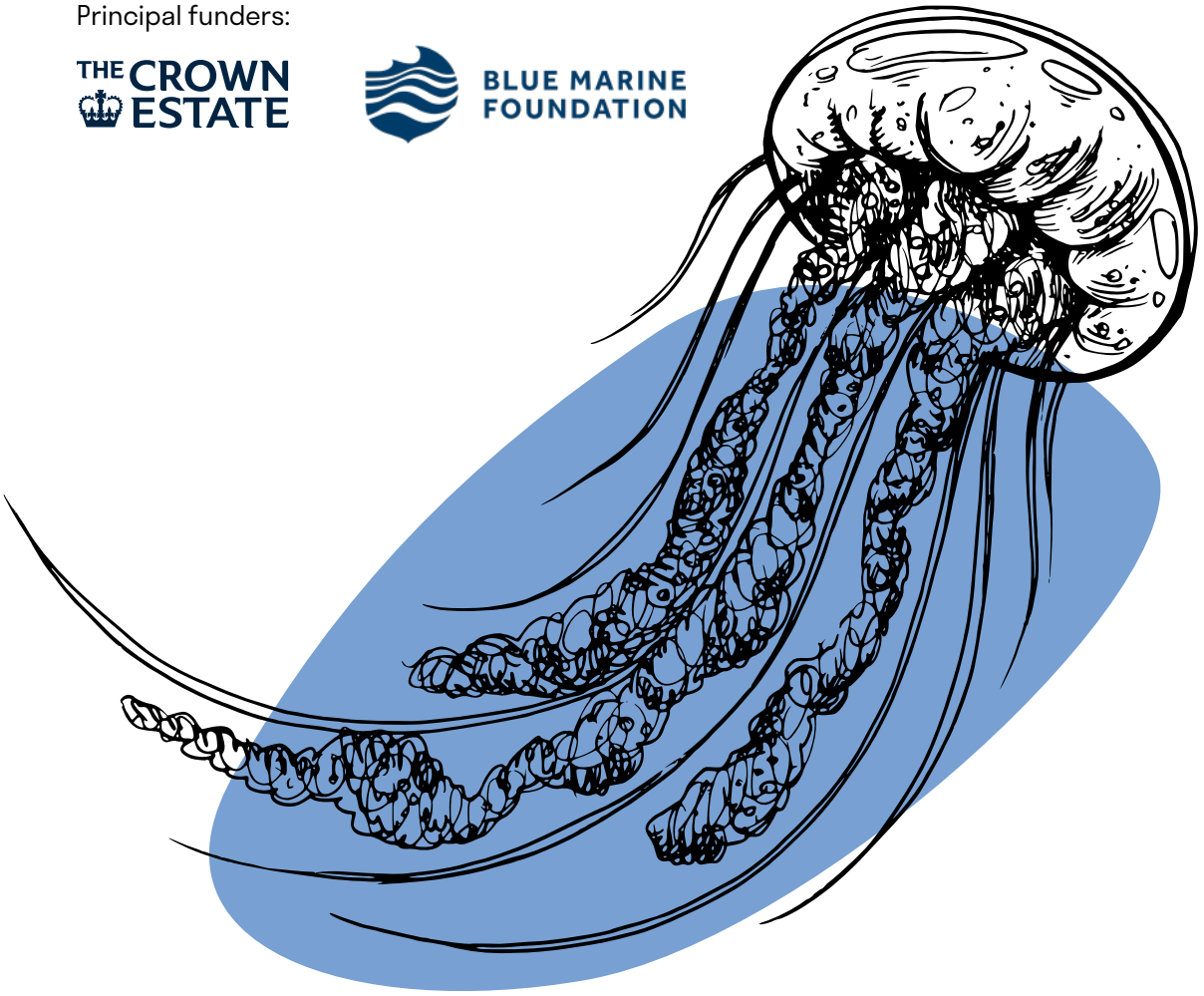
Principal funders:

THE CROWN ESTATE

BLUE MARINE FOUNDATION



HIGH INTEGRITY MARINE NATURAL CAPITAL MARKETS IN THE UK

A ROADMAP FOR ACTION

Developed by:

finance earth

POLLINATION

Also funded by:

Crown Estate Scotland
Oighreachd a' Chrùin Alba

Esmée Fairbairn FOUNDATION

UNIVERSITY OF PORTSMOUTH

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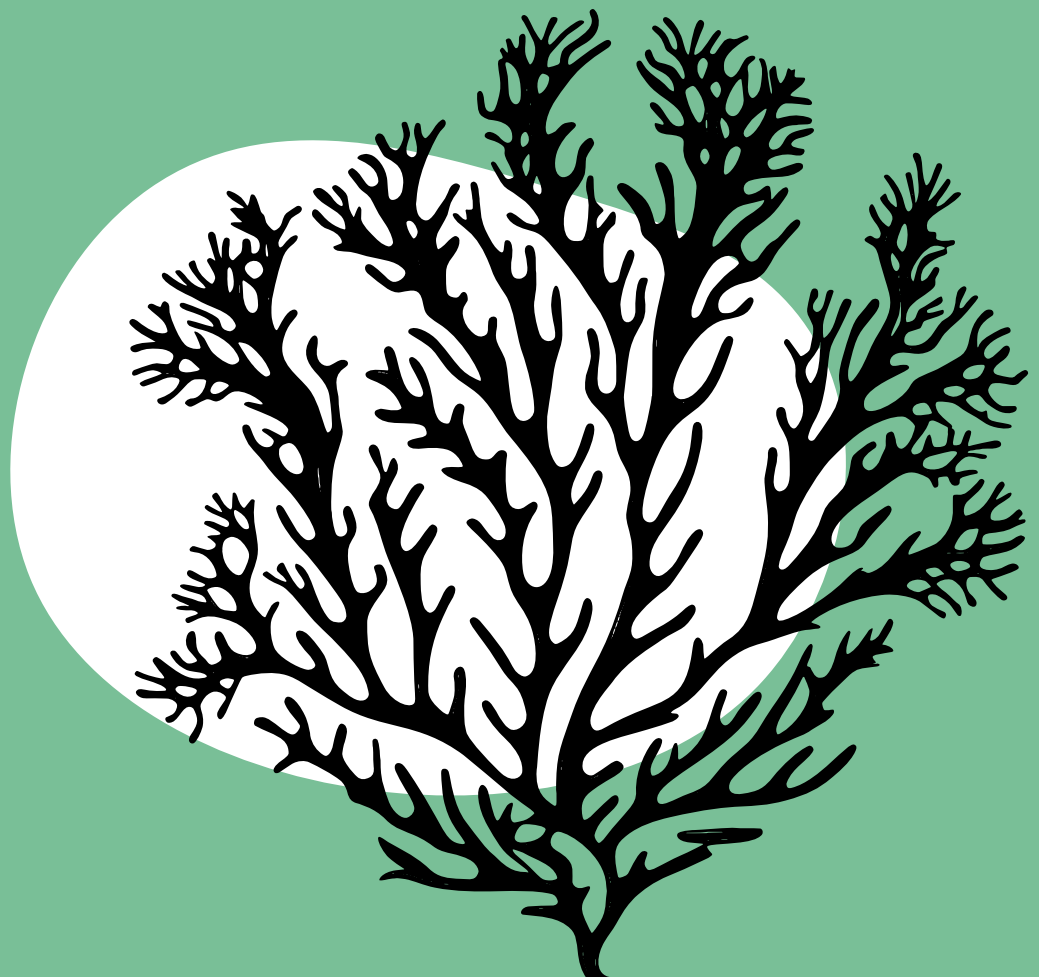


FOREWORD

The United Kingdom has long been a centre for pioneering and world-leading innovation made possible through collaboration across sectors, from academia to finance. Recently, the great power of this collaboration has been catalytic in the creation of markets, like offshore wind, that simultaneously deliver jobs, green growth, and critical progress towards net zero.

Today we are introducing a roadmap that presents an opportunity for the UK to set the standard for excellence globally when it comes to establishing equitable, transparent, high-integrity and standardised markets for marine natural capital. It builds on the significant actions already underway across all the nations of the UK to protect, restore and sustainably manage marine and coastal ecosystems.

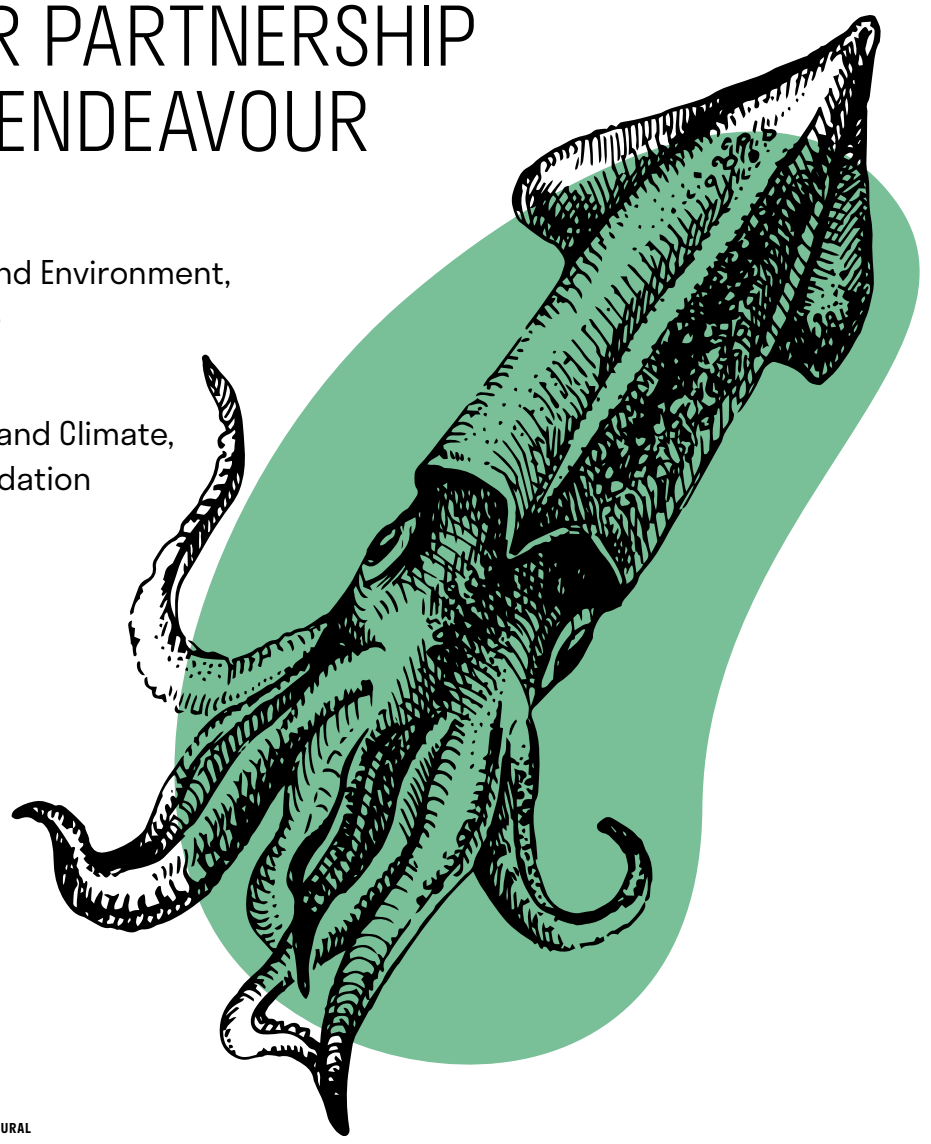
Devolution means that market development should be tailored to the four nations of the UK. However, through meaningful collaboration, we can achieve shared but nationally appropriate approaches that uphold the highest standards of integrity to deliver scale and real impact.

Developed in collaboration with leaders spanning academia, industry, finance, government and not-for-profits across the nations, this roadmap is a milestone for bringing actors together to take urgent action for recovery of the marine environment. It presents a pathway towards valuing ecosystem services appropriately by progressing an enabling policy environment that can bring financial resources to bear, together.

WE LOOK FORWARD TO YOUR PARTNERSHIP IN THIS ENDEAVOUR

Caroline Price
Head of Nature and Environment,
The Crown Estate

Dan Crockett
Director, Oceans and Climate,
Blue Marine Foundation



WORK FUNDED BY:

The Crown Estate

Blue Marine Foundation (funded by CVC Capital Partners and Flotilla Foundation)

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Esmée Fairbairn Foundation

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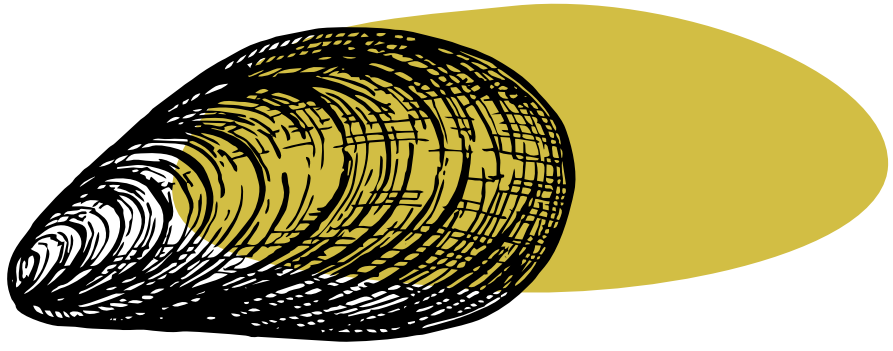


ROADMAP SUMMARY

BY 2025 | **BY 2026** | **BY 2027** | **BY 2030**

RECOMMENDATION 1

Identify priority opportunities and approved methods for marine and coastal conservation and restoration

- Identify clear government leads — GOVERNMENTS
- Progress ongoing marine spatial planning processes — GOVERNMENTS
- Collate existing opportunity mapping initiatives — GOVERNMENTS, 3RD SECTOR, LANDOWNERS
- Identify near-term priority areas for conservation & restoration projects — GOVERNMENTS, LANDOWNERS, ACADEMIA, 3RD SECTOR, PRIVATE SECTOR
- Engage communities & iterate priority areas — GOVERNMENTS, LANDOWNERS, 3RD SECTOR
- Publicly communicate opportunity mapping of priority areas — THIRD SECTOR, GOVERNMENTS
- Promote restoration approaches through a "library" of methods — GOVERNMENTS

RECOMMENDATION 2

Deliver seascape-scale natural capital projects through combined public & private funding

- Establish UK "buyers" & "sellers" alliances — PRIVATE SECTOR
- Identify data needs for investment — PRIVATE SECTOR
- Identify suitable sites for seascape scale pilots — PRIVATE SECTOR, 3RD SECTOR
- Create a pooled public & private grant funding pot — GOVERNMENTS, 3RD SECTOR, PRIVATE SECTOR
- Share knowledge from pilots — PRIVATE SECTOR, 3RD SECTOR
- Develop central brokerage/trading platform — PRIVATE SECTOR, THIRD SECTOR
- Design & establish risk transfer mechanisms — PRIVATE SECTOR, GOVERNMENTS

RECOMMENDATION 3

Implement policy & regulatory requirements to drive demand for marine natural capital

- Convene a working group to develop UK-aligned marine offsetting approaches — GOVERNMENTS
- Include consideration of terrestrial impacts on marine & coastal environments in policymaking — GOVERNMENTS
- Establish clear guidance on development offsetting mechanisms — GOVERNMENTS
- Include blue carbon habitats in the UK GHG inventory & NDCs — GOVERNMENTS
- Clarify how corporates should report on blue carbon — GOVERNMENTS
- Expand terrestrial water quality markets to require mitigation of impacts at source — GOVERNMENTS

RECOMMENDATION 4

Accelerate the development of UK-wide codes for marine & coastal ecosystem services

- Ensure marine expertise feeds into the BSI's Nature Investment Standards Programme — PRIVATE SECTOR, GOVERNMENTS
- Coordinate resourcing & development of priority codes — 3RD SECTOR, GOVERNMENTS
- Set up expert coalitions to develop and pilot codes across all nations — 3RD SECTOR, ACADEMIA, GOVERNMENTS
- Include marine and coastal codes within verification & approval processes — PRIVATE SECTOR, GOVERNMENTS

RECOMMENDATION 5

Address critical evidence gaps for the development of marine natural capital markets

- Conduct a data audit of existing decision useful data — ACADEMIA, GOVERNMENTS
- Deliver research funding to contribute to a shared evidence base — PRIVATE SECTOR, GOVERNMENTS
- Structure leasing requirements to contribute to a shared evidence base — SEABED OWNERS
- Deliver multi-disciplinary research to address key evidence gaps — 3RD SECTOR, ACADEMIA, GOVERNMENTS

RECOMMENDATION 6

Develop accessible, standardised approaches to data collection, hosting & monitoring

- Establish standards for data collection, hosting & monitoring — 3RD SECTOR, ACADEMIA, GOVERNMENTS
- Sign-post relevant existing data sources — GOVERNMENTS, LANDOWNERS
- Improve accessibility of key databases — PRIVATE SECTOR, GOVERNMENTS
- Develop handbooks for data collection for ecosystem services — 3RD SECTOR, ACADEMIA, GOVERNMENTS
- Provide training to practitioners and citizen scientists — 3RD SECTOR

RECOMMENDATION 7

Build the skills & capacity to harness marine natural capital opportunities

- Identify key skills gaps and training needs through survey & skills audit — ACADEMIA, GOVERNMENTS
- Provide finance & investment readiness upskilling — PRIVATE SECTOR
- Publish guidance on leasing & licensing processes to enable project delivery — LANDOWNERS, GOVERNMENTS
- Establish regional networks, or "labs", of blue natural capital practitioners — GOVERNMENTS
- Develop dedicated PhD programmes and vocational courses — 3RD SECTOR, ACADEMIA

INTRODUCTION:
DELIVERING A VISION FOR HIGH-INTEGRITY MARINE NATURAL CAPITAL MARKETS IN THE UK

THE VISION

The UK's diverse marine and coastal ecosystems play a critical role in underpinning our economy, health and wellbeing. Our coasts, estuaries and offshore waters contribute an estimated £47 billion to the economy and support over 500,000 jobs.[1]

The UK's marine natural capital assets are estimated to have an asset value of £211 billion.[2] They help regulate our climate by sequestering and storing carbon and host an abundance of biodiversity as well as providing adaptation benefits such as reducing flood risk. These environments are also vital cultural, social and scientific assets, benefiting coastal communities and providing blue spaces for work, research and leisure and tourism.

Despite their importance, historic and growing pressures pose a significant threat to these marine and coastal ecosystems and natural capital assets. Rising temperatures, development, certain fishing and aquaculture practices, water pollution[3] and other anthropogenic impacts, in particular land-based pollution, drive deterioration of marine and coastal natural capital.[4] In turn, these pressures compromise the ecosystem services we depend upon.

1 Armour, C. (2019) How the UKHO is Supporting the Blue Economy.
2 ONS (2021) Marine accounts, natural capital, UK: 2021.
3 Blue Marine Foundation (2024) Seagrass-policy-report_V4-2.pdf (bluemarinefoundation.com).
4 UNESCO IOC (2022) State of the Ocean Report 2022: Pilot Edition.

KEY FACTS

3000MT

The UK's seabed sediments store over 3000 Mt of organic and inorganic carbon, more than five times the estimated carbon stocks of UK forests.[5]

44%

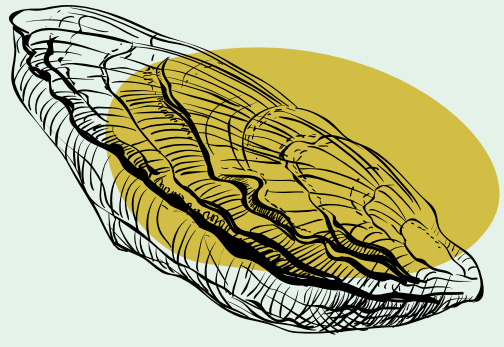
44% of seagrass habitats have been lost in the last century.[6]

95%

Populations of native oysters in the UK have declined by up to 95% since the mid-19th century.[7]

84%

Up to 84% of UK saltmarsh area has been lost over the last 200 years.[8]



5 WWF (2022) Scientists Embark on World-First Study to Reveal Carbon Stored in UK Seas; Smeaton, C., et al. (2021) Marine Sedimentary Carbon Stocks of the United Kingdom's Exclusive Economic Zone.
6 Green, A.E., et al. (2021) Historical Analysis Exposes Catastrophic Seagrass Loss for the United Kingdom.
7 Native Oyster Network (ND) European Native Oyster.
8 Mike Best, et al. (no date) Saltmarsh in Time and Space.

As appreciation of marine and coastal ecosystem services has grown, so too has the opportunity to leverage payments for ecosystem services and create markets to deliver protection and restoration of our vital marine and coastal environments. These markets hold the potential to unlock much-needed private and philanthropic funding for the protection, restoration and sustainable use of our marine and coastal natural capital, where public coffers are often stretched.

However, if poorly designed, these markets also hold potential risks, such as facilitation of greenwashing, lack of community involvement and benefit, and short-lived or failed projects to protect and restore marine and coastal ecosystems, reducing investor confidence and deterring investment.

WHAT ARE NATURAL CAPITAL MARKETS?

Marine natural capital refers to the stock of natural resources in the marine environment, including geological features, minerals, flora and fauna. These resources provide a flow of ecosystem services that provide benefits to people, businesses and the economy at large, such as fish for food or aggregates for construction.

These ecosystem services are typically provided for 'free' and can be eroded if not adequately managed. Natural capital markets (also referred to as "nature markets") provide a mechanism for investment in nature through the sale of units of an environmental outcome – be it carbon sequestration, biodiversity improvements or nutrient cycling – which are delivered by nature projects or improvements to environmental management.[9] This means that natural capital markets can be a tool to facilitate protection and restoration of natural capital and ecosystem services.

Natural capital markets can be driven by voluntary or compliance (mandated through regulation) purposes, or a combination of both. Examples of voluntary markets include those facilitated by UK Codes, currently focusing on carbon (e.g., Woodland Carbon Code or Peatland Code). Examples of compliance markets include the Biodiversity Net Gain scheme in England or Natural England's nutrient neutrality pilot markets in selected Nutrient Advice Areas. In both cases, the markets are facilitated by payments in return for the provision of ecosystem services, which in turn can be delivered through a range of interventions, such as habitat restoration.

While natural capital markets are an effective tool to protect and restore ecosystems, a range of other tools including effective regulation and enforcement are also required.

9 BSI (2024) bsi_flex_701_v1.0_drm_free.pdf (bsigroup.com).

The UK has already established itself as a leader in many ways in developing high-integrity terrestrial natural capital markets, yet marine natural capital markets remain largely nascent. Few marine protection and restoration projects are investment-ready due to a range of finance, scientific, and policy barriers set out in an initial synthesis report published in September 2023.[10] Some of these challenges differ from those facing terrestrial markets, e.g., significant gaps in the availability of data and metrics, while others overlap and can draw on best practices under development on areas such as ensuring both buy and sell-side integrity.

There is an opportunity to build on the learning from terrestrial markets across the four nations to create high-integrity marine natural capital markets that future-proof vital marine and coastal ecosystems and underpin coastal livelihoods and a thriving blue economy. Key existing initiatives and frameworks, such as the UK Government Nature Markets Framework[11] and the Scottish Government Interim Principles for Responsible Investment in Natural Capital[12] will provide critical foundations for developments of marine and coastal markets.

Forthcoming guidance, including commitments from the Scottish Government to publish proposals for a market framework to strengthen the interim principles,[13] as well as the UK Government to consult on policy interventions to help grow high integrity voluntary carbon and nature markets,[14] and the Welsh Government to develop draft guiding principles for responsible private investment to support nature recovery, will provide additional guardrails to help ensure market integrity.[15]

Critically, showcasing best practices for high-integrity markets in the UK could help inform market development in coastal communities around the world, turning the tide for marine and coastal restoration and conservation.

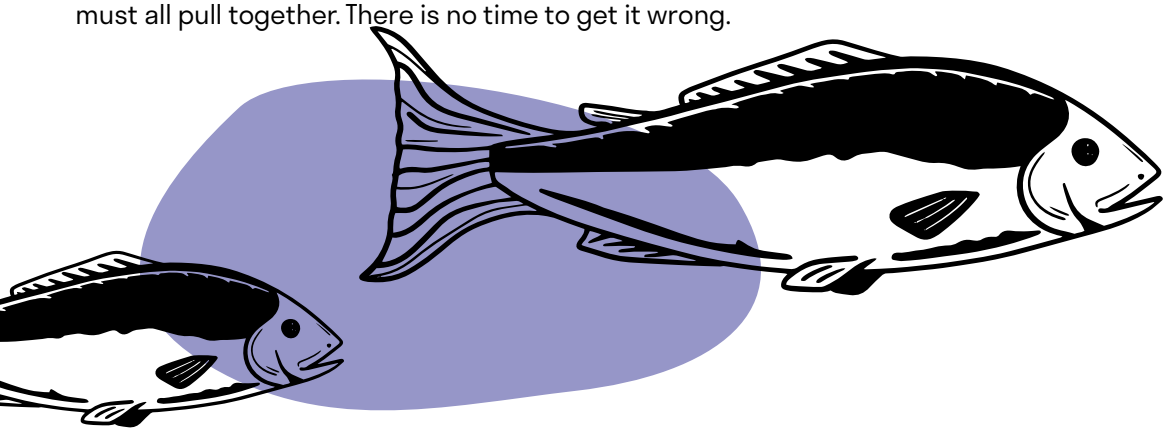
10 Pollination, Finance Earth, Blue Marine Foundation and The Crown Estate (2023) Developing High-Integrity Marine Natural Capital Markets in the UK.
11 HM Government (2023) Nature Markets: A Framework for Scaling Up Private Investment in Nature Recovery and Sustainable Farming.
12 Scottish Government (2022) Interim Principles for Responsible Investment in Natural Capital.
13 Scottish Government (2024) Programme for Government 2023 to 2024.
14 Defra (2024) Policy Paper: Nature Markets Framework Progress Update March 2024.
15 Welsh Parliament: Climate Change, Environment, and Infrastructure Committee (2024) Scrutiny of the Welsh Government Draft Budget 2024 – 2025.

A ROADMAP FOR ACTION

This roadmap sets out steps for delivering this vision which have been co-designed through a year-long initiative involving more than 200 UK and international stakeholders. The roadmap builds on the initial synthesis report, which was based on extensive desk-based research, one-to-one engagement and two workshops.

Following an online consultation on the initial report, Finance Earth and Pollination partnered with the Seascape Restoration Research Network, led by the University of Portsmouth, to hold a workshop in each of the four nations of the UK. Through the workshops, participants refined the initial recommendations and identified actions to support their delivery, alongside key stakeholders to lead these actions.

The roadmap reflects the breadth of work already underway to advance high-integrity marine natural capital markets across the UK, drawing upon lessons learned from broader nature market initiatives in the terrestrial context.[16] Support and coordinated action from government, private sector enterprises, financial institutions, academia, non-governmental organisations (NGOs) and wider civil society can deliver this roadmap and the vision for high-integrity marine natural capital markets in the UK. We must all pull together. There is no time to get it wrong.



16 Significant efforts such as the development of the carbon codes, emerging compliance markets, innovative funding programmes (e.g., ELMs, NEIRF, FIRNs), the establishment of the Nature Markets Framework 2023, development of Interim Principles for Responsible Investment in Natural Capital in Scotland, and NGO efforts (e.g., the Green Finance Institute (GFI) Hive's Investment Readiness Toolkit, the Financing Nature Recovery UK initiative, and the publication of the Nature Markets Principles) have all set a foundation for the development of high-integrity natural capital markets A detailed review of initiatives underway is included in Developing High-Integrity Marine Natural Capital Markets in the UK: Report for Consultation.

WHAT DOES HIGH-INTEGRITY MEAN?

High-integrity means real measurable value is delivered for people and nature. High-integrity natural capital markets ensure the value generated by ecosystems is properly captured and understood, so that funding can flow towards their restoration and protection and benefit is delivered for local communities.

This improves investor confidence that their investments will deliver the desired outcomes and are effectively aligned with restoration and conservation efforts and wider environmental and social commitments - thus ensuring that market participants are not exposed to reputational risks associated with issues such as greenwashing, and protecting the value of the market.

To achieve high-integrity markets, robust methodologies for the quantification of natural capital and ecosystem services are required alongside effective monitoring, reporting, and verification of the outcomes achieved, so that transactions (such as the sale of credits) deliver clear, lasting and additional environmental and social improvements.[17]

To ensure local communities benefit, they must be involved in decision-making around the use of natural capital and the design of associated projects.

> **COMMUNITY PARTICIPATION AND BUY-IN IS ABSOLUTELY ESSENTIAL –** A LACK OF COMMUNITY INVOLVEMENT AND UNDERSTANDING CAN BE A HUGE BARRIER TO GETTING PROJECTS OFF THE GROUND.
>
> **Paul Renfro** Pembrokeshire Coastal Forum

17 HM Government (2023) Nature markets: A Framework for Scaling up Private Investment in Nature Recovery and Sustainable Farming.

HIGH-INTEGRITY MARINE NATURAL CAPITAL MARKETS...

PEOPLE

- Incentivise development of projects through a fair price
- Provide measurable financial and non-financial benefits for coastal communities and stewards of marine natural capital
- Are transparent and enable a wide range of stakeholders, active in different sectors, to engage and participate

PLANET

- Are based on robust and up-to-date scientific analysis
- Are structured in a way that considers the unique attributes and challenges of the marine environment
- Are integrated with terrestrial natural capital markets to ensure continuity and synergies across ecosystems

INTERNATIONAL CONTEXT

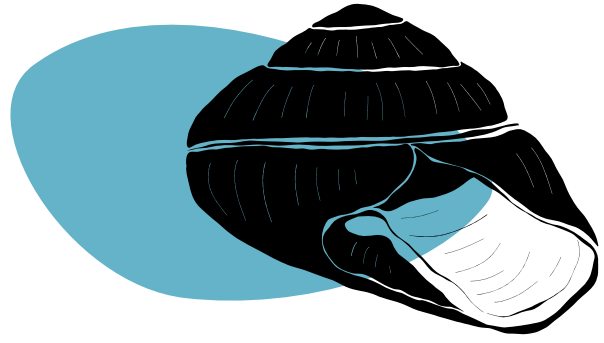
The ocean agenda has recently received increased international attention across the public and private sector. Major announcements at COP28 in December 2023 highlighted growing ambition for financing high-integrity restoration and conservation efforts. For example, 21 countries endorsed the Mangrove Breakthrough Initiative to deploy US$4 billion to restore and protect 15 million hectares of mangroves by 2030.[18] The Bezos Earth Fund also pledged up to US$100 million in grants to fund Marine Protected Areas (MPAs) and other conservation efforts across Pacific Island States.[19] In the context of these funding commitments, the COP28 Dubai Ocean Declaration emphasised the need for ocean science and observations to urgently improve monitoring, reporting and verification (MRV) for ocean-based climate action.[20] Countries also increasingly reference the ocean in updated nationally determined contributions (NDCs), with 80 countries including coastal and marine nature-based solutions for mitigation and adaptation efforts.[21]

18 Mangrove Alliance (2023) A Breakthrough Moment for Mangroves: Delivering Global Action on Mangrove Restoration and Protection.
19 Chandrasekhar, A., D. Dunne, O. Dwyer, V. Quiroz, G. Viglione (2023) COP28: Key Outcomes for Food, Forests, Land and Nature at the UN Climate Talks in Dubai.
20 Manuell, R. (2023) Dubai Ocean Declaration Urges Robust Monitoring Standards for Blue Carbon Removals.
21 Lecerf, M., D. Herr, C. Elverum, E. Delrieu, L. Picourt (2023) Coastal and Marine Ecosystems as Nature-based Solutions in New or Updated Nationally Determined Contributions.

However, significantly more investment must be delivered at a global scale to prevent further loss and achieve recovery of our coastal and marine systems. A UN Environment Programme (UNEP) review of projects found that donor governments and international bodies still contribute the most to seascape restoration projects. NGOs and governments remain the largest recipients.[22] Innovative finance for marine and coastal systems has accelerated through debt-for-nature swaps in Ecuador[23] and Belize,[24] as well as leading private-sector and blended finance funds such as the Ocean14 Capital Fund,[25] the Global Fund for Coral Reefs,[26] and the Ocean Engagement Fund led by Credit Suisse and Rockefeller Asset Management.[27] Enabling initiatives including the recently launched Blue Bond Incubator will continue to support investment.[28]

An estimated financing gap of US$149 billion per year remains to deliver Sustainable Development Goal 14 (Life Below Water). Delivering the vision for high-integrity marine natural capital markets in the UK could be a key stepping stone in advancing international efforts to bridge this gap.[29] In order to maximise access to finance at scale, the UK can learn from and align with global approaches, as well as build on its own experience in terrestrial natural capital markets. Indeed, recent research by Ecosystem Marketplace demonstrates that projects working towards UN Sustainable Development Goals were priced at an 86% premium compared to projects without any alignment.[30]

Key learnings from a range of international projects are provided in Annexe 2 and initiatives for international collaboration leading the way in this space are shared in Annexe 3.



22 UNEP-WCMC (2022) Progress, Needs, and Opportunities for Seascape Restoration.
23 Jones, M., and R. Campos (2023) Ecuador Seals Record Debt-for-Nature Swap with Galagos Bond.
24 Owen, N. (2022) Belize: Swapping Debt for Nature.
25 Ocean 14 Capital (2023) Ocean 14 Capital Fund nets Another €30M and Invests in Company Reinventing Seabed Seafood Harvesting.
26 Global Fund for Coral Reefs (2023) Coral Reef Breakthrough Launches to Prevent Extinction of One of the World's Most Threatened, Yet Most Valuable and Most Biodiversity Ecosystems.
27 Credit Suisse (2021) Credit Suisse Rockefeller Ocean Engagement Fund: Engaging for a Blue Economy.
28 Ocean Risk Alliance (2024) Blue Bond Incubator: Channelling capital toward a sustainable ocean economy.
29 Johansen, D. & R.A. Vestvik (2020) The Cost of Saving Our Ocean – Estimating the Funding Gap of Sustainable Development Goal 14.
30 Ecosystem Marketplace (2023) 2023 State of the Voluntary Carbon Markets Report.

SEVEN RECOMMENDATIONS TO DEVELOP HIGH-INTEGRITY MARINE NATURAL CAPITAL MARKETS IN THE UK

This section sets out key recommendations to develop high-integrity marine natural capital markets in the UK, and the actions that can support delivery of these recommendations.

The recommendations and actions are by no means exhaustive, but have been selected and codesigned by a wide range of organisations and individuals as the top priority. The recommendations focus on steps that are realistic, achievable and can deliver the most impact in the next few years, ensuring integrity is at the heart of market design. **They are not in any order of priority – they should be delivered in parallel in an integrated way to have the greatest impact.**

Some actions may require more time to implement, while others can be 'quick wins' and help to build momentum. Each action includes a target date for implementation through to 2030, considering need, complexity to implement and staging required where relevant. Parallel delivery of the actions will enable learnings sharing between stakeholders and across recommendations to accelerate progress towards a shared goal.

The roadmap also identifies key stakeholder groups or specific organisations to lead delivery of each action. However, collective ownership of these actions will be essential for the success of this roadmap – it is not intended that lead stakeholder groups will be solely responsible for delivery. Everyone has a part to play with all hands on deck required to accelerate action.

STAKEHOLDER GROUPS	DESCRIPTION
Private Sector	Corporates and financial institutions
Third Sector	NGOs, community groups and professional associations
Academia	Includes members of an educational institution (such as a university or institute of higher education), or the institution itself
Governments	Referring to both UK and Devolved Governments, including those departments, arm's-length bodies (ALBs) or entities operating in the policy field, responsible for formulating policies and/or with regulatory or supervisory authorities
Relevant Landowners	Organisations with ownership of land on the coast and seabed, and/or are involved in issuing leases for activities in these areas, such as The Crown Estate and Crown Estate Scotland

THE RECOMMENDATIONS

The recommendations included herein are the result of an initial step to identify the key barriers to developing high-integrity marine natural capital markets in the UK in collaboration with stakeholders from across the stakeholder groups above. The barriers were initially grouped into finance, policy and scientific categories. Through the process to identify recommendations to address these barriers, it was clear that many of the needed solutions are cross-cutting and entail a set of integrated actions across stakeholder groups and sectors.

BARRIER	RECOMMENDATION
Lack of consensus on prioritisation of target areas and approved methods for habitat conservation and restoration	RECOMENDATION 1 **Identify priority opportunities and approved methods for marine and coastal conservation and restoration**
Limited track record of pilot projects to prove efficacy of restoration methods, revenue streams and the business case for marine and coastal ecosystem services and lack of systematic monitoring over the long term to define successes and failures	RECOMENDATION 2 **Deliver seascape-scale natural capital projects through combined public and private funding**
Lack of demand drivers and obligations to pay for marine ecosystem services	RECOMENDATION 3 **Implement policy and regulatory requirements to drive demand for marine natural capital**
Nascent and fragmented nature of existing marine codes and insufficient funding for their development	RECOMENDATION 4 **Accelerate the development of UK-wide codes for marine and coastal ecosystem services**
Key data and evidence gaps including extent and condition of habitats, impacts of human activities and benefits from ecosystem services	RECOMENDATION 5 **Address critical evidence gaps for the development of marine natural capital markets**
Data is held in multiple overlapping depositories, is often poorly managed and organised and can be of varying quality	RECOMENDATION 6 **Develop publicly accessible and standardised approaches to data collection, hosting and monitoring**
There is currently a shortage of key skills and knowledge to deliver marine natural capital projects and at scale	RECOMENDATION 7 **Build the necessary skills and capacity to harness marine natural capital opportunities**

RECOMMENDATION 1

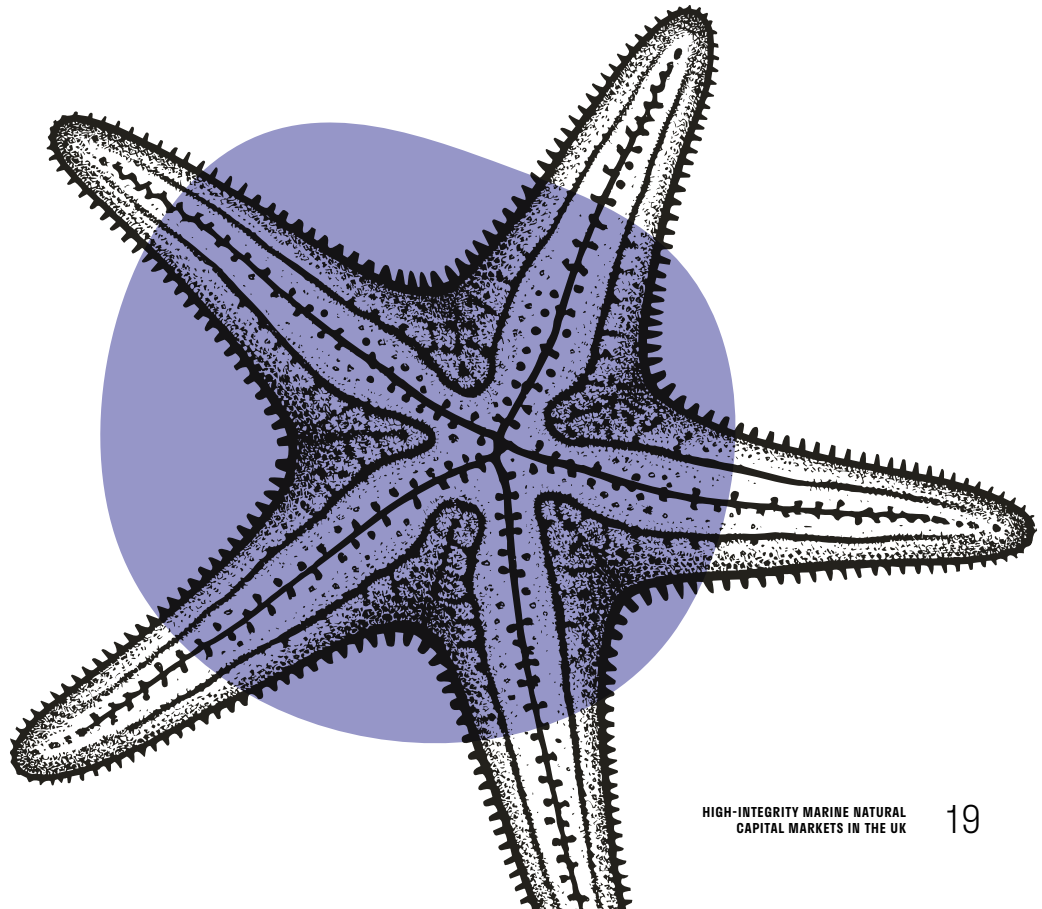
IDENTIFY PRIORITY OPPORTUNITIES AND APPROVED METHODS FOR MARINE AND COASTAL CONSERVATION AND RESTORATION

YEAR	ACTIONS	LEAD STAKEHOLDERS[31]
2025	Identify clear government leads to agree on priority areas for marine and coastal protection and restoration	**Governments**
	Collate existing opportunity mapping initiatives	**Governments, Landowners, Third Sector**
	Progress ongoing marine spatial planning processes including greater consideration of natural capital in decision making	**Governments**
2026	Identify near-term priority areas for conservation and restoration projects	**Governments, Landowners, Third Sector, Academia, Private Sector**
	Engage communities to confirm support for spatial prioritisation and iterate priority areas based on feedback	**Governments, Private Sector, Landowners, Third Sector**
2027	Publicly communicate opportunity mapping of priority areas for conservation and restoration	**Governments, Third Sector**
	Collate, approve and promote restoration methods published in a "library" of methods	**Governments**

31 The identification of lead stakeholders is not intended to be conclusive or to suggest that other stakeholders should not be active in delivery.

There is currently limited consensus or information on priority areas to deliver marine natural capital projects. Some efforts are happening in a disparate way and in areas which may not provide the greatest impact or bring benefits to communities. This means that resources may not be allocated where they are needed most and actors may not be joined up in taking collective action. Identification of priority areas for conservation and restoration projects will be critical for high-integrity market development by facilitating access to areas suited for project development and providing a clear steer to practitioners on how they can deliver the greatest benefit. Some opportunity mapping initiatives led by government, NGOs, The Crown Estate, Crown Estate Scotland and landowners are already underway, alongside updates to national and regional marine plans.

Resulting spatial guidance should clarify where market-based mechanisms can help deliver public targets for marine and coastal conservation and restoration. Guidance could be used in updated statutory marine planning processes and leasing rounds to better reflect net zero and nature recovery ambitions in decision-making. This will both help project developers better understand where they can deliver high-integrity projects with a strong chance of success and community support, as well as send a supply signal to potential investors and off-takers on the scale of the opportunity.



INITIATIVES ALREADY UNDERWAY

THE CROWN ESTATE WHOLE-OF-SEABED PROGRAMME

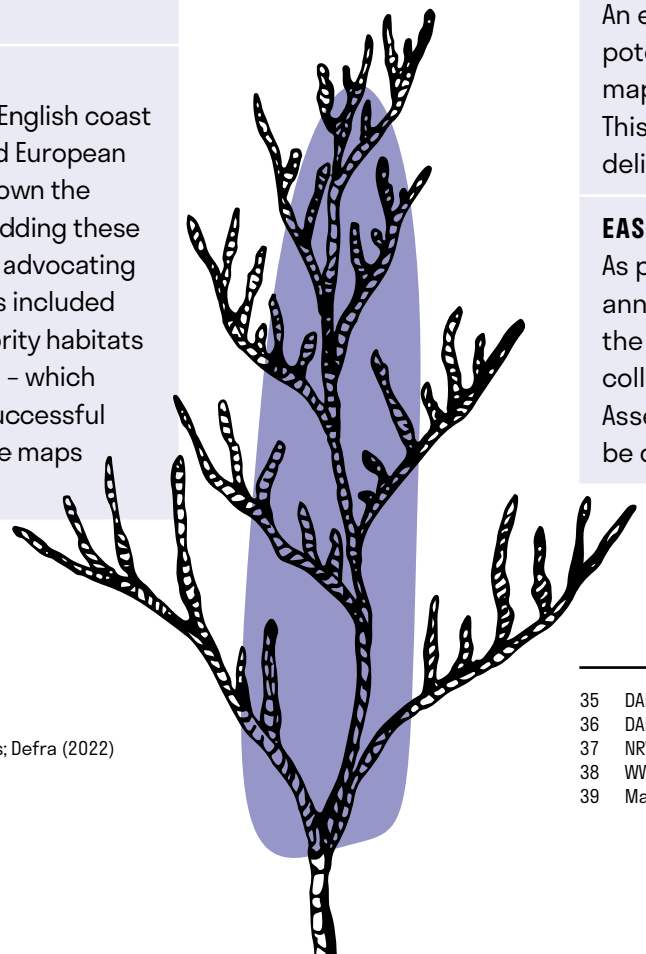
Convening key stakeholders, including government departments and industry, The Crown Estate is leveraging cutting-edge technology to build the evidence base needed to understand seabed resources. This will be used to create a Marine Delivery Routemap with partners to develop a long-term strategy for the marine space. The Routemap will help coordinate action across agencies and sectors to: deliver on Nature Recovery and Net Zero policy; build a thriving marine economy; and support onshore communities.[32]

MARINE PLANNING

In 2021, the Secretary of State for Environment, Food and Rural Affairs adopted the final four marine plans to complete coverage of UK waters, which were prepared and submitted by the Marine Management Organisation (MMO). The plans are reviewed every three years. Defra has also established the cross-government Marine Spatial Prioritisation programme focused on future use of English seas and updating England's approach to marine planning. The initiative is intended to help balance the needs of industry with protecting and restoring marine habitats.[33]

RESTORING MEADOW, MARSH AND REEF (REMEMARE)

ReMeMaRe aims to restore 15% of priority habitats along the English coast by 2043, with a focus on seagrass meadows, saltmarshes, and European native oyster reefs. The initiative has focussed on breaking down the barriers to restoration, developing tools and guidance, embedding these in policy and planning frameworks, filling evidence gaps, and advocating for the importance of estuaries and coasts generally. This has included the development of restoration potential maps for three priority habitats - seagrass, saltmarsh and European native oyster restoration – which provide a high-level, national scale overview of sites where successful restoration may be possible. A next step will be to refine these maps at a more regional or local level.[34]



NORTHERN IRELAND SEABED MAPPING

In 2020, Department of Agriculture, Environment and Rural Affairs (DAERA) commissioned the Northern Ireland 3-Dimensional Coastal Survey to deliver detailed mapping of the coastal environment, with the intention to repeat LiDAR surveys ever 3-5 years to build upon baseline data.[35] DAERA has also created a Northern Ireland Marine Mapviewer to enable visualisation of marine uses and activities.[36]

NATURAL RESOURCES WALES (NRW) MARINE RESTORATION REPORT

NRW mapped key data points including seabed type, depth, current habitats, and light levels to identify where environmental conditions could support restoration of habitats like saltmarsh, mudflats, seagrass, and reefs. The work represented a significant step forward in identifying priority areas for implementation of restoration Welsh Government is exploring how marine planning can support NRW's mapping work and guide restoration projects in relation to policy ENV_01 in the Welsh National Marine Plan and is also considering whether exemptions from requiring a marine license may be appropriate for certain restoration projects.[37]

WILDFOWL AND WETLANDS TRUST (WWT) NATIONAL MAPPING TOOL

An example of a range of ongoing NGO initiatives to map restoration potential for key coastal and marine habitats, is developing a national mapping tool to identify areas of opportunity for wetland creation. This will include coastal saltmarsh, helping to prioritise key areas for delivery of restoration projects.[38]

EAST MARINE PLAN

As part of their work to replace the East Marine Plan, MMO has announced that they will use a natural capital approach to deliver the sustainability appraisal of the East Marine Plan's replacement, and collaborate with the with Defra's Marine Natural Capital and Ecosystem Assessment (mNCEA) programme.[39] The updated plan is expected to be delivered in 2026.

32 The Crown Estate (ND) Marine: Our Approach.
33 Defra (2023) Three-year Report on the East Inshore and East Offshore Marine Plans; Defra (2022) Minister Pow Keynote Speech – Coastal Futures 2022.
34 ReMeMaRe (2023) ReMeMaRe Delivery Plan.
35 DAERA (ND) Northern Ireland 3-Dimensional Coastal Survey (Baseline Survey).
36 DAERA (ND) Marine Mapviewer.
37 NRW (2021) Restoring Marine and Coastal Habitats in Wales: Identifying Spatial Opportunities and Benefits.
38 WWT (ND) A Blue Recovery.
39 Marine Management Organisation (2024) East Marine Plan Statement of Public Participation.

SCOTLAND'S STRATEGIC FRAMEWORK FOR BIODIVERSITY
Scottish Government's consultation paper on the Strategic Framework for Biodiversity sets out its intention to publish a plan for marine and coastal ecosystem restoration, including prioritising habitats and locations suitable for restoration by 2025. It aims to develop Coastal Change Adaptation Plans which will identify opportunities to safeguard and create coastal habitats to deliver resilience and biodiversity benefits.[40]

BY 2025

Governments should each identify respective leads to drive the process of agreeing priority areas for market-based restoration and conservation interventions. Strong cross-sectoral leadership should further uphold a seascape approach, helping to align marine, coastal, and land-based planning processes sensitive to terrestrial drivers of degradation. The responsible leads would champion greater consideration of a natural capital approach to development of national marine plans and decision-making once plans are adopted.

Governments, including ALBs like the Joint Nature Conservation Committee (JNCC), in partnership with environmental NGOs and The Crown Estate should lead in collating and communicating the outputs from existing opportunity mapping initiatives, such as ReMeMaRe, ReMeMaRe's Marine Restoration Potential (MaRePo) project, Marine Spatial Prioritisation (MSPri) and NGO programmes, including WWT's work on saltmarsh mapping. For example, the MaRePo project for mapping potential subtidal habitat restoration will identify areas of soft and hard constraints and will incorporate climate change within the modelling. In England, Marine Net Gain policy will utilise developing evidence on marine restoration potential to inform a strategic approach to objectives. This can help to build a more complete view of what is already understood locally about areas where restoration and conservation interventions could best drive desired ecological outcomes and benefit local communities. Further, this mapping will be responsive to competing uses for marine and coastal space, helping to clarify opportunities for connectivity and seascape-scale delivery.

40 Scottish Government (2023) Tackling the Nature Emergency – Strategic Framework for Biodiversity: Consultation.

In parallel, significant policy processes are already underway to update marine spatial plans in the UK.

INITIATIVES ALREADY UNDERWAY

SCOTLAND'S NATIONAL MARINE PLAN 2
Scotland formally announced the decision to update and replace the current National Marine Plan in 2022, following a statutory review finding that a new Plan must address the twin crises of climate change and biodiversity loss. A final Plan is expected to be in place by 2026.[41]

NORTHERN IRELAND'S DRAFT MARINE PLAN
DAERA published a revised Statement of Public Participation on the draft Marine Plan in 2022. Following this consultation period, the Marine Plan will be published in its final form and adopted.[42] This process can now progress following the reestablishment of the executive in Northern Ireland. The final report of the Northern Ireland Marine Natural Capital (NI-MANACA) project also provided a baseline assessment of Northern Ireland's marine natural capital and developed an innovative decision support tool to inform marine spatial planning.[43]

WELSH NATIONAL MARINE PLAN
Under the existing Marine Plan in Wales, Welsh Government is focussed on bringing greater spatial certainty to policies in support of plan implementation. This includes supporting NRW mapping work to guide restoration projects in relation under policy ENV 01. Welsh Government will commission an independent review of marine planning approaches to inform future planning. [44]

These processes will underpin delivery of the other recommendations over the long-term, including in the context of the UK Marine Policy Statement. In the short term, Governments should ensure marine spatial planning processes include robust stakeholder engagement to deliver a just transition for coastal communities.

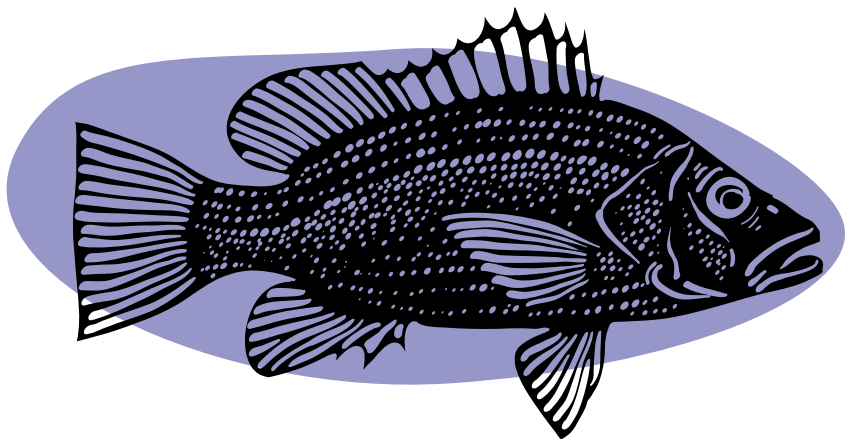
41 Scottish Government (2023) National Marine Plan 2: Strategic Environmental Assessment Scoping Report.
42 DAERA (ND) Marine Plan for Northern Ireland.
43 Burdon, D., et al. (2023) An Assessment of Northern Ireland's Marine Natural Capital (NI-MANACA).
44 Welsh Government (2023) Marine Planning: How We are Developing Policies for the Sustainable Use of Our Seas.

BY 2026

Building upon the initial work to co-develop plans for marine and coastal spaces, Governments and other key delivery agencies should share an initial view of near-term priority areas for conservation and restoration projects, articulating their intended contribution towards achieving broader statutory targets. This will be critical to enable development of a robust project pipeline without waiting for delivery of finalised marine spatial plans. Governments and local NGOs should then partner on an iterative process of engagement with stakeholders to confirm their support for proposed spatial prioritisation. Robust co-development of opportunity mapping with stakeholders will build credibility and long-term support for the emerging conservation and restoration priorities – building confidence amongst investors and market actors in the permanence of projects.

BY 2027

Governments should communicate the outcomes of the process as widely as possible. Existing coalitions like the UK Blue Carbon Forum, the Wales Coast and Seas Partnership (CaSP), the Marine Natural Capital Navigators (within the Scottish Forum on Natural Capital), and the Northern Ireland Coastal and Marine Forum can further help socialise these findings and engage private sector actors on the clear opportunity for investment and project development. Governments should also recommend approved restoration methods as best practice in order to fast track project development, for instance by publishing a 'library' of approved methods. This process should help ensure restoration efforts and methods embed climate change considerations to underpin permanence of outcomes. Delivery agencies should take account of evolving frameworks and co-develop plans for the delivery of near term prioritised projects.



RECOMMENDATION 2

DELIVER SEASCAPE-SCALE NATURAL CAPITAL PROJECTS THROUGH COMBINED PUBLIC AND PRIVATE FUNDING

YEAR	ACTIONS	LEAD STAKEHOLDERS
2025	Establish UK "buyers" and "sellers" alliances	**Private Sector**
2026	Identify data needs for investment and communicate requirements to project developers	**Private Sector:** Buyers' Alliance
	Identify suitable sites for seascape-scale pilots that match buyer and investor needs, informed by identified priority areas	**Private Sector, Third Sector, Landowners:** Sellers' Alliance, The Crown Estate, Crown Estate Scotland
	Create a pooled public and private grant funding pot to deliver pilots and prove the business case for marine natural capital projects	**Private Sector, Third Sector, Governments:** Buyers' & Sellers' Alliance; Public, Private and Philanthropic Funders
	Share knowledge from pilots to build data and evidence, showcase best practice restoration methods, enable policy refinement and develop skills and capacity	**Private Sector, Third Sector, Landowners:** Buyers' and Sellers' Alliance, The Crown Estate, Crown Estate Scotland
2027	Develop central brokerage/trading platform	**Private Sector, Third Sector:** Sellers' Alliance
2030	Design and establish risk transfer mechanisms to scale up investment	**Private Sector, Governments:** Financial Institutions and Governments

Given the diversity of marine and coastal natural capital and ecosystem services, there is a need to demonstrate the technical and financial feasibility of various types of marine natural capital projects. In the early stage of the market, projects will likely require grant funding from public and private sources to prove the business case for payments for marine natural capital outcomes. Dedicated funding is needed to develop robust business cases, including covering costs of obtaining professional advice on the technical, legal and financial aspects to deliver 'investment ready' projects and market environmental benefits to potential buyers and investors.

> **WE SIMPLY NEED REAL-WORLD EVIDENCE,** AND WE CAN ONLY ACCELERATE THIS THROUGH PROOF-OF-CONCEPT PILOT PROJECTS THAT CAN BE EXECUTED WITH SUPPORT FROM BOTH PRIVATE AND PUBLIC CAPITAL.
>
> **Joost den Haan** PlanBlue

'Seascape scale' initiatives are larger scale projects that span multiple habitats and whole geographies, for instance the Solent Seascape Project.[45] Such pilots will enable evidence collection of a range of ecological benefits and can help demonstrate scalability. Over the long-term, additional market infrastructure should be developed to enable connection between buyers and sellers and flows of repayable finance.

Efforts are already under way to develop international groups of carbon buyers; for instance, the Business Alliance to Scale Climate Solutions has developed a Blue Carbon Buyers Alliance. Similar UK-level, dedicated buyers' and sellers' alliances could facilitate a communication of needs to ensure these seascape scale pilots provide the necessary data to meet buyer and investor needs in the UK and are joined-up with international initiatives.

45 Solent Seascape Project (ND) Solent Seascape.

INITIATIVES ALREADY UNDERWAY

BLUE CARBON BUYERS' ALLIANCE

Convened by Business for Social Responsibility (BSR), the international Blue Carbon Buyers' Alliance aims to support early-stage mangrove, seagrass and saltmarsh projects. These will serve as proof-of-concept initiatives with sufficient potential runways to scale, with a focus on demonstrating high-integrity practices in alignment with High-Quality Blue Carbon Principles and Guidance[46] launched at COP27. Businesses may pledge commitments to purchase a certain volume of credits or contribute a fixed level of funding. The Alliance also allows philanthropic funders to support early-stage projects, welcomes collaboration with government, and establishes partnerships with project developers on the supply side.[47] A similar model could be deployed in the UK to support development of marine natural capital markets.

BY 2025

Over the short term, leading interested stakeholders should convene UK-wide working groups, or alliances, for natural capital 'buyers' and 'sellers'. A buyers' alliance would consist of corporates interested in purchasing marine natural capital outcomes, while a sellers' alliance would include project developers involved in the development of marine natural capital projects.

The buyers' alliance should agree and communicate the key data needs for investment and purchasing decisions to the sellers' alliance. In collaboration with The Crown Estate and Crown Estate Scotland, the seller's alliance should develop pilots, where possible within the priority areas identified in **Recommendation 1.**

46 World Economic Forum, Friends of Ocean Action, the Ocean Risk and Resilience Action Alliance, Salesforce, The Nature Conservancy, and Conservation International (2022) High-Quality Blue Carbon Principles and Guidance: A Triple-Benefit Investment for People, Nature, and Climate.

47 Business Alliance to Scale Climate Solutions (2021) Blue Carbon Buyers Alliance Concept Note.

INITIATIVES ALREADY UNDERWAY

SCAMP

The Solway Coast and Marine Project (SCAMP), delivered by Dumfries and Galloway Council and the Solway Firth Partnership, aims to increase understanding of coastal and marine natural capital and undertake interventions to restore and expand key habitats at a seascape scale across the Solway Firth. The project is currently engaging with local communities, landowners, buyers and other stakeholders, and aims to establish a marine research centre to pilot approaches for restoration.[48]

NATURE NORTH

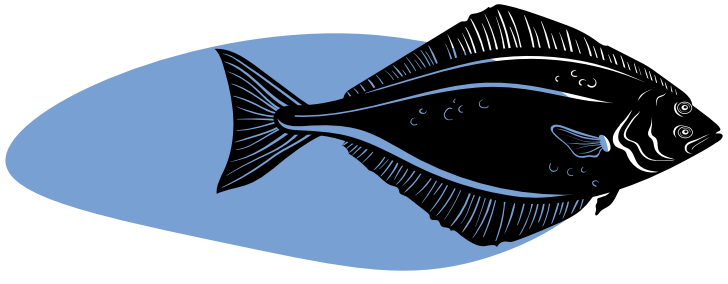
Nature North is working to create a set of business cases for nature recovery in the North of England. An investable proposition in development focuses on the Northern coasts and estuaries, with activities including saltmarsh restoration, mariculture development, sustainable fishing initiatives and ecotourism.[49]

SMEEF

Scotland's Marine Environment Enhancement Fund (SMEEF) supports projects and activities that recover, restore or enhance the health of marine and coastal habitats and species. Launched in 2022, the fund has distributed £3.3m to 45 projects. Recent grants have covered seagrass, native oyster, and cetacean restoration and enhancement.

BY 2026

Following the identification of priority pilot sites, a pooled grant funding pot for pilot delivery should be created to aggregate funding from public, private and philanthropic sources to enable delivery of pilots at a seascape scale, specifically targeted at addressing buyers' data needs.



48 Solway Firth Partnership (2023) Marine Natural Capital – Dumfries and Galloway.
49 Nature North (2024) Northern Coasts and Estuaries - Nature North.

The design of the pooled funding pot could build on existing models across devolved nations including:

- The Wales Coasts and Seas Partnership (CaSP Cymru) Blue Investment Working Group, creating a project pipeline and identifying a range of funding sources.
- The Nature Networks Fund in Wales, improving the condition, connectivity and resilience of marine, freshwater and terrestrial protected sites. It also provides funding for capacity building with a focus on investment readiness, to support the delivery of a future pipeline of projects.
- The Natural Environment Investment Readiness Fund (NEIRF) in England, providing grants to develop projects that can attract private investment into nature markets.
- The Scottish Marine Environmental Enhancement Fund (SMEEF) in Scotland, providing funding for marine enhancement projects, distributing £3.3m so far.
- DAERA's ongoing Environment Fund 2023 – 2028, which supports projects that help deliver key environmental outcomes across Northern Ireland.

The data and evidence collected in the pilots can be shared by the sellers' alliance, The Crown Estate and Crown Estate Scotland, and place-based initiatives, such as Blue Natural Capital Labs, to support refinement of policy and regulation identified in **Recommendation 3.** The data collected from pilots will also enable further development and refinement of codes and policy on the stacking/bundling rules for ecosystem services.

INITIATIVES ALREADY UNDERWAY

MARINE RECOVERY FUND:

The Energy Act 2023 sets out the powers of the UK government to develop a Marine Recovery Fund (MRF). The MRF will be an optional mechanism for offshore wind developers, which will be able to pay into it in order to discharge their compensation requirement(s) as part of receiving their development consent order (DCO) for unavoidable adverse environmental effects on an MPA. The fund will then be used to support marine and coastal restoration in order to meet these compensation requirements. Design of the MRF is still underway.[50]

50 BEIS, DESNZ (2023) Energy Security Bill factsheet: Offshore wind environmental improvement package.

BY 2027

Following the funding of key seascape-scale pilots, the sellers' alliance should establish a central brokerage/trading platform to facilitate sales of environmental services, create cost efficiencies and increase market activity. A centralised platform will enhance transparency in the market and underpin its integrity, for example, by helping to ensure credits and the outcomes they represent are only sold once. This can build on existing models such as Projects for Nature.

INITIATIVES ALREADY UNDERWAY

KANA EARTH'S HUB AND SEED PLATFORMS

Kana Earth has developed a digital platform for use by natural capital project developers, investors, and off-takers of credits. Asset and investment managers can use the 'Seed' platform to manage investments, while the 'Hub' platform is aimed at project developers, verification and validation bodies, and codes and standards developers. Kana Earth has further built out a publicly-facing directory of projects, enhancing transparency into the market.[51]

PROJECTS FOR NATURE

Projects for Nature has built partnerships with businesses, NGOs, government, and other stakeholders to develop a portfolio of high-integrity projects. These are made available to businesses interested in donating through the platform to facilitate identification of project opportunities aligned with funder objectives. [52]

BY 2030

In early-stage market development, risk transfer mechanisms are needed to de-risk private investment in project development and implementation until revenue generation is certain and predictable. This can include strategies and mechanisms, such as insurance, guarantees or first loss capital, that aim to reduce, mitigate or transfer the financial risks of the investment through ensuring a certain level of financial return or absorbing losses. The Governments and other patient funders should provide first-loss capital, guarantees or concessionary capital to leverage investment from institutional investors.

51 Kana Earth (2023) The Platform to Unit Natural Capital Creators, Investors and Buyers, and Scale the Sector.
52 Projects for Nature (2024) What is Projects for Nature?

RECOMMENDATION 3

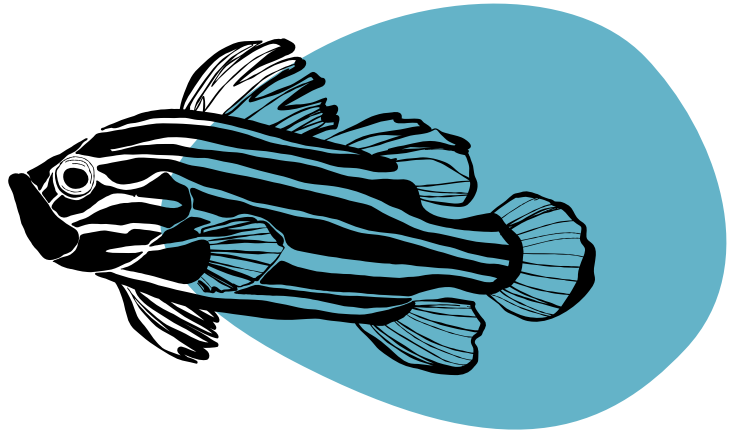
IMPLEMENT POLICY AND REGULATORY REQUIREMENTS TO DRIVE DEMAND FOR MARINE NATURAL CAPITAL

YEAR	ACTIONS	LEAD STAKEHOLDERS
2025	Convene a working group to develop UK-aligned marine offsetting approaches	**Governments:** JNCC and other ALBs
	Include consideration of terrestrial impacts on the marine and coastal environment in policymaking and strengthen mitigation requirements related to water quality	**Governments**
2027	Establish clear guidance on how development offsetting mechanisms should be delivered	**Governments**
	Include blue carbon habitats in the UK Greenhouse Gas (GHG) inventory and NDCs	**Governments:** Department for Energy Security and Net Zero (DESNZ)
	Clarify how corporates should report on blue carbon with clear national guidance on carbon accounting and claims	**Governments:** DESNZ
	Expand terrestrial water quality markets to require mitigation of impacts at source	**Governments**
2030	Include blue carbon habitats in the UK GHG inventory and NDCs	**Governments:** DESNZ

Policy and regulatory requirements are critical to support the development of markets by creating demand drivers for natural capital, enabling revenue generation and driving more capital into coastal and marine ecosystems, while ensuring market integrity. In England, implementation of the Marine Net Gain policy could support the growth of a significant market for marine natural capital restoration, as developers would need to go beyond existing requirements, to limit impacts from development provide a net environmental gain. In devolved nations, the integration of policy may take effect differently. For example, at present the Welsh National Marine Plan sets out the mitigation hierarchy for marine developments and articulates criteria for mapping Strategic Resource Areas, in order to enable planning decisions to take formal account of competing sectoral interests and environmental constraints. The Welsh Government is also currently consulting on plans to integrate the environment in policy and decision-making by embedding environmental principles into law, establishing a new environmental governance body and setting new biodiversity targets.[53]

Clear guidance and alignment on any development offsetting approaches between nations is needed to provide certainty to both project developers and the private sector. Additionally, the integration of the UK's blue carbon in GHG inventories and the UK NDCs could encourage greater public and private sector funding for the UK's blue carbon ecosystems.

Currently, there is limited integration between terrestrial and marine policy. The considerable impact of land-based pollution on the health of marine ecosystems increases the vulnerability of marine natural capital projects, creating challenges in designing projects with permanence. Developing more effective policy to address land-based pollution will help reduce negative terrestrial impacts on marine natural capital and is likely to increase market certainty that benefits from marine natural capital projects can be maintained over long time periods.



53 Welsh Government (2024) Environmental Principles, Governance and Biodiversity Targets: White Paper.

A NOTE ON OFFSETTING,[54] CREDITS & COMPENSATION[55]

The UK and devolved governments are developing approaches that ensure developers and other stakeholders follow the mitigation hierarchy in relation to any degradation of marine and coastal ecosystems. Any residual impact which cannot be avoided or mitigated, should be compensated for or offset through the use of credits or other approaches linked to the specific impact incurred.

Compensation has a specific meaning related to habitat regulation assessment (HRA) derogations. Offsetting of residual impacts can take a variety of forms, but is most effective when directly linked to the type and location of the impact being addressed and when it delivers a net positive uplift over the existing baseline (thereby leaving the environment in a better state than before the impact).

BY 2025

JNCC and other ALBs, or another convenor should establish a UK-wide working group to design aligned policies for net positive impacts from development and other activities in the marine environment. This includes alignment on the activities that will be included, the evidence base and monitoring requirements, impact assessment and monitoring approaches and role of MPAs in enabling delivery.

Governments should also consider the inclusion of specific requirements to mitigate impacts on the marine and coastal environment within policy and regulation related to wastewater discharge, agricultural and manufacturing inputs and other land-based sources of pollution.

In order for projects to generate revenue sufficient to cover costs, there is often a need for stacking of revenues or bundling of outcomes, such as biodiversity and coastal defence.[56] As policies and regulations are developed, Governments should provide clear guidance on rules around stacking of multiple types of ecosystem service payments, and how compliance and voluntary markets should interact, in order to increase certainty around revenue opportunities available to support marine restoration and conservation projects. Guidance should be aligned to the British Standards Institute (BSI) Nature Investment Standards Programme.

54 IUCN Biodiversity offsets - resource | IUCN.
55 UK Government (2023) Habitats regulations assessments: protecting a European site.
56 Stacking refers to when separate credits or units are issued for different ecosystem services from the same piece of land, and bundling refers to a single credit or unit which delivers a bundle of environmental benefits.

The 2023 Green Finance Strategy outlines the government's commitment to consult in the coming months on further policy interventions to help grow high-integrity voluntary carbon and nature markets, and set out next steps and proposals for developing nature markets and assurance arrangements so that investment schemes can be assured against BSI standards.

INITIATIVES ALREADY UNDERWAY

MARINE NET GAIN

UK Government published its response to the public consultation on the principles of Marine Net Gain in 2023, clarifying it will only apply to developments below the mean low water mark in England. Key next steps in its development will include the creation of an assessment framework for Marine Net Gain delivery, implementation of proof-of-concept projects, development of detailed supporting policy, a full cost-benefit-analysis, and determination of legislative powers.[57] This will drive demand for high-integrity marine restoration projects.

UKBCEP

The The UK Blue Carbon Evidence Partnership (UKBCEP) published its Evidence Needs Statement in 2023, identifying five blue carbon objectives where further evidence is needed to advance commitments. The report further specified five interconnected categories of specific evidence gaps to be addressed in support of these objectives. Partners will next work through the initiative to develop a roadmap for inclusion of coastal wetlands in the UK GHG.[58]

SOURCE TO SEA

NatureScot, the Scottish Environmental Protection Agency, and the University of Stirling recently published a report grounded in robust stakeholder engagement exploring opportunities for more integrated management from land to sea in Scotland. Building on a review of Scottish policy, the report's key recommendations included better integrating marine and land planning processes, connecting existing data sets, and continued dialogue across stakeholders to improve coordination.[59]

57 Defra (2023) Consultation on the Principles of Marine Net Gain: Consultation Outcome Government Response.
58 UK Blue Carbon Evidence Partnership (2023) Evidence Needs Statement.
59 NatureScot (2023) Source to Sea : Enabling Coherent, Efficient and Synergistic Outcomes.

CONSULTATION ON LEGISLATION TO FACILITATE MARINE NATURE RESTORATION

Scottish Government is consulting on legislative proposals to address two barriers to scaling restoration projects: (1) challenges around securing licenses, permits, and consents for restoration; and (2) lack of a clear mechanisms to protect habitats and species once restored. They are considering two proposals to address these challenges: (1) introduce a registration process for restoration projects below a certain threshold, rather than requiring a licence; and (2) enable Scottish Ministers to apply Marine Conservation Orders to protect habitats or species under restoration.[60]

BY 2027

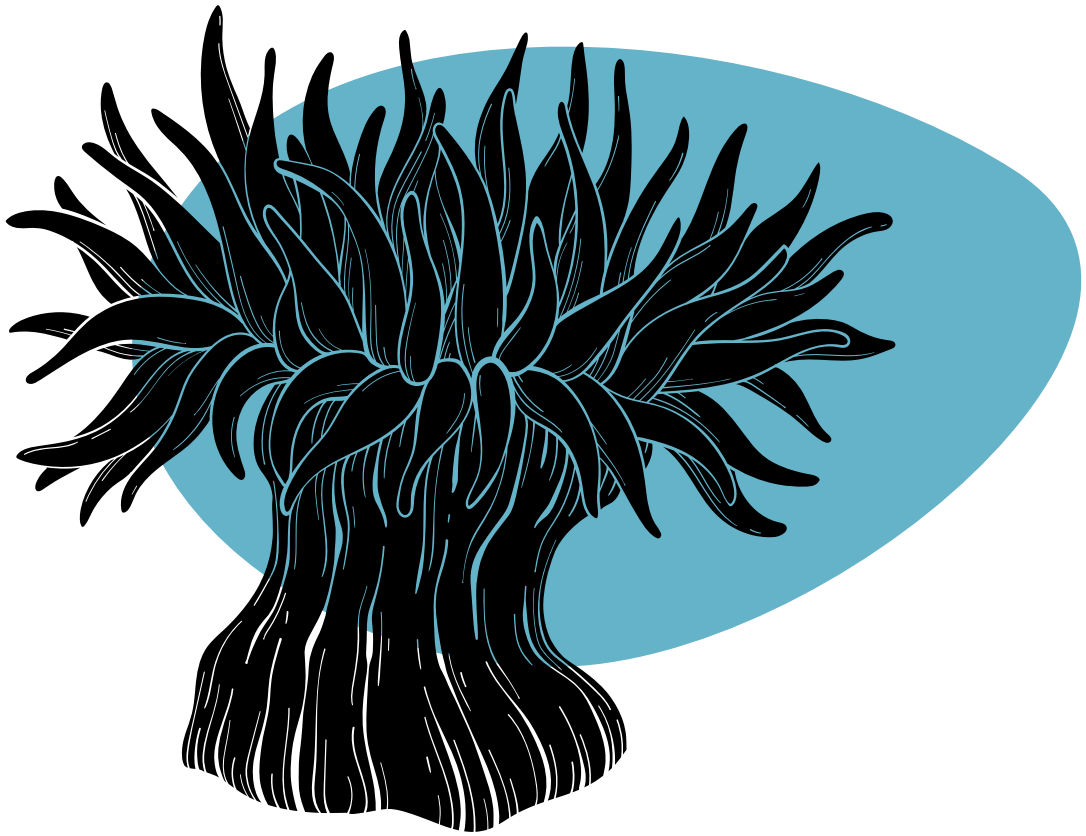
Governments should publish and clearly communicate guidance on developing compensatory measures for MPAs. This guidance should be broadly aligned across the UK nations (based on the working group outputs) to create a coherent regulatory landscape, while adopting locally-appropriate devolved approaches, and should include how compensation measures for MPAs will operate alongside nation-specific offsetting policies, such as Marine Net Gain in England.

Building on existing work carried out by mNCEA, there is also a key role for Department for Energy Security and Net Zero (DESNZ) to decide on the inclusion of saltmarsh and seagrass in the GHG inventory, with the UK Blue Carbon Forum and UK Blue Carbon Evidence Partnership (UKBCEP) playing a supporting role of providing an evidence base. Including blue carbon in the UK's GHG inventory will elevate these environments as a policy priority, helping to secure further public funding for their restoration and removal of anthropogenic pressures. Partners will next work through the initiative to develop a roadmap for inclusion of coastal wetlands in the UK GHG inventory.

60 Scottish Government (2024) Facilitating Marine Nature Restoration through Legislation: Consultation.

If it is possible for blue carbon habitats to be included in the GHG inventory and NDCs, it will be important for Governments to develop guidance and frameworks, building on 2019 Environmental Reporting Guidelines, for reporting on blue carbon emission reduction claims. This will enable corporates to have confidence to take action on their environmental impact, including via investment in marine natural capital projects. Guidance on blue carbon accounting will also reduce the potential for green-washing and support the development of high-integrity marine natural capital markets.

To improve water quality, the emphasis should be on developing markets for preventing pollution entering marine areas through point-source or diffuse pollution from terrestrial activities, as a priority over ex-post remediation. This action builds on existing policy and regulation such as the Plan for Water in England, Source to Sea in Scotland, The Water Resources (Control of Agricultural Pollution) (Wales) Regulations 2021, and advocacy by NGO actors in Northern Ireland.



RECOMMENDATION 4

ACCELERATE THE DEVELOPMENT OF UK-WIDE CODES FOR MARINE AND COASTAL ECOSYSTEM SERVICES

YEAR	ACTIONS	LEAD STAKEHOLDERS
2025	Ensure marine expertise feeds into the BSI's Nature Investment Standards Programme to deliver alignment around priority codes and how they should be structured	**Private Sector, Governments:** BSI & Governments
2026	Coordinate resourcing and development of priority codes in alignment with broader BSI Nature Investment Standards Programme	**Third Sector, Governments:** UKBCEP; UK Centre for Ecology and Hydrology (UKCEH), Governments
	Set up expert coalitions to develop and pilot codes across all nations to ensure community engagement and geographic suitability	**Third Sector, Academia, Governments:** Scientific Community, NGOs, Academia, Government Scientists
2027	Include marine and coastal codes within verification and approval processes to signal high-integrity codes to the market	**Private Sector, Governments:** BSI & Governments

High-integrity markets will require robust methodologies or 'codes' to quantify the breadth of ecosystem services delivered by marine and coastal ecosystems. Methodologies will provide detailed quantitative instructions on how projects can meet the requirements of standards for what must be proven to ensure high-integrity, independently verified units. Standards should further set out integrity requirements, such as demonstration of project benefits to communities, which will require agreeing key social metrics. Investor and off-taker confidence in markets will depend upon the scientific credibility of these codes and resultant project track records. The codes will also need to be practical and cost-effective to use in the UK context, while demonstrating alignment with international best practices.

Recognising the nascent and fragmented nature of existing codes, widely seen as a key barrier to market growth, Defra, as well as NatureScot and the National Lottery Heritage Fund, have supported the development of new methodologies and codes for nature investment through the Natural Environment Investment Readiness Fund (NEIRF) and Financing Investment Ready Nature in Scotland (FIRNS) schemes respectively, but more remains to be done. Partnerships and scientific bodies like the UKBCEP and UKCEH, which is currently leading on the development of the Saltmarsh Code, have an important role to play in supporting their development. The BSI Nature Investment Standards Programme has been established to provide standards so that mature codes can be used to provide the basis for high-integrity nature investment schemes.

> **CONSENSUS ON CODES FOR ECOSYSTEM SERVICES IS CRUCIAL.** THAT'S WHY AVIVA IS FUNDING LEADING RESEARCH THAT WILL CONTRIBUTE TO THE WIDER UNDERSTANDING OF HOW SALTMARSHES CAN HELP MOVE THE UK TOWARDS NET ZERO, BUILDING CONFIDENCE AND UNLOCKING THE INVESTMENT NEEDED.
>
> **Henrietta Stock** Aviva

INITIATIVES ALREADY UNDERWAY

CODE DEVELOPMENT

Early-stage work is already underway to explore the potential for the development of a range of codes. The Saltmarsh Code is currently the most advanced with a pilot code expected by 2025. A range of others which have been considered, but not yet developed, include a Seagrass Code, Kelp Code, Seaweed Code, Nitrogen Recycling Code, and Marine Natural Capital Code. The Wilder Carbon Standard is also exploring application to marine environments. Voluntary biodiversity crediting methodologies are also under development for marine and coastal habitats. For example, Plan Vivo and Pivotal have been working together to co-design a methodology for a new biodiversity standard, PV Nature, which is currently being piloted as part of the Solent Seascape Project.[61] Focusing on codes already under development in initial prioritisation and resourcing processes can best leverage work already underway.

BSI NATURE INVESTMENT STANDARDS PROGRAMME

BSI, the UK's National Standards Body, with funding from Defra, is designed to build consensus on the necessary standards and integrity principles for investment. BSI Flex 701 (Nature Markets – Overarching Principles and Framework) was made available in March 2024 for public consultation.[62]

BY 2025

As part of the Nature Investment Standards Programme, BSI has engaged with stakeholders on the role of marine and coastal environment in its principles and standards. Building on this initial work, Governments should deliver additional funding to expand the stakeholder engagement process already underway, to help prioritise the codes needed for marine and coastal habitats and help foster consensus around remaining areas of divergence.

61 Plan Vivo (2024) Plan Vivo Launch Pioneering Biodiversity Standard.
62 BSI (2023) Nature Investment Standards Programme.

BY 2026

The UKBCEP, with support from Governments for piloting and addressing key evidence gaps, should play a key role in developing stakeholder consensus on which codes should be prioritised for development beyond the Saltmarsh Code. Improving alignment and accelerating delivery of a shortlist of priority codes with robust research funding could help unlock private investment in marine and coastal natural capital projects.

Critically, this will benefit from piloting across all four nations to ensure the geographic suitability of codes, built on a local evidence base. Further, a just transition lens could shape the development of the codes. For example, project certification could require demonstration of best practices in stakeholder engagement, the delivery of social and economic co-benefits to local communities, and transparent and equitable benefit-sharing mechanisms.

BY 2027

As early versions of codes are developed and refined, BSI could potentially play a role in developing standards to support the use of mature marine codes for high-integrity marine natural capital projects. A transparent registry of projects developed under each high-integrity code, aligned to the central brokerage/trading platform developed under **Recommendation 2,** would strengthen confidence in nascent marine natural capital markets. The potential for integrating data on marine natural capital projects with other natural capital data, including the UK Land Carbon registry and other registries and datasets, should be explored.

RECOMMENDATION 5

ADDRESS CRITICAL EVIDENCE GAPS FOR THE DEVELOPMENT OF MARINE NATURAL CAPITAL MARKETS

YEAR	ACTIONS	LEAD STAKEHOLDERS
2025	Conduct a data audit to identify existing decision-useful data, responsive to private sector requirements and clarify remaining priority data gaps	**Third Sector, Governments, Academia:** UKBCEP, UK Blue Carbon Forum, Scottish Blue Carbon Forum, Seascape Restoration Network, Governments, Universities
2026	Deliver research funding with clear requirements to contribute to a shared evidence base while preventing duplication of data	**Private Sector, Governments:** Academic Grant Funders
	Structure leasing requirements to collect natural capital data and contribute to a shared evidence base	**Landowners**
2030	Deliver multi-disciplinary research to address key evidence gaps, prioritising needs articulated by the UKBCEP and supporting opportunity mapping	**Third Sector, Governments, Academia:** UKBCEP, Governments, Universities

Critical evidence gaps remain to be addressed to ensure the development of high-integrity marine natural capital markets is underpinned by robust scientific evidence, including baseline data on marine natural capital and data on effectiveness of protection and restoration methods. This will help ensure markets genuinely deliver net gains to biodiversity and ecosystem integrity and enhance verifiability. While additional data is needed to build confidence in how managing, protecting and restoring habitats can deliver ecosystem services, these gaps should be addressed in tandem with ongoing pilot project development.

Efforts to build the evidence base need to draw upon existing databases and initiatives, such as that led by the UKBCEP. A clear, focused research agenda can maximise the efficiency and quality of research being carried out to deliver the decision-useful data that off-takers, investors and other market actors need. This agenda will then form the basis of future research, ensuring that research and data are not duplicated, new project data contributes to a publicly available evidence base, and multi-disciplinary approaches deliver a clear understanding of social and economic considerations for market development.

INITIATIVES ALREADY UNDERWAY

SEASCAPE RESTORATION RESEARCH NETWORK
The Universities of Portsmouth, Brighton, Sussex, Surrey, and the National Oceanography Centre in Southampton, established the Seascape Restoration Research Network to facilitate collaboration with local restoration projects. The initiative is co-developing a shared research agenda with stakeholders to help achieve seascape-scale restoration through better integrating finance and biodiversity. The ongoing effort will help to focus research efforts to address outstanding evidence gaps that limit the scale of high-integrity marine natural capital markets.

SCOTTISH GOVERNMENT MARINE SCIENCE AND INNOVATION STRATEGY
The Strategy, published in 2024, sets out how science will support Scotland's Blue Economy Vision and articulates six key outcomes, including addressing data gaps, developing marine research communities of practice, fostering bold, innovative solutions and technologies, and building Scotland's ability to address the twin threats of climate change and biodiversity loss.[63]

WELSH MARINE EVIDENCE STRATEGY
Welsh Government and NRW jointly developed a strategy to define high level, strategic marine evidence priorities for Wales. The Strategy includes a framework to support the collection and improved use of marine evidence for as well as signposting to key evidence sources.[64]

63 Scottish Government (2024) Marine Science and Innovation Strategy.
64 Welsh Government (2019) Welsh Marine Evidence Strategy.

MNCEA
Cefas, Defra, the Environment Agency, JNCC, MMO, and Natural England established the mNCEA programme to run from 2022 to 2025. The programme will provide evidence, tools and guidance for policymakers to integrate natural capital approaches into decision-making. mNCEA published a first set of outputs in 2023, and ongoing efforts will help to address key evidence gaps to underpin marine and coastal natural capital approaches.[65]

UK MARINE STRATEGY ASSESSMENT
The next UK Marine Strategy assessment will be published in 2024 and provide an update on progress towards achieving Good Environmental Status. The assessment will provide clarity on key outstanding gaps where focused progress is needed to mitigate drivers of degradation and deliver restoration and recovery.[66]

BY 2025

Partnerships across scientific bodies, such as JNCC, Governments, and universities, should undertake a data audit of existing publicly available databases. These organisations already host data repositories like Marine Environmental Data and Information Network (MEDIN) and commission large-scale research initiatives like ReMeMaRe and mNCEA. Due to significant initiatives already underway in the UK, much of the data needed to progress the development of markets is already available, but it is often not accessible, nor is there a clear strategy in place to prevent duplication in data gathering. The coalition conducting the audit can consult with the buyers' alliance articulated in **Recommendation 2** to clarify the scope of the audit needed. This engagement will clarify their assessment of key data gaps and prepare the coalition to communicate priority areas with the wider research community.

65 Cefas (2023) One Year On: Cefas Generates New Tools and Evidence to Support Marine Natural Capital Programme.
66 Office for Environmental Protection (2023) OEP CEO Speaks on Marine Protection.

> IN THE UK WE HAVE WORLD-CLASS EXPERTISE IN ASSESSING AND MONITORING OUR MARINE AND COASTAL ECOSYSTEMS (NATURAL CAPITAL ASSETS), YET CONFIDENCE LIMITING KNOWLEDGE GAPS STILL REMAIN ABOUT HABITAT EXTENT AND QUALITY, THE QUANTIFICATION OF THE ECOSYSTEM SERVICES THEY PROVIDE, AND HOW ANTHROPOGENIC IMPACTS AFFECT THE DELIVERY OF THESE BENEFITS. **WE NEED A FOCUSED RESEARCH AGENDA THAT ADDRESSES THESE GAPS AND BUILDS OUR EVIDENCE BASE USING CONSENSUS AND MARKET RELEVANT APPROACHES.**

Professor Joanne Preston University of Portsmouth

BY 2026

To avoid duplication and to encourage the accessibility and visibility of research, academic grant providers and other funders could require research applicants to demonstrate that they have assessed available data relevant to their thesis against the audit, ahead of providing funding for new research. Similarly, leasing bodies, such as The Crown Estate or Crown Estate Scotland, could structure their leasing contracts with the requirement for leaseholders to collect evidence that addresses key evidence gaps and to contribute this to a shared evidence base (where suitable given potential commercial sensitivity). Leaseholders who are carrying out marine activities already could concurrently contribute data in demand, such as natural capital baselines and biodiversity impact monitoring, to build the evidence base for offsetting or compensation obligations.

BY 2030

Finally, cross-cutting and interdisciplinary research should continue to be funded and commissioned to address the evidence gaps identified by the UKBCEP and in direct response to the data audit. Key dimensions of research across these areas could include quantifying a broader range of ecosystem services delivered by marine and coastal habitats, as well as characterising the interdependencies between marine, coastal and terrestrial ecosystems and land uses. Stakeholders also emphasised the importance of accelerating knowledge sharing about best practices for successful restoration approaches. Beyond natural sciences, there are key knowledge gaps on the delivery of community benefits, such as potential for job creation, as well as community values and preferences for the marine and coastal environment. Scottish Wildlife Trust's Oceans of Value project provides an impactful example of approaches to recognise community values for the marine and coastal environment and Sea the Value, led by Plymouth Marine Laboratory, seeks to determine novel and policy relevant pluralistic values for marine biodiversity and apply these values to co-develop green investment options. [67] [68] Fundamental and applied research through projects will also play a role in contributing to higher-quality mapping of marine and coastal habitat condition and extent. This in turn could inform the opportunity mapping of high-potential project sites to inform broader marine spatial planning.

67 Scottish Wildlife Trusts (ND) Oceans of Value.
68 Plymouth Marine Laboratory (2022) Sea the Value.

RECOMMENDATION 6

DEVELOP ACCESSIBLE, STANDARDISED APPROACHES TO DATA COLLECTION, HOSTING AND MONITORING

YEAR	ACTIONS	LEAD STAKEHOLDERS
2025	Establish standards for data collection, hosting and monitoring	**Third Sector, Governments:** Seascape Restoration Research Network, UK Blue Carbon Forum, Scottish Blue Carbon Forum, UKBCEP, Governments
2026	Provide funding to establish and run a scientific coalition to improve accessibility of key databases	**Private Sector, Governments:** Database Funders & Partners
	Sign-post relevant existing data sources	**Governments, Landowners**
2027	Develop handbooks for data collection for ecosystem services, including and beyond carbon	**Third Sector, Governments, Academia:** Scientific Coalitions including Governments, Academia, and NGOs
	Provide training to practitioners and citizen scientists on data collection and marine natural capital, in alignment with agreed standards	**Third Sector:** Blue Natural Capital Labs

Integrity of new markets will depend upon transparency and verifiability, underpinned by robust data and evidence. Whilst there is a proliferation of marine and coastal data housed on databases in the UK, such as MEDIN, it can be difficult and time-consuming to locate the relevant data required. From a data storage perspective, data is often poorly managed and organised, and of varying quality. Stakeholders require both strengthened existing databases through better resourcing and management, as well as a national portal that signposts users to where data is.

From a data collection perspective, the creation of frameworks which encourage a standardised approach to data quality will be essential, from the citizen science level to the professional practitioner level. Critically, improving the accessibility and quality of existing databases is preferrable to developing a new 'data warehouse', which would be unnecessarily complex and expensive to achieve.

BY 2025

Scientific convening bodies, such as the Seascape Restoration Research Network, UK Blue Carbon Forum, Scottish Blue Carbon Forum, UKBCEP, and Government leads should establish standards for data collection, hosting and monitoring. Standards can help ensure the data needed for natural capital markets is collected, namely consistent data on the baseline of marine ecosystems, and standardised measures of ecosystem services delivered through conservation and protection intervention. This data will prove critical to develop codes as articulated in **Recommendation 3.**

A scientific convening body should bring together a group of academic experts on coastal and marine habitats and ecosystems to reach consensus on the standards, building upon previous and ongoing initiatives providing restoration guidance.

INITIATIVES ALREADY UNDERWAY

RESTORATION HANDBOOKS

Through collaboration across the Environment Agency, the Zoological Society of London (ZSL), the University of Portsmouth, Cefas, ABPMer, and other organisations, this initiative delivered restoration guidelines for native oyster reefs, seagrass, saltmarsh and restoring coastal habitats using dredged sediments.[69] Alongside, the Environment Agency and Natural England have developed restoration principles for the marine and coastal environment as part of ReMeMaRe.[70]

69 Environment Agency (2021) Restoration Handbooks Published to Give Best Practice Advice on Creating New Estuarine and Coastal Habitats.

70 Catchment Based Approach. Marine and Coastal Habitat Restoration Principles - CaBA (catchmentbasedapproach.org).

LIBRARY OF MEASURES
A newly established Scottish Government Marine Nature Enhancement Team is collaborating to deliver a library of high-impact restoration actions that can be implemented by project developers. The initiative will help accelerate access to and understanding of best practices for restoration projects, catalysing the market's ability to 'learn while doing'.

BLUE CARBON FORUM FOR WALES
There is an intention to set up a blue carbon forum for Wales. The vision for this group is to be inclusive of all with an interest in Blue Carbon in Wales, with an aim to share information and knowledge, and to accelerate the already growing body of expertise and experience in Wales.

Draft standards should then be shared for feedback from market stakeholders, particularly project developers, to ensure their practicality, before being communicated widely. Data standards could include (but are not limited to) meta-data requirements, ensuring that the data collected aligns with key targets and metrics within nature recovery strategies, establishing quality assurance and quality control for citizen science data collection, and ensuring alignment with existing marine natural capital accounting framework data approaches and sources in each devolved administration.

> **THERE'S AN OVERWHELMING AMOUNT OF DATA OUT THERE** - NOW WE NEED TO BRING IT ALL TOGETHER TO IMPROVE ACCESS AND MANAGEMENT. A NATIONAL PORTAL WOULD NOT ONLY MAKE IT EASIER TO LOCATE RELEVANT DATA BUT ALSO HELP ENSURE DATA INTEGRITY, QUALITY AND CONSISTENCY.
>
> **Jo Pike** Scottish Wildlife Trust

BY 2026

Governments and relevant bodies (i.e. Defra, DAERA, Marine Scotland, MMO, NRW, The Crown Estate or Crown Estate Scotland) could host a central page on their respective websites signposting users to data and serving as the first port of call for those seeking data in their nation. Clarifying 'where to go for what' would reduce transaction costs for project developers and continue to build market confidence in the scientific integrity of new markets. There are clear lessons to be learned from existing platforms playing similar roles for industry and policymakers, such as the Marine Data Exchange and the Offshore Wind Evidence and Knowledge Hub.

Once standards have been developed, a coalition could be formed to improve the accessibility and user-friendliness of the key databases. Given that resources like MEDIN are funded by government departments, existing funding streams could be funnelled towards the establishment of the coalition for this purpose. To generate further support for this initiative, Governments could also work with the private and wider public sector to design an innovation challenge, for example, through Scotland's CivTech Challenge Programme or with UK Research and Innovation (UKRI).

BY 2027

To ensure that the agreed standards of data collection, hosting and monitoring are upheld and followed, the same scientific coalition could develop and disseminate handbooks for data collection, guiding users on the best way to collect data on ecosystem services. Similarly, Blue Natural Capital Labs established under **Recommendation 7** could use this resource from the scientific community to offer practical and accessible training to both practitioners and citizen scientists. The dissemination of handbooks and training ensures alignment with the agreed standards from the scientific community, while supporting the development of a skilled workforce. Enhanced technical capacity across project developers will further ensure the quality of the project pipeline visible to investors and off-takers, continuing to build confidence in the market. The handbooks would need to be periodically updated as new developments emerge and as such, could be housed on a central website which facilitates easy updates.

RECOMMENDATION 7

BUILD THE NECESSARY SKILLS AND CAPACITY TO HARNESS MARINE NATURAL CAPITAL OPPORTUNITIES

YEAR	ACTIONS	LEAD STAKEHOLDERS
2025	Identify key skills gaps and training needs through survey and skills audit	**Academia, Governments:** Academia, Local Authorities
2026	Publish guidance on leasing and licensing processes to enable project delivery	**Landowners, Governments**
	Establish regional networks, or 'labs', of blue natural capital practitioners	**Governments:** Local Authorities
	Provide finance and investment readiness upskilling	**Private Sector:** Financial Institutions
2027	Develop dedicated PhD programmes and vocational courses to address key skills gaps	**Academia, Third sector**

"RESTORING OUR MARINE NATURAL CAPITAL WILL RELY ON INVESTMENT AND LOCAL COMMUNITIES WHO ARE INSPIRED TO ACT FOR OCEAN RECOVERY. **TO ACHIEVE THIS WE NEED A MULTI-DISCIPLINARY APPROACH,** WHILST PROVIDING APPROPRIATE RESOURCES, SKILLS AND TRAINING SO COMMUNITIES CAN TAKE ADVANTAGE OF NEW OPPORTUNITIES."

Robert Walsh Northern Ireland Marine Task Force

Critically, high integrity markets should deliver benefits to local communities in support of a just transition. Specialist technical skills and expertise are needed to develop marine natural capital projects and markets, presenting an opportunity for job creation and support to local economies. However, currently a shortage of skills and knowledge prevents delivery at scale. Ecological expertise and use of emerging MRV technology, as well as practical skills for effective on-the-ground delivery, will be required to deliver and maintain marine conservation projects. Financial skillsets are required to create robust business cases, engage with buyers and investors and manage long-term costs and income. As marine natural capital markets continue to develop rapidly, training and capacity programmes to build stakeholder expertise and knowledge will need to be continually updated so that workers can harness the opportunities of these markets for local communities.

The process to secure consents, permissions, leases, licenses, and other approvals required for conservation and restoration projects is not well understood in some cases and can be challenging for project developers. It can be difficult to prove the case for marine restoration projects over other seabed uses, owing to the varied and nascent nature of evolving marine natural capital markets. Current processes for approval, which were not necessarily established with marine natural capital markets in mind, may require adjustment to facilitate greater activity and investment. Further guidance and awareness raising would assist project developers and investors navigating these markets.

INITIATIVES ALREADY UNDERWAY

THE CROWN ESTATE ENGAGEMENT

In line with its objective of delivering lasting and shared prosperity for the nation, The Crown Estate is reviewing the opportunities within its remit to meet the evolving demands of varied and nascent marine natural capital markets. As part of this review, The Crown Estate is engaging with restoration practitioners and marine natural capital project developers to seek input on how their approach could best evolve over time. They are also looking to develop guidance to assist project developers with navigating the leasing process. In particular, as part of the Whole-of-Seabed programme, The Crown Estate is integrating data about areas of greatest opportunity for nature outcomes into their spatial evidence base to inform a Marine Delivery Routemap which can help identify priority areas for restoration and recovery per **Recommendation 1.**

STREAMLINING APPROVAL PROCESSES
In parallel, the Environment Agency and MMO are leading efforts to streamline the statutory licensing processes for restoration projects to help reduce the number of individual approvals needed across multiple departments, and a licensing review is similarly underway in Wales.

SMEEF RESTORATION TOOLKIT
The SMEEF Restoration Toolkit provides guidance on top questions project developers have encountered regarding permissions when developing restoration or enhancement projects in Scotland. The toolkit further helps build project developer capacity around monitoring, funding, engagement, and delivering successful restoration.

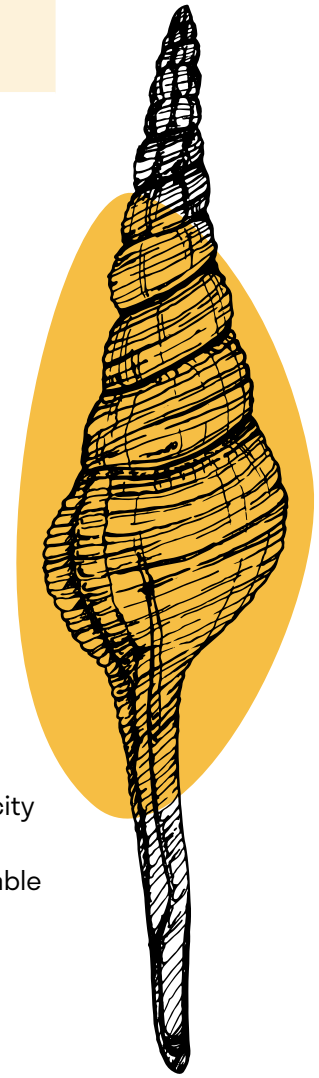
BY 2025

Universities and colleges should carry out a 'skills audit' to identify key skills gaps for the development of marine natural capital markets. This should be based on surveys of a broad range of stakeholders to cover areas such as ecological expertise, data management, green finance knowledge and skills, and project management, as well as understanding of leasing and licensing processes. This should also include critical practical skills required for the delivery of habitat protection and restoration, such as machinery and vehicle operation, construction, and navigation.

BY 2026

Building on the initial skills audit, local authorities should work with relevant universities and other research institutions to establish regional networks or 'Blue Natural Capital Labs' of existing natural capital practitioners or experts, who can support targeted local capacity building. These labs can facilitate uptake of emerging marine natural capital financing techniques grounded in local understanding and enable shared learnings. Existing models include the Sussex Bay Blue Natural Capital Lab, which aims to facilitate collaboration, research, capacity building and planning at a seascape scale.

Practitioners and financial institutions should provide finance and investment readiness upskilling, based on skills gaps identified in the audit and leveraging learnings from similar programmes including mNCEA, NEIRF and the Nature Network Fund.



INITIATIVES ALREADY UNDERWAY

SUSSEX BAY BLUE NATURAL CAPITAL LAB
The first Blue Natural Capital Lab helps to convene government, communities, and other key local stakeholders to deliver more coordinated seascape planning and project development. The Lab is connected to the broader Seascape Restoration Research Network, linking local universities to enhance coordination on research. The Lab provides a model for similar networked initiatives in other geographies.

BRIGHT TIDE BLUE ECONOMY OCEAN ACCELERATOR AND BLUE CARBON ACCELERATOR PROGRAMME
Bright Tide's accelerator programmes offer legal, financial, and scientific support for new ventures, helping entrepreneurs to build the new skills needed to succeed. They are designed to help get new innovative approaches off the ground across blue carbon and other sustainable ocean economy sectors, such as aquaculture. Improving access to funders as well as supporting innovation within marine natural capital network can help catalyse new business development.

SAMS SEAWEED ACADEMY
The Seaweed Academy was designed to help address the skills gap to scale the seaweed industry within the UK. Courses are aimed at both individuals and businesses looking to build technical knowledge or seeking accreditation for seaweed farming. The Academy is an initiative of the Scottish Association for Marine Science (SAMS) and provides a valuable model of how to build the skilled workforce needed for market development.

BY 2027

Relevant universities, colleges and third sector organisations should also design and offer a range of dedicated PhD programmes and vocational courses to address key skill needs and support the ongoing development of a skilled workforce. The development of vocational courses and apprenticeship standards could also be supplemented by the Blue Natural Capital Labs of experienced practitioners, sharing knowledge and learnings from practical project delivery.

IMPLEMENTING THE ROADMAP

The actions in this roadmap have been defined based on a consensus view of what needs to be done to develop high-integrity marine natural capital markets and to help deliver thriving, resilient ecosystems and benefits for communities across the UK.

Now we all need to pull together to ensure this roadmap is translated into real impact.

The steering group established to support the development of this initiative will lead on managing and steering key actions, to help ensure the roadmap stays on course. But successful delivery relies on everyone taking part - from local communities, local authorities, NGOs, politicians, and government departments, to project developers, buyers, funders and investors.

WE NEED YOU – THERE IS NO TIME TO LOSE.

ANNEXES

ANNEXE 1

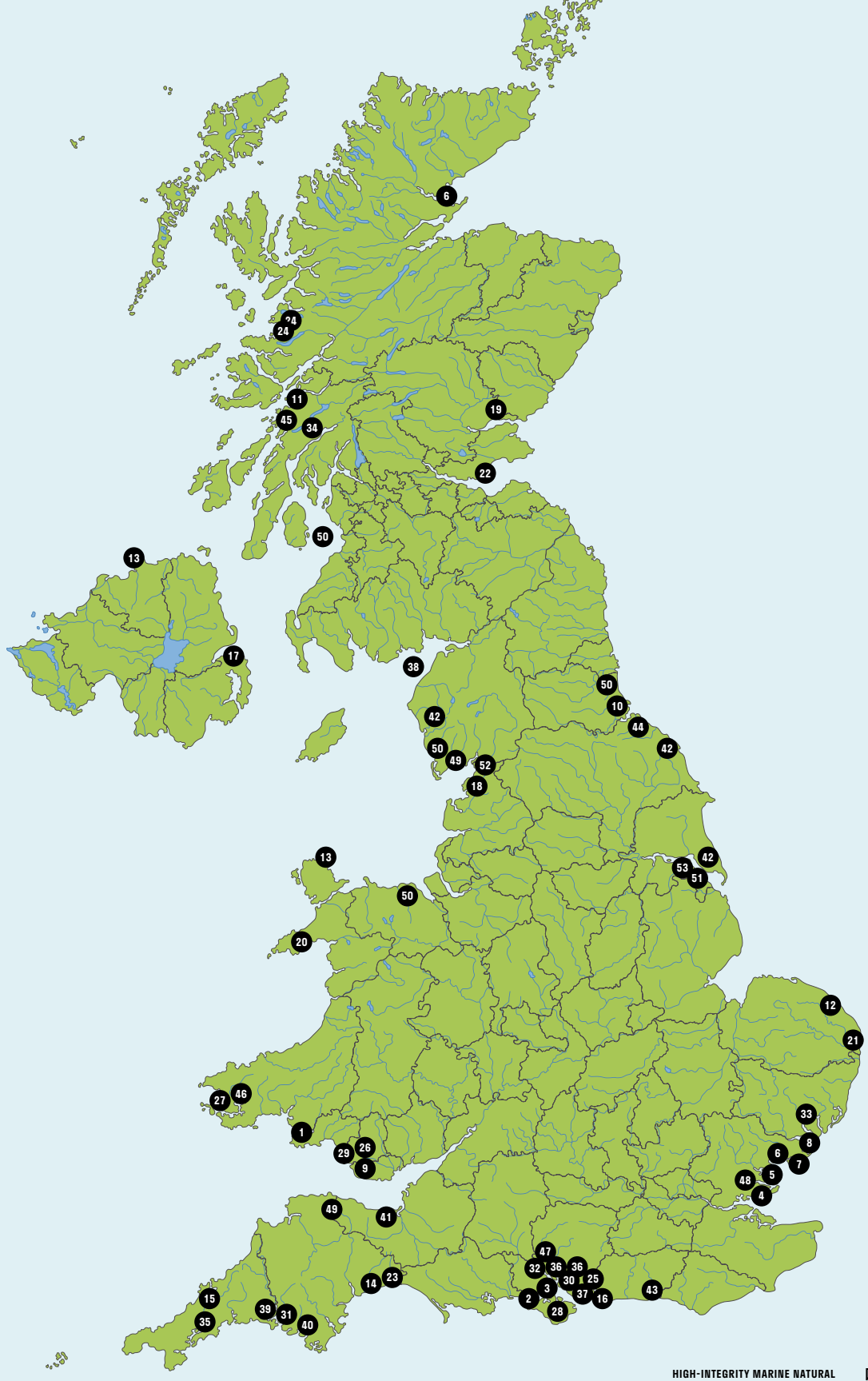
MAP OF EXISTING MARINE NATURAL CAPITAL PROJECTS IN THE UK

This project list is by no means exhaustive, but aims to give an indication of the variety of marine natural capital projects already underway around the UK.

1. Angle Bay Oyster Farm
2. Beneficial Use of Dredging in the Solent Project (BUDS)
3. Boiler Marsh restoration in Lymington
4. Catchment to Coast
5. Dengie Peninsula
6. Dornoch Environmental Enhancement Project (DEEP) native oyster restoration
7. Essex Native Oyster Restoration Initiative (ENORI)
8. Essex Wildlife Trust
9. Exploring Restoration In South Wales
10. Fish for Tees project
11. Highlands Rewilding - Tayvallich Estate
12. LIFE on the Edge
13. Lough Foyle Native Oysters
14. Lower Otter Restoration Project
15. Making Space for Sand
16. Medmerry Nature Reserve
17. Native Oyster Restoration in Northern Ireland (NONI)
18. Our Future Coast
19. Oxygen Conservation - Firth of Tay
20. Replenishing damaged seagrass meadows in Wales
21. Resilient Coasts
22. Restoration Forth
23. Ropes to Reefs
24. Salmon Scotland and Atlantic Mariculture Kelp Shelters
25. Saltmarsh Restoration Trial Project – West Itchenor
26. Project Seagrass Nursery
27. Seagrass Ocean Rescue: Dale
28. Seagrass Ocean Rescue: Isle of Wight
29. Seagrass Ocean Rescue: North Wales
30. Seagrass Ocean Rescue: Solent
31. Seagrass Restoration in Plymouth Sound
32. Seagrass Restoration in the Solent
33. Seagrass Seeds of Recovery
34. Seawilding
35. Seeding Change Together Project
36. Solent Oyster Restoration Project
37. Solent Seascape Project
38. Solway Coast and Marine Project
39. South West Partnership for Environmental and Economic Prosperity (SWEEP)
40. South West Seagrass Restoration
41. Steart Marshes
42. Stronger Shores
43. Sussex Kelp Recovery Project
44. Tees Tidelands
45. The Kilchoan Estate
46. The Wales Native Oyster Restoration Project
47. University of Portsmouth - fisheries project
48. Wallasea Island Wild Coast Project
49. Wild Exmoor
50. Wild Oyster Project
51. Wilder Humber
52. WWF Saltmarsh Research
53. Yorkshire Wildlife Trust - Spurn Point

UK-WIDE PROJECTS

- Blue Carbon Mapping Project
- Nestle and Oyster Heaven - Native Oyster Restoration Biodiversity Credits
- Operation Oyster
- Restoration of Seagrass for Ocean Wealth (ReSOW UK)
- Restoring Meadow, Marsh and Reef (ReMeMaRe)
- WWT Saltmarsh Restoration & WWT's Blue Recovery



ANNEXE 2

INSIGHTS FROM INTERNATIONAL EXPERIENCE

International experience is growing across the key recommendation areas to be progressed in the UK, with emerging examples that can serve as initial models to be adapted to local contexts.

ALIGNMENT OF RECOMMENDATIONS WITH INTERNATIONAL EXAMPLES

RECOMMENDATIONS	INTERNATIONAL EXAMPLES
Pilot projects	**SCALING FEDERAL PROJECT FUNDING IN THE US** ▸ The US government has announced $20M in funding for the nation's 34 state and territory coastal management programs and $12M for 30 sites within the National Estuarine Research Reserve System ▸ The funding will support restoration and conservation projects to increase coastal resilience and build capacity around nature-based infrastructure[71] ▸ New legislation also delivered $14M for 10 research projects on marine carbon dioxide removals, complemented by $10M in funding from across government departments and philanthropy to deliver 7 additional projects ▸ The funding aims to build the evidence base on impacts and effectiveness of new strategies, to ensure they are responsibly scaled and high integrity[72]
Policy and regulatory demand drivers	**INCLUSION OF BLUE CARBON IN GHG INVENTORY IN JAPAN** ▸ Japan has announced that it will include the carbon dioxide absorbed by seaweed and seagrass in its annual reporting of greenhouse gas emissions and absorption to the UN[73] ▸ The measure is intended to help Japan advance the role of blue carbon in meeting its national net zero target[74] and it has developed guidance for measurement methods for its blue carbon habitats[75]
Critical evidence gaps	**RAPIDLY DEVELOPING SCIENTIFIC PARTNERSHIPS IN BELIZE** ▸ Through the Belize Blue Carbon project, an international collaboration, The Smithsonian Environmental Research Center delivered the first national estimate of mangrove carbon stocks in Belize. ▸ Research teams gathered new evidence, collated existing mapping data, and facilitated knowledge sharing with a breadth of government, NGO, academic, and scientific stakeholders to support ongoing research efforts ▸ The project delivered a management and monitoring guide for mangroves and supported the inclusion of mangroves in Belize's NDC[76]
Accessible data	**CENTRALISING BLUE CARBON DATA AND DEVELOPING NATIONAL GUIDANCE IN AUSTRALIA** ▸ Through its role on the High Level Panel for a Sustainable Ocean Economy, Australia has been developing a National Ocean Ecosystem Account[77] ▸ Developing the account included auditing the most appropriate data and metrics to be centralised through the account, with signposting through the Australian Bureau of Statistics, as well as identification of key data gaps[78] ▸ The Australian government further commissioned a research consortium to produce detailed guidance on measuring restoration benefits of coastal and blue carbon ecosystems aligned with its accounting framework.[79] ▸ Government support for research and project development has helped Australia to include coastal wetlands in its greenhouse gas inventory as well as begin developing a methodology for blue carbon credits under its Emissions Reduction Fund.[80]
Codes for ecosystem services	**DEVELOPING A CODE FOR RESILIENCE BENEFITS OF COASTAL HABITATS IN THE CARIBBEAN** ▸ The Nature Conservancy (TNC) and AXA XL are developing Blue Carbon Resilience Credits with support from the Ocean Risk and Resilience Action Alliance ▸ The credits will help capture the additional benefits beyond carbon that mangroves, sea grasses, and salt marshes provide for coastal adaptation to sea level rise ▸ Beginning in The Bahamas, TNC and AXA XL hope to expand use of the credits in the Caribbean and more broadly for coastal wetlands.[81]

71 NOAA (2023) Biden-Harris Administration Announces $32 Million for Coastal Conservation, Restoration, and Resilience through Investing in America Agenda.
72 NOAA (2023) Biden-Harris Administration Announces $14 Million as Part of Investing in America Agenda to Support Research for New Ocean-Based Climate Solutions.
73 The Japan Times (2023) Japan to Calculate 'Blue Carbon' Amount in Emissions Cut.
74 Shimbun, Y. (2024) Japan Plans to Report 360,000 Tons of 'Blue Carbon' to U.N.; First Such Calculation in the World.
75 Tatsuki, T., W. Kenta, T. Kazufumi, K. Tomohiro (2015) Guideline of Blue Carbon (CO2 Absorption and Carbon Sequestration) Measurement Methodology in Port Areas.
76 Cawood, A. (2023) Getting to the Root of Blue Carbon Storage in Belize's Mangroves.
77 High Level Panel for a Sustainable Ocean Economy (2023) The Blue Carbon Handbook.
78 Australian Bureau of Statistics (2022) Towards a National Ocean Account.
79 Australian Government Department of Climate Change, Energy, the Environment and Water (2023) A Guide to Measuring and Accounting for the Benefits of Restoring Coastal Blue Carbon Ecosystems.
80 Australian Government Department of Climate Change, Energy, the Environment and Water (2023). Coastal Blue Carbon Ecosystems: Summary & Snapshot of Current Activities Supported by the Australian Government.
81 ORRAA (2024) Capturing the Value of Coastal Wetlands through Blue Carbon Resilience Credits.

Priority opportunities

INTEGRATED MARINE SPATIAL PLANNING IN THE SEYCHELLES

- The Seychelles Marine Spatial Plan (SMSP) covers the whole of Seychelles' ocean (1.35 million km^2), making it the first comprehensive marine spatial plan in the Western Indian Ocean
- The SMSP aims to enable the expansion of marine biodiversity protection to 30% of the Exclusive Economic Zone while supporting sustainable economic growth
- The SMSP received input from over 11 sectors, including fishing, tourism, marine charters, biodiversity conservation, renewable and non-renewable energy, port authority and maritime safety
- The Seychelles government legally designated 13 MPAs with over 410,000 km^2 of MPAs after extensive stakeholder consultation: since 2014, the SMSP has held over 250 meetings with participation from over 150 stakeholders and civil society
- The SMSP was developed by the Ministry of Agriculture, Climate Change and the Environment with support from TNC, and funded by the Government of Seychelles and TNC, as well as World Bank SWIOFish3, Oceans5, Waitt Foundation, Blue Nature Alliance, and other organisations [82]

Skills and capacity

PAIRING EDUCATION WITH OYSTER REEF RESTORATION IN NEW YORK CITY

- The Harbor School in New York was founded as part of a network of career-themed public schools, focusing marine science and technology.[83]
- Areas of study range from marine biology research to vessel operations, and students benefit from a close partnership with the Billion Oyster Project and The Nature Conservancy to contribute to the ecological restoration of New York Harbor.[84]
- While economically disadvantaged students represent 70% of incoming classes, the school has achieved a graduation rate of over 90% with nearly all graduates accepted for university study.
- The curriculum prepares students to fill scientific roles in conservation and restoration efforts, while also providing technical tracks for jobs in-demand in New York City's blue economy.[85]

82 Seychelles' Marine Spatial Plan (2024) The Seychelles' Marine Spatial Plan: On the leading edge of marine conservation & climate change.
83 Kidd, D. (2022) New York City's Public School on an Island.
84 McCann, M. (2019) Restoring Oysters to Urban waters: Lessons Learned and Future Opportunities in NY/NJ Harbor.
85 Misdary, R. (2023) New York Harbor School Charts Expansion as it Teaches Next Generation of Ocean Stewards.

ANNEXE 3

INITIATIVES FOR INTERNATIONAL COLLABORATION

INITIATIVE	OVERVIEW
BLUE CARBON ACTION PARTNERSHIP[86]	World Economic Forum initiative to support national governments with delivering national blue carbon roadmaps and global convening to help connect supply and demand and facilitate knowledge exchange
BLUE NATURAL CAPITAL (IUCN)[87]	IUCN manages the Blue Natural Capital Financing Facility (BNFCFF) and Blue Carbon Accelerator Fund (BCAF) to help develop investable blue natural capital projects, as well as support projects in developing countries to draw in private-sector finance.
GLOBAL OCEAN ACCOUNTS PARTNERSHIP (GOAP)[88]	GOAP was established to convene governments, international organisations, and research institutions within an ocean accounting community of practice to help integrate the value of ocean systems into decision-making.
HIGH LEVEL PANEL FOR A SUSTAINABLE OCEAN ECONOMY[89]	The Panel convenes leaders across 18 countries representing 50% of global coastlines to support a commitment to sustainably manage 100% of ocean areas within national jurisdictions, and delivers leading research and guidance on marine natural capital topics like blue carbon.
INTERNATIONAL PARTNERSHIP FOR BLUE CARBON[90]	Coalition of 55 Partners comprising government, NGO, research, and intergovernmental organisations contributing to efforts to protect, sustainable manage, and restore global blue carbon ecosystems.
MANGROVE BREAKTHROUGH INITIATIVE[91]	Initiative to deploy US$4 billion to restore and protect 15 million ha of mangroves by 2030
OCEAN RISK AND RESILIENCE ACTION ALLIANCE[92]	Multi-stakeholder convener with the objective of, "building the resilience of 250 million climate vulnerable coastal people by 2030, by deploying at least USD$500 million of investment into coastal and ocean resilience through the development of at least 50 novel finance and insurance products."
SUSTAINABLE BLUE ECONOMY FINANCE INITIATIVE (UNEP-FI)[93]	UN initiative to convene global stakeholders to provide guidance and frameworks to scale investment, underwriting and lending in support of UN SDG 14, and support implementation of the Sustainable Blue Economy Finance Principles

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ANNEXE 4

GLOSSARY

Biodiversity Net Gain (BNG): BNG is an approach to development that requires developers in England to enhance biodiversity in order to mitigate biodiversity loss due to development, such that an overall increase in natural habitat and ecological features is achieved. BNG became a legal requirement for most terrestrial development in England in 2024.

Biodiversity offsets: Biodiversity offsets are measurable conservation outcomes designed to compensate for adverse and unavoidable impacts of developments, in addition to prevention and mitigation measures already implemented. They are only appropriate for projects which have rigorously applied the mitigation hierarchy framework and should preferably deliver a biodiversity net gain.[94]

Blended finance: The strategic use of capital from public or philanthropic sources to mobilise private capital flows towards impact-orientated investments. Originally used in the context of sustainable development, the strategy is increasingly being utilised to stimulate climate and nature-related investment.[95]

Blue carbon: The term used to refer to carbon captured by and stored in the world's marine and coastal ecosystems.[96] Blue economy: Economic activities related to sustainable use of ocean resources. This includes ecosystem services such as carbon storage, coastal protection, cultural values and biodiversity.[97]

Bundling: When a suite of ecosystem services produced by the same activity is sold as a single combined unit in the market.[98]

Carbon markets: Trading systems in which carbon credits are sold and bought. Companies or individuals can use carbon markets to compensate for their greenhouse gas emissions by purchasing carbon credits from projects that remove or reduce greenhouse gas emissions. Carbon markets can therefore provide a flow of capital to marine restoration projects that are proven to sequester or avoid carbon emissions, such as the restoration or protection of wetland habitats.[99]

Codes: Robust methodologies, 'codes', or schemes to quantify the breadth of ecosystem services delivered by ecosystems, as well as standards to underpin transactions, are central to high-integrity natural capital markets.[100] Codes and standards set out processes for measuring environmental benefit, such as carbon sequestration, and processes for quality assurance and verification.[101]

Coastal defence: Management techniques designed to protect shorelines from flooding and erosion caused by waves and rising water levels. Historically these have consisted of hard engineering solutions such as the construction of sea walls and groynes; in recent years however there has been an increase in the deployment of schemes inspired and supported by nature. Reefs, seagrass meadows, salt marshes, and sand dunes are all effective at dissipating wave energy and acting as a buffer against tidal storms and surges. A key benefit of nature-based interventions over hard interventions is that they often increase the resilience of existing ecosystems, and provide a wide range of benefits for other sectors, such as tourism and fisheries, as well as coastal protection.[102]

Ecosystem: The complex of living organisms, their physical environment, and all their interrelationships within a particular geographic area.[103]

Ecosystem services: The benefits that can be obtained from ecosystems, including provisioning, regulating, cultural and supporting services.[104]

94 IUCN (2021) Issues Brief: Biodiversity offsets.
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102 Moraes, R. P. L. et al. (2022) Nature-Based Solutions in Coastal and Estuarine Areas of Europe.
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104 NatureScot (ND) Ecosystem services - nature's benefits.

First loss capital: Capital provided by an investor who agrees to bear first losses in an investment in order to catalyse the participation of co-investors that would not have otherwise invested, typically used for impact investing.[105]

High-integrity: High-integrity natural capital markets ensure the value generated by ecosystems is properly captured and understood, so that funding can flow towards their restoration and protection and benefit is delivered for local communities. To achieve high-integrity markets, robust methodologies for the quantification of natural capital and ecosystem services are required alongside effective monitoring, reporting, and verification of the outcomes achieved, so that transactions (such as the sale of credits) deliver clear, lasting and additional environmental and social improvements.[106]

Marine Net Gain: Aims to support marine ecosystem recovery by requiring in-scope developments to deliver an overall environmental gain, and thereby embed environmental improvement into infrastructure planning and delivery.[107]

Nationally determined contributions (NDCs): The Paris Agreement requests that countries set out and communicate their post-2020 actions to reduce emissions and adapt to climate change through NDCs. NDCs are regularly updated, with each revision expected to ratchet up ambition to deliver increased emissions cuts.[108]

Natural capital: The stock of natural assets such as soil, air, water, and living things, from which humans derive ecosystem services such as food, climate regulation, flood defence and leisure.[109]

Natural capital markets: Natural capital markets provide a means to deliver payment for ecosystem services provided by natural capital – be it carbon sequestration, biodiversity improvements, or nutrient cycling – and support the cost associated with delivering/maintaining the service. Natural capital markets are also called environmental markets or ecosystem markets.

Nature-based solutions: Nature-based solutions are actions to protect, sustainably manage, and restore natural and modified ecosystems that address societal challenges effectively and adaptively, simultaneously benefiting people and nature. Nature-based Solutions are underpinned by benefits that flow from healthy ecosystems. They target major challenges like climate change, disaster risk reduction, food and water security, biodiversity loss and human health, and are critical to sustainable economic development.[110]

Risk transfer mechanisms: Risk transfer refers to the process of shifting financial risks or liabilities from one party to another.[111] Risk transfer mechanisms can help de-risk private investment. This can include strategies and mechanisms, such as insurance, guarantees or first loss capital, that aim to reduce, mitigate or transfer the financial risks of the investment through ensuring a certain level of financial return or absorbing losses.

Seascape: Coastal and marine ecosystems across a given region. A "seascape" approach aims to ensure management of these ecosystems is more holistic and takes account of a region larger than single ecosystems, MPAs or other areas and communities, as well as multiple uses such as fishing and ecotourism.[112]

Stacking: When multiple different ecosystem services produced by the same activities are sold as separate units in the market.[113]

Strategic Compensation (marine): As part of the government's proposed Offshore Wind Environmental Improvement Package (OWEIP), if an offshore wind farm has significant negative impacts on protected habitats and species which cannot be avoided, reduced or mitigated, developers are required to take compensatory measures. The OWEIP is aimed to accelerate deployment of offshore wind and was introduced as part of Energy Act 2023.[114]

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ANNEX 5

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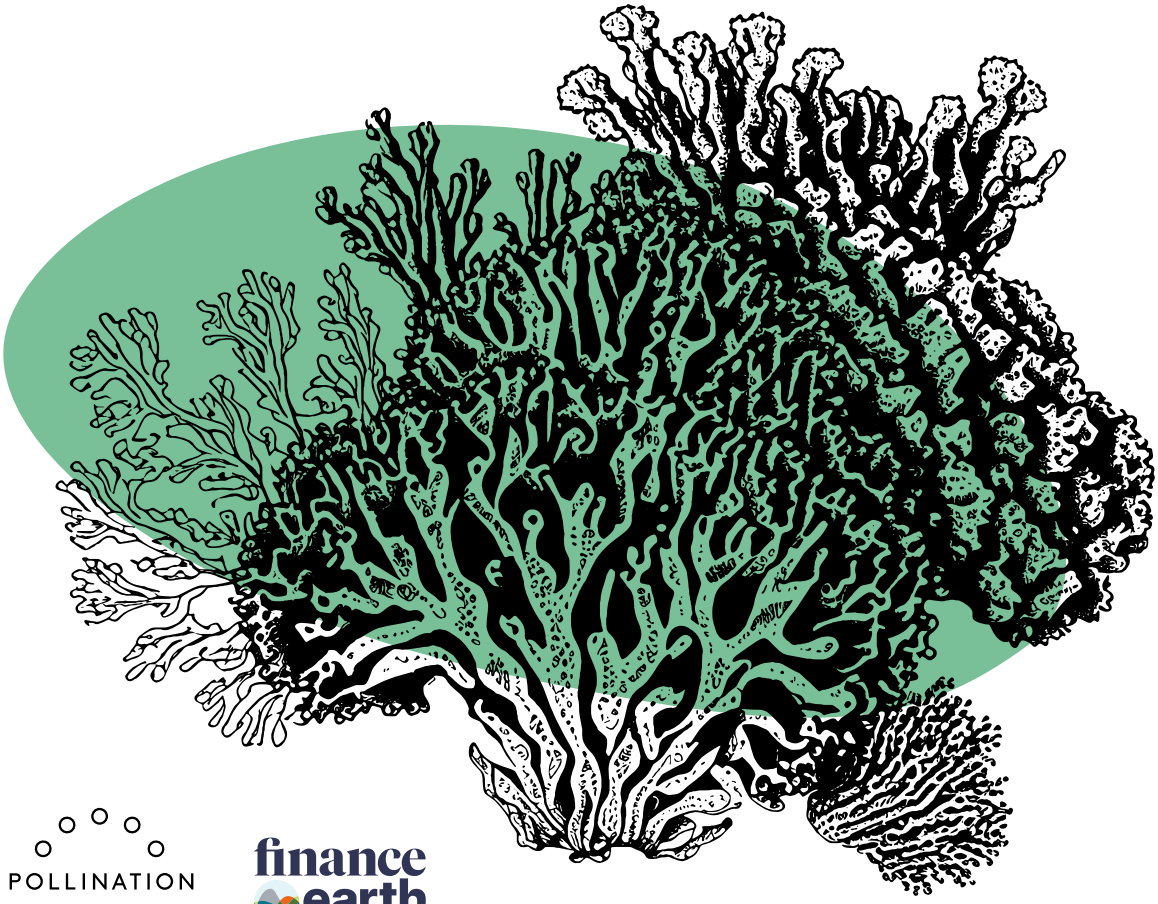

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