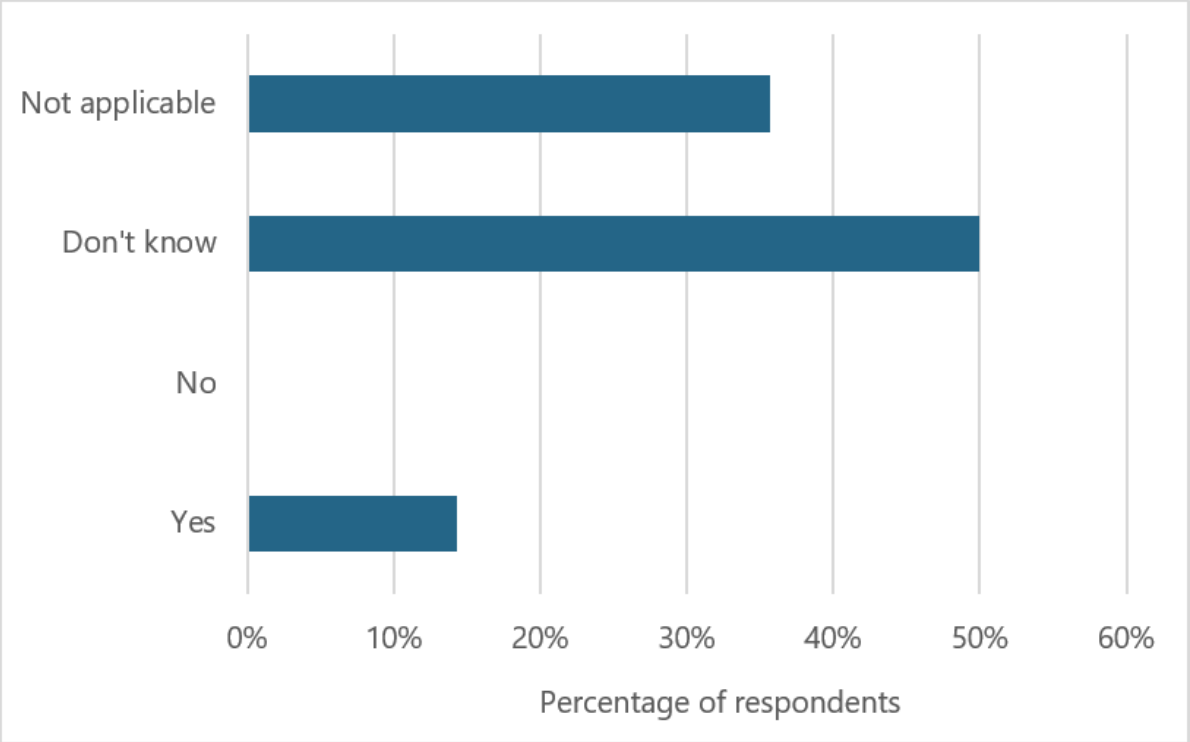


Figure F9 Responses to Question 12 of the stakeholder survey which asked 'Are you aware of any measures for climate change adaptation or mitigation in marine projects (e.g., in developments or environmental projects)?'

F.14 Environmental Impact Assessment (EIA) requirements and climate change mitigation and adaptation

For Question 13, stakeholders were asked 'Do you think that EIA requirements bring sufficient consideration of climate change mitigation and adaptation?' Fourteen quantitative responses and ten qualitative responses were received to the question. Results of the quantitative responses are shown in Table F10 and Figure F10.

Table F10 Responses to Question 13 of the stakeholder survey

Answer choices	Number of responses	Percentage
Yes	3	21%
No	6	43%
Don't know	5	36%

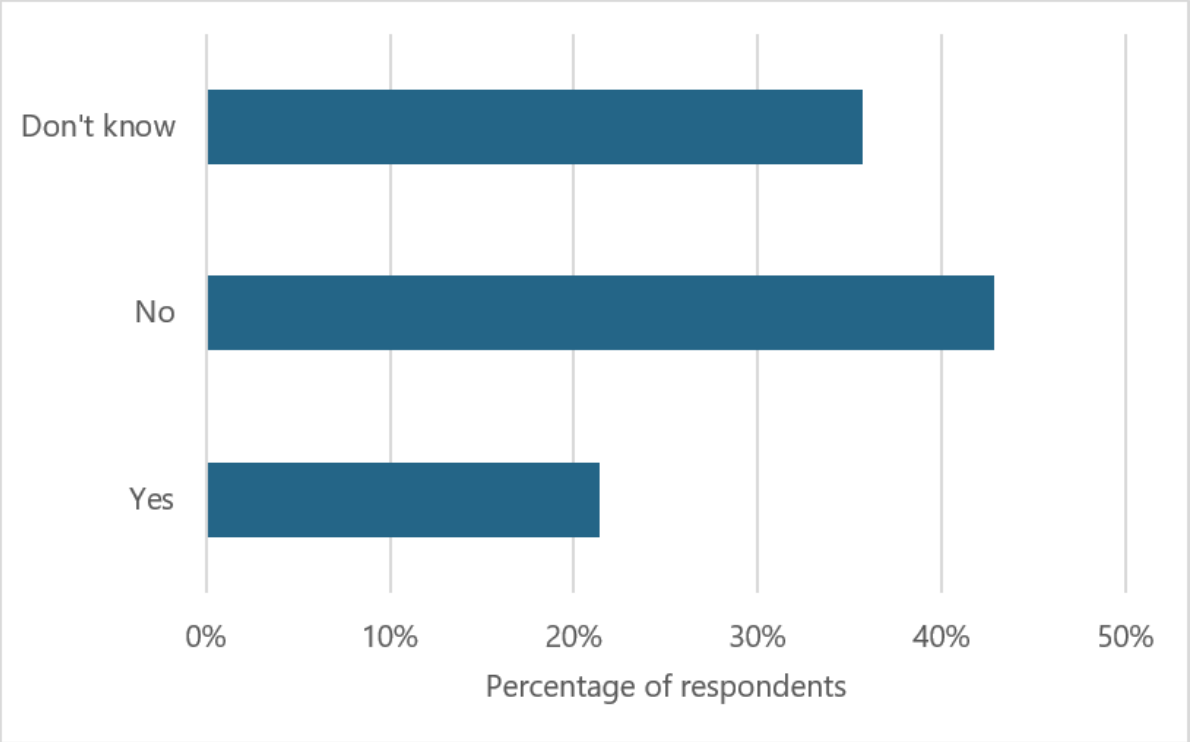


Figure F10 Responses to Question 13 of the stakeholder survey, which asked participants 'Do you think that EIA requirements bring sufficient consideration of climate change mitigation and adaptation?'

F.15 Targeted marine planning policy to support adapting to climate change or to mitigate climate change impacts

For Question 14, stakeholders were asked 'Do you think there are any specific sectors that would benefit from targeted marine planning policy to support adapting to climate change or to mitigate climate change impacts?'. Fourteen quantitative responses and nine qualitative responses were received to the question. Results of the quantitative responses are shown in Table F11 and Figure F11.

Table F11 Responses to Question 14 of the stakeholder survey

Answer choices	Number of responses	Percentage
Yes	11	79%
No	0	0%
Don't know	3	21%

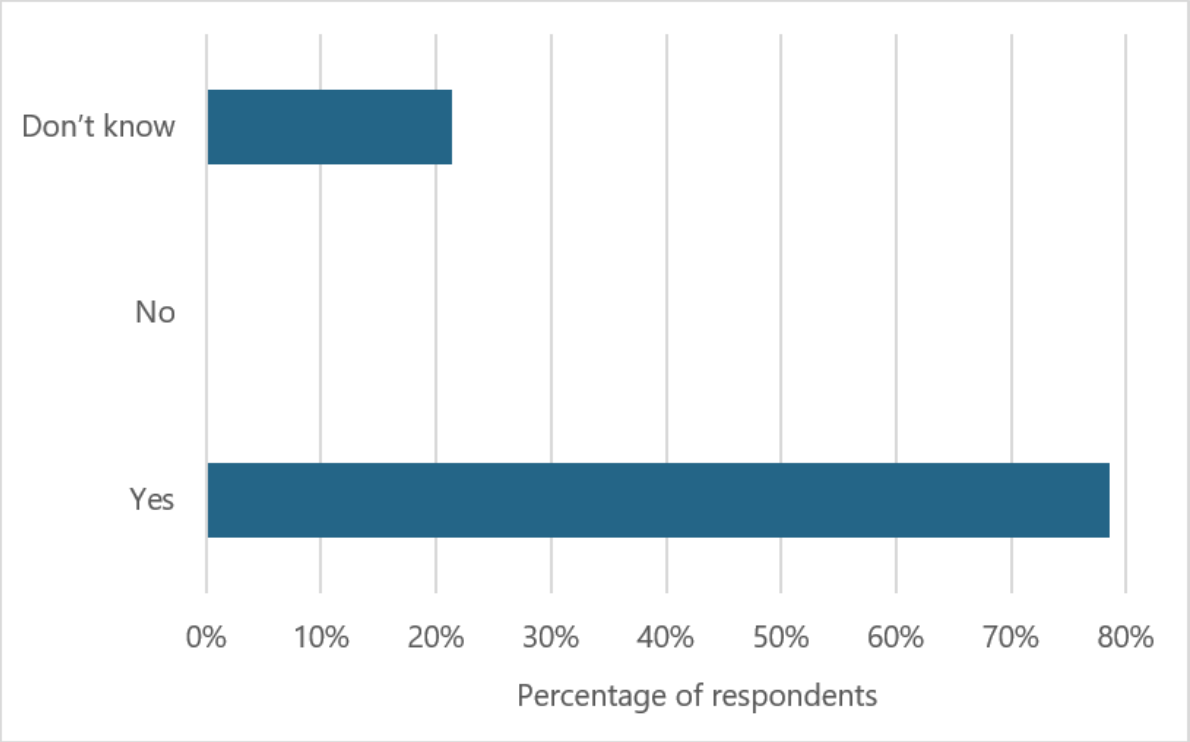


Figure F11 Responses to Question 14 of the stakeholder survey, which asked 'Do you think any specific sectors that would benefit from targeted marine planning policy to support adapting to climate change or to mitigate climate change impacts?

F.16 Sectors that would benefit from targeted marine planning policy or guidance to support adapting to climate change or to mitigate climate change impacts

For Question 15, it was asked 'Which sectors would benefit from targeted marine planning policy or guidance to support adapting to climate change or to mitigate climate change impacts?' Eleven quantitative responses and eight qualitative responses were received to the question. Results of the quantitative responses are shown in Table F12 and Figure F12.

Table F12 Responses to Question 15 of the stakeholder survey

Answer choices	Number of responses
Aquaculture	7
Carbon capture, usage and storage	7
Commercial fisheries	7
Defence	4
Desalination	4
Dredging and disposal	6
Energy production: nuclear	4
Energy production: hydrogen	6
Marine aggregates	5
Oil and gas	5
Ports and shipping	7
Power cables	6
Renewables: offshore wind energy (static and floating)	9
Renewables: wave and tidal energy	9
Surface water management and wastewater treatment and disposal	9
Telecommunication cables	6
Tourism and recreation	6

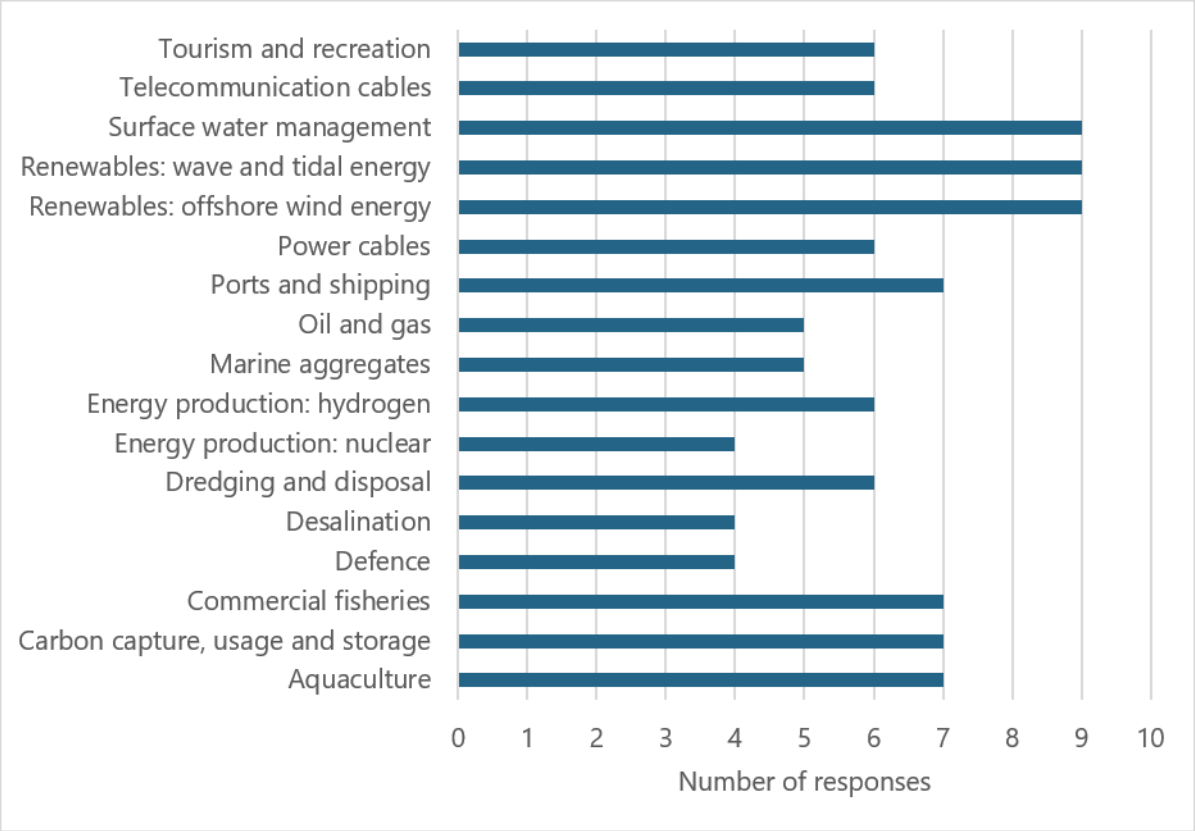


Figure F12 **Responses to Question 15 of the stakeholder survey which asked 'Which sectors would benefit from targeted marine planning policy or guidance to support adapting to climate change or to mitigate climate change impacts?'**

F.17 How the marine planning framework in Wales can best support marine sectors in climate change adaptation and mitigation

For Question 16, it was asked 'Do you have any further suggestions for how the marine planning framework in Wales can best support marine sectors in climate change adaptation and mitigation?'. In response to this question, eight qualitative responses were received to the question (see Section 3.3 and 4.5). There was no quantitative element to the question on which to report.

F.18 Profile of survey respondents

To best understand the demographic of survey respondents, Question 17 asked 'Please select the sector you work in'. Table F13 and Figure F13 display the responses.

Table F13 Responses to Question 17 of the stakeholder survey

Answer choices	Number of responses	Percentage
Academia / research	2	12%
Aquaculture	0	0%
Cables	0	0%
Commercial fishing	0	0%
Consultancy	0	0%
Environmental NGO/charity	2	12%
Government agency	3	18%
Government department/ministry	1	6%
Local authority	0	0%
Marine minerals	1	6%
NGO	1	6%
Offshore renewables	0	0%
Oil and gas	0	0%
Ports and harbours	1	6%
Power generation	0	0%
Recreation	1	6%
Shipping	0	0%
Water utility	0	0%
Other (please specify here):	5	29%

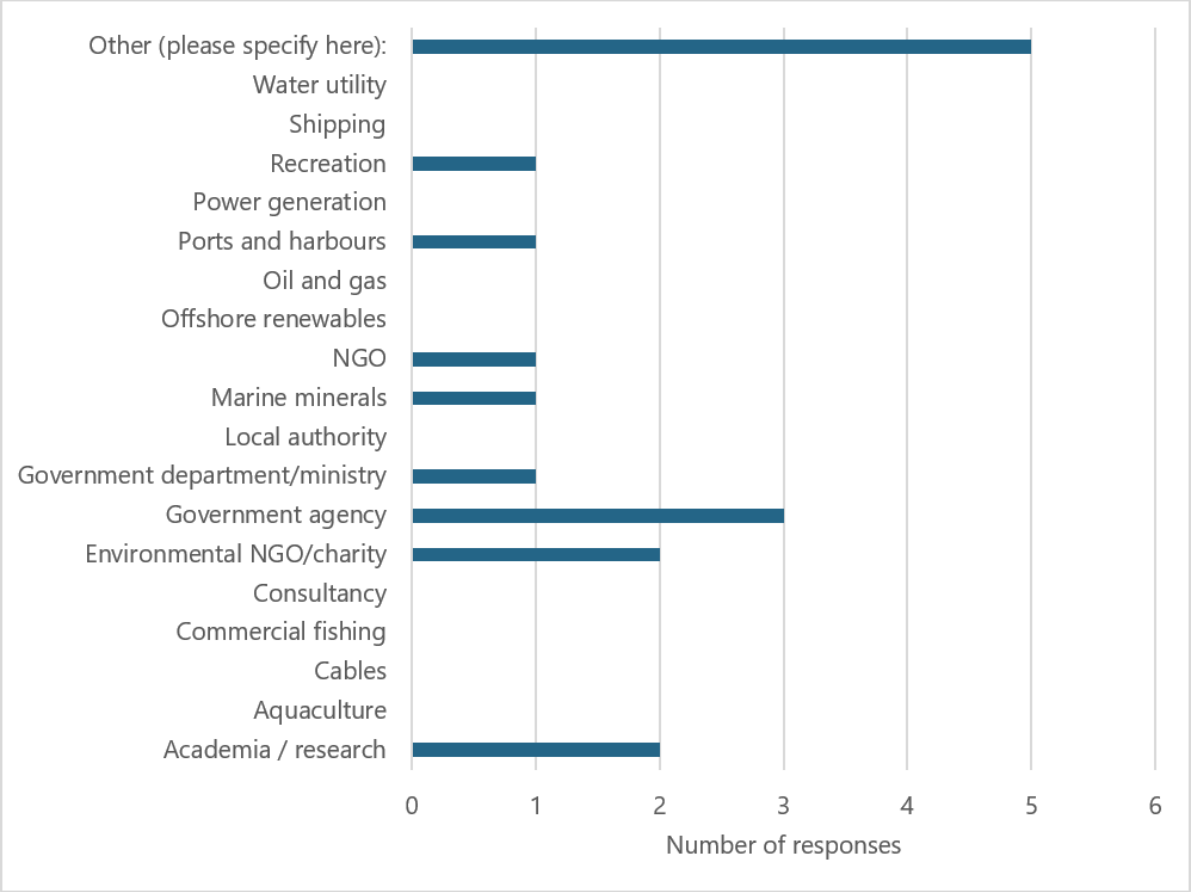


Figure F13 **Responses to Question 17 of the stakeholder survey, which asked participants to 'Please select the sector you work in'**

G Stakeholder Workshop Outcomes

On 11 February 2026, an online workshop was held with stakeholders and the Welsh Government via Microsoft Teams. The purpose of the workshop was to build on the themes emerging from the stakeholder survey and to gather views on which potential actions could be prioritised for development within this report. Four ABPmer colleagues guided the workshop, aided by two members of the Welsh Government. Twenty-three invited stakeholders were present at the workshop, either in part or for the scheduled duration.

After an introduction to the workshop, the meeting was structured into two parts, 'gathering views and testing initial findings', and 'generating recommendations'. To gather views and test initial findings, attendees discussed policy clarity, guidance needs and evidence gaps as a group. Thoughts and suggestions were collated on a collaborative Mural board. To generate recommendations, attendees spent ten minutes voting for actions identified in the earlier session with a total of five votes allowed per attendee across the three themes. After each of the two sessions, there was a 20-minute plenary where attendees could provide further feedback.

G.1 Attendees

Table G1 shows the attendees of the online workshop, with details of their organisation and their allocated sector grouping which was used for voting activities.

Table G1 Attendees of the online workshop

Organisation	Sector
British Marine Aggregate Producers Association	Industry
Cardiff University	Academia
JNCC	Government Agency
Marine Conservation Society	NGO
MMO – Marine Planning	Government Agency
NRW representatives including the specialist advisors covering marine and marine regulation	Government Agency
Rewilding Britain	NGO
Royal Yachting Association	Recreation
Royal Society for the Protection of Birds (RSPB) Cymru	NGO
Seabed User and Development Group	Industry
The Crown Estate (TCE)	Commercial/Leasing Agency
Welsh Government representatives from departments including the Fisheries Division and Marine Policy	Government
Welsh Local Government Association	Government

It is noted that not all invited sectors took part.

G.2 Gathering views and testing initial findings

Feedback from the stakeholder survey was used to create the actions for discussion in the workshop for the topics of policy clarity, guidance needs and evidence gaps. The findings are shown in G.2.1, G.2.2, and G.2.3 respectively.

G.2.1 Policy clarity

For the topic of policy clarity, the following actions were discussed:

- Increase strength of the WNMP and certain policies;
- Clarify wording of existing policies and objectives;
- Introduce new policies;
- Increase the spatial specificity of policies;
- Improve integration of policy frameworks; and
- Enhance climate change adaptation and mitigation within the WNMP.

Overall, there was broad support for amendments to policy wording and potentially for the introduction of new policies, alongside strong support for greater integration across the Plan. However, respondents emphasised the importance of retaining flexibility in wording, recognising the inherent uncertainty associated with climate change and the need to balance certainty with specificity within the WNMP. While revised wording was welcomed, there was a view that this may need to be sector-specific to ensure relevance and effectiveness. The need to minimise duplication across plan policies and to ensure alignment with the Climate Change Act was also highlighted. In addition, respondents noted the importance of improving technologies to enable access to blue carbon in ways that do not negatively impact the environment, and suggested the potential value of introducing SRAs for nature. It was emphasised that clear and accessible guidance would continue to be helpful in supporting effective implementation.

There was an opportunity for attendees to create new actions for discussion, but no new actions were raised.

G.2.2 Guidance needs

For the topic of guidance needs, the following actions were discussed:

- Climate change guidance (e.g., in a technical statement) created (or updated) for all sectors;
- Guidance tailored and accessible to the intended audience;
- Guidance consolidated across multiple frameworks and processes to make climate change more explicit; and
- Planning documents published in a way that can be updated regularly.

Most comments focused on the first two actions, emphasising the need for climate change guidance to be created or updated for all sectors, for example through a technical statement, and for that guidance to be tailored, accessible, and appropriate for the intended audience. Respondents highlighted the value of sector-specific information, including the development of guidance on blue carbon that can be used by developers, and stressed that guidance should be specific, transparent, and provide clearer direction on climate change mitigation and adaptation. There was also a strong call for a clearer distinction between what is required and what is recommended, alongside consideration of how approval and licensing processes could better integrate climate change requirements. Views were mixed on whether a single consolidated piece of guidance or multiple sector-specific documents would be more helpful,

recognising that consolidation may be challenging. Online guidance was seen as preferable due to its ability to be more easily updated, with monitoring and evaluation identified as key to ensuring guidance remains current and effective over time.

There was an opportunity for attendees to create new actions for discussion, but no new actions were raised.

G.2.3 Evidence gaps

For the topic of evidence gaps, the following actions were discussed:

- Emerging climate and environmental data to be regularly updated on DataMapWales and/or the Marine Planning Portal to aid in decision making;
- Inclusion of natural capital in MSP;
- Better integration across data platforms to aid in decision making;
- Strengthened assessment of cumulative impacts; and
- Strengthened monitoring of existing policies.

Stakeholders identified a range of suggestions based on existing issues and recommendations for further evidence sources, including data from The Crown Estate, MCCIP and NRW. There was a strong emphasis on clarifying responsibility for maintaining and updating datasets, alongside ensuring that sufficient resource would be available to undertake this task. Improving data accessibility and ease of discovery was highlighted as important, as was the need for training to support effective assessment processes, potentially drawing on existing initiatives such as Defra and MMO natural capital projects. Attendees stressed the importance of maintaining a clear audit trail to document data sources, decision-making processes and how decisions evolve as data changes. Concerns were raised about limited support and engagement in relation to cumulative impacts, and there was broad agreement on the need for a robust, overarching monitoring approach that may require multiple indicators to reflect the complexity of the marine environment.

There was an opportunity for attendees to create new actions for discussion, but no new actions were raised.

G.3 Generating recommendations

G.3.1 Policy clarity

There was a wide spread of votes across the actions which demonstrate the perceived importance of each. The action with the most votes was to increase the strength of the WNMP and certain policies. This was voted on by a broad range of sectors including government departments, government sponsored bodies and agencies, eNGOs and charities, multi-sector representation and partnerships.

G.3.2 Guidance needs

Under this theme, the action with the most votes was for climate change guidance to be created for all sectors. This was predominantly voted for by government sponsored bodies and partnerships. A respondent noted that they only voted to create guidance as the other actions should be carried out as standard. All guidance should be accessible and inherently tailored in a way that can be regularly updated. There were the least votes for 'guidance tailored and accessible to the intended audience' with four votes.

G.3.3 Evidence gaps

There was a strong preference for data to be regularly updated, which was voted predominantly by government agencies, recreation organisations and eNGOs, which received 13 votes. There were fewest votes for 'inclusion of natural capital in MSP', with only one vote.

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