POLICY BRIEF

Policy opportunities and challenges for Blue Growth

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Executive Summary

Blue Growth is the expanding but sustainable use of ocean resources for economic growth, improved livelihoods and ocean ecosystem health. Blue Growth is expected to increase across all sectors in the North Atlantic over the next decade, involving new activities and additional locations for existing activities. Coordinating these activities and ensuring sustainability can present significant challenges. The potential for collaboration across Blue Economy sectors to enhance synergies and avoid conflicts is central to effective marine spatial planning.

Well-managed Blue Growth could make important contributions towards achieving United Nations Sustainable Development Goals (SDGs) including SDG2: Zero Hunger; SDG7: Affordable and Clean Energy; SDG8: Decent Work and Economic Growth, and SDG14: a healthy marine environment.

Improved science and technology are key to ensuring that Blue Growth is sustainable, particularly in the face of changing climatic and marine conditions. Greater integration between marine sectors is being actively fostered through several ongoing and newly-established initiatives, including the United Nations' 'Decade of Ocean Science for Sustainable Development' and a new international treaty for conservation and sustainable use of marine biological diversity in areas beyond national jurisdiction.

The ATLAS project is developing a knowledge base to inform the development of international policies to ensure deep-sea Atlantic resources are managed effectively. This in turn will contribute to the European Commission's long-term Blue Growth strategy.

Introduction

Blue Growth is the increasing sustainable use of ocean resources for economic growth, improved livelihoods and ocean ecosystem health. Sustainable use balances the need for resource exploitation with resource conservation and addressing any trade-offs that may be required. Economic activities are often grouped into sectors, but in reality these sectors are highly interdependent, relying on common skills and infrastructure and depending on others using the seas sustainably[1]. Coordinating these activities and ensuring sustainability can present significant challenges in busy ocean regions, especially in areas beyond national jurisdiction (ABNJ) where governance mechanisms are incomplete and scientific knowledge less advanced. Marine/maritime spatial planning (MSP) offers new opportunities to balance uses and protection of marine ecosystems. Starting in 2016, the **ATLAS** project has been assessing the feasibility and benefits of applying MSP to advance multi-sectoral approaches in support of new Blue Growth in the Atlantic at basin, regional and local scale.

Prospects in the North Atlantic

Blue Growth is expected to proceed across all sectors in the North Atlantic over the next decade. In many cases this will involve new activities, or new locations for existing activities, and that will require investments in effective MSP to ensure sustainability, foster collaboration, and avoid conflicts.

- **Fisheries** are expected to see changes in target areas and target species, partly as a result of climate change.
- **Aquaculture** will shift from monospecific towards multitrophic practices and increased targeting of higher trophic levels.
- **Biotechnology** prospecting for novel compounds will see increased focus on biodiversity hotspots and extreme environments.
- **Oil and gas** fields are nearing maturation; prospecting and exploitation will continue and expand into new areas, but focus is gradually shifting to marine renewables.
- **Renewable energy** developments will include floating turbines and increasing depth of operation for offshore wind. Wave energy is still at the early stages of development but progress towards commercial operations is anticipated by 2030[2].
- **Deep-sea mining** will see new technologies and reduced costs, with expanded prospecting for minerals. Commercial exploitation of polymetallic sulphide minerals along the Mid-Atlantic Ridge could occur before 2030.
- **Cargo transport** is expected to increase, including the addition of new routes, such as through the Northwest Passage.
- **Tourism** will grow through ocean cruises and whale & dolphin watching tours.
- **Telecommunications** will require new cable routes, as well as cable upgrades for existing routes.
- **Service and research activities** will grow to support growth in all these sectors.

Opportunities in the North Atlantic

Interest in Blue Growth is driven by a powerful combination of consumer and industrial demands, geopolitical strategies, and technological advances:

- **Growing demand for resources**, including fish protein, renewable and fossil energy, and rare earth metals for modern technologies.
- **Geopolitical considerations**, such as securing independence of energy supply and food production to meet growing demands while avoiding the environmental impacts of intensified terrestrial productions.
- **New and cheaper technologies** are making possible activities that until recently would have been prohibitively expensive or impossible, including more widespread use of tidal and wave power, and deep-sea mining for minerals. Several other key developments relate to increasing automation and digitalisation [3].
- **Cleaner technologies** are reducing the environmental impacts of existing activities, for example more selective/less damaging fishing gear and improved ballast water management.
- **Global sustainable development goal** progress could be enhanced in part through well-managed Blue Growth.

Blue Growth and the United Nations Sustainable Development Goals (SDGs)

The sustainable bioeconomy sectors (fisheries, aquaculture and biotechnology) are central to achieving Zero Hunger [4]. Worldwide, about a billion people rely on fish as their main source of animal protein [5].

Marine renewables - offshore wind, tidal and wave energy - have a vital role to play as reliable and clean sources of renewable energy.

By 2030, the economic output of the global Blue Economy could surpass $3 trillion, providing more than 40 million jobs worldwide [6].

Blue Growth should be compatible with the goal of sustainable management and protection of marine and coastal ecosystems, and also make a positive contribution through improved technologies and conservation/restoration practices for the marine environment [7].

Challenges in the North Atlantic

While marine ecosystems hold the potential to address many of the world's great socio-economic concerns, supporting sustainable Blue Growth presents multiple challenges and requires detailed knowledge of the marine environment and multiple ocean uses in an area.

- **Science and technology** are key to sustainable management of marine resources [8], reflected in the UN declaring a 'Decade of Ocean Science for Sustainable Development' from 2021-2030 [9].
- **The harsh ocean environment** can be a major challenge for technologies requiring permanent installations (notably, offshore wind and tidal and wave energy).
- **High costs of technology development** are a potential barrier to growth in aquaculture, biotechnology, tidal and wave energy and deep-sea mining.
- **Regulatory uncertainty** hinders investments, with unresolved issues about enforcement, benefit sharing, and/or long-term liability issues, especially for activities in areas beyond national jurisdiction (ABNJ).

- **Public perceptions** may also create barriers that need careful management, especially where there is the perceived risk of residual environmental damage.
- **Resistance to change** in practices or regulations within a sector (e.g. for fisheries and shipping) can hinder progress.

Collaboration and coordination

Some of the challenges for Blue Growth in the North Atlantic could be addressed through collaborations across Blue Economy sectors. These collaborations can build on positive synergies as well as avoiding negative conflicts. Full consideration of potential collaborations is central to effective MSP. Offshore wind, fisheries, aquaculture and oil and gas are all collaborating to address potential spatial conflicts, and to explore synergies, such as providing wind energy to power aquaculture or sharing supply vessels between the offshore installations of different sectors. Whilst there is clear sectoral interest for collaboration in the North Atlantic, challenges such as lack of incentives or even regulatory hurdles can hinder collaboration between sectors.

- **Commercial arrangements** are relatively common, between enterprises and companies or research institutes providing engineering or analytical solutions to specific business challenges:
    - increase automation, and improve feed production species in aquaculture
    - develop better biocides for anti-fouling in shipping and offshore installations
    - develop new pigments and alternatives to plastic through biotechnology
    - improve technology and analytical techniques for underwater research and monitoring.
- **Shared infrastructure** on land or in ports holds potential for increasing efficiency through reduced costs and/or reduced environmental impacts and waste.
- **Offshore colocation or shared infrastructures** could be expanded, for example through collaborations between oil and gas infrastructure and offshore renewables.
- '**Circular economy**' initiatives, for example attempts to incentivise fishers to combat marine litter [10], could be extended.
- **New financing opportunities** are available for sustainable ocean projects, through initiatives such as the Blue Sustainable Ocean Strategy by the European Investment Bank [11].

Climate change and Blue Growth

Climate change (CC) has a multiplying effect for both the challenges and the opportunities for sustainable Blue Growth:

- For some sectors, CC is primarily an economic driver via the costs of meeting environmental or sustainability requirements regulations, and rising energy costs.
- Several marine sectors are directly impacted by CC, for example through fish stocks changing migratory patterns and lost business opportunities resulting from biodiversity loss and increased storminess.
- The effectiveness of existing marine protected areas (MPAs) could be threatened by CC through affecting the persistence of the populations within them.
- Faster growth rates in warmer waters and the potential to farm new species as a result of CC could help aquaculture growth; but aquaculture could be harmed by new pathogens and damage to installations from more extreme weather events.
- The opening up of high-latitude destinations for cruising and wildlife observation as a result of CC could lead to new opportunities for tourism.

Policy needs

Policy measures, new regulations and legal requirements are vital drivers for Blue Growth, structuring the framework within which it is possible to operate. The North Atlantic is a particularly busy region for Blue Growth, with multiple sectors seeking space and resources for their activities. Managing the activities of all the North Atlantic Blue Economy sectors, both in space and time, is a complex challenge that requires robust and coherent policy frameworks.

Several important political milestones were reached in 2019 to help progress towards international commitments regarding the ocean, and so support Blue Growth. These included a regional workshop to facilitate the description of Ecologically or Biologically Significant Marine Areas in the North-East Atlantic [12] and two sessions of the Intergovernmental Conference on an international legally binding instrument (ILBI) under the United Nations Convention on the Law of the Sea on the conservation and sustainable use of marine biological diversity of areas beyond national jurisdiction (BBNJ) [13].

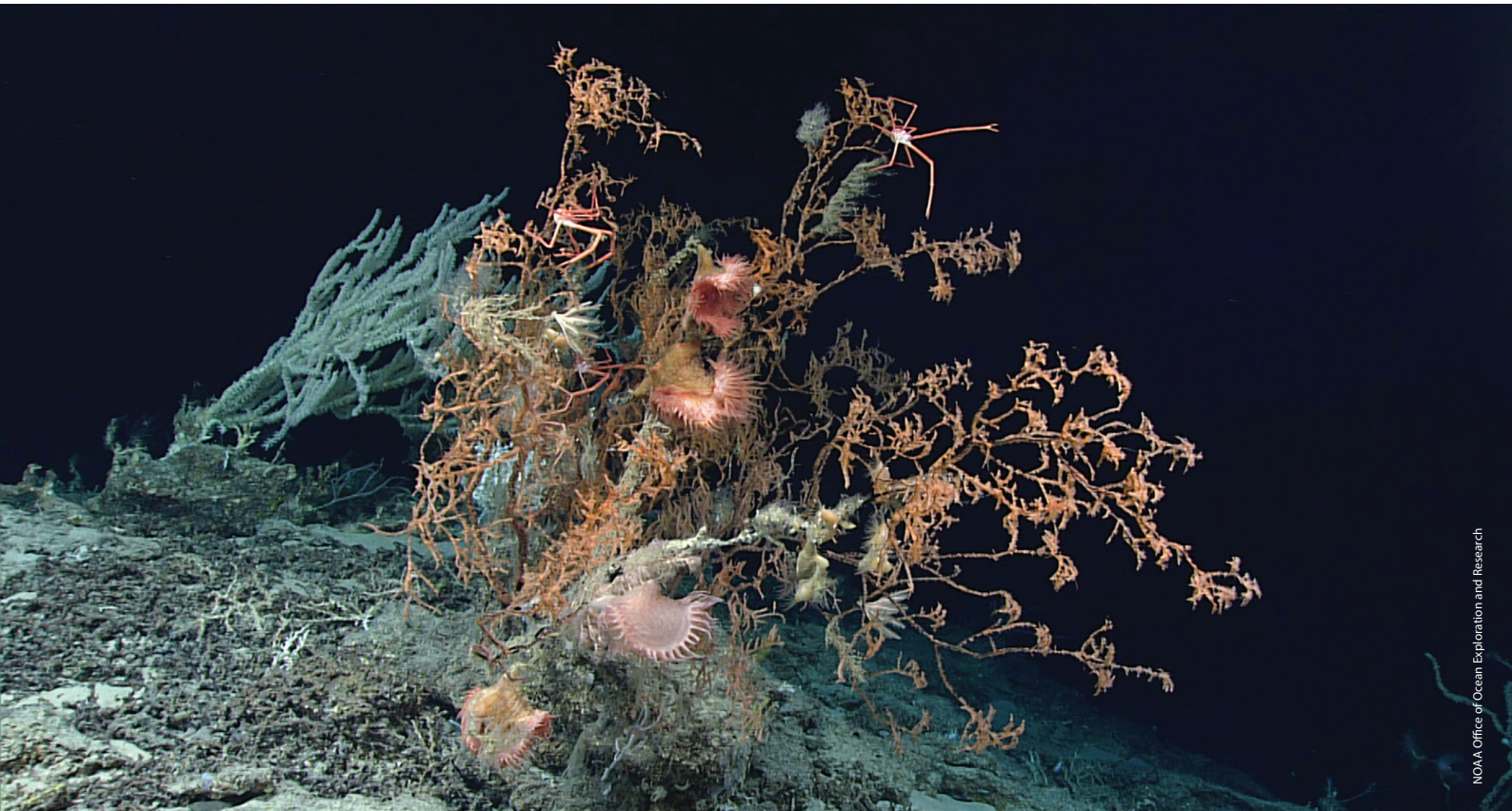
Blue Growth and legal protection for marine biological diversity of areas beyond national jurisdiction

A new international legally binding instrument (ILBI) for BBNJ may not *directly* influence business plans for Blue Economy actors in the North Atlantic working largely within national jurisdictions (e.g. energy sectors) or where they are considered to be minimally impacted by this instrument (e.g. shipping).

However there could be *indirect* impacts, for example if the new agreement impacts on sourcing of feed ingredients for aquaculture, or constrains existing freedoms to lay cables beyond national jurisdiction. There could be additional challenges associated with a greater administrative burden or spatial restrictions on certain activities.

A new ILBI for BBNJ could also create opportunities, including more sustainable resource management leading to longer term gains for biotechnology, increased equity and transparency in the use and benefit sharing of marine genetic resources, and direct conservation benefits.

There could also be direct impacts on Blue Growth related to increased environmental surveying and monitoring requirements for ABNJ/BBNJ. Additional surveying and monitoring could increase the operating costs of some sectors, although this could create business opportunities for the research and development supporting sectors.



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Research needs

For Blue Growth to occur, a broad range of additional scientific information needs to be obtained through collaboration among Blue Economy sectors, research providers and government.

- **Knowledge needs** range from higher resolution seafloor maps, real-time fisheries data and weather predictions, to improved knowledge of seasonal cycles and biological connectivity.
- **Coordination and collaboration** among sectors creates specific information requirements, in particular providing the scientific knowledge and data needed to inform MSP. This includes identification of suitable areas for the different sector activities, as well as areas that may require enhanced conservation actions.
- **Environmental Impact Assessments** and siting decisions for infrastructure require robust and comprehensive baseline data and better understanding of the cumulative and long-term impacts of human activities on marine ecosystems.
- **Monitoring** of impacts requires improved technology and methodology.
- **Climate change adaptation strategies** require knowledge and evidence to ensure that siting decisions and conservation networks are adequate not only for current conditions but in the long term.

This demand for multidisciplinary research is an important driver for growth in cross-sectoral service providers, particularly those involved in environmental survey, assessment and monitoring.

The way forward

The North Atlantic Blue Economy displays complex and dynamic interrelationships among the various industry sectors, science, and policy. The many existing and emerging users have different spatial requirements, and their cumulative impacts on the marine environment are often poorly understood. Sustainable Blue Growth in the North Atlantic requires multiple levels of cooperation and collaboration, involving national and international science, industry and policy.

Maintaining sustainable Blue Growth in the North Atlantic requires open, constructive and continued dialogue among all sectors, working together towards common goals and to overcome common challenges. Greater connectivity between science, industry and government is being actively fostered through the **ATLAS** project and various other ongoing and newly established multi-year projects, such as AORA [14] and iAtlantic [15]. Further research and investment will be required to realise the full potential of North Atlantic Blue Growth.

ATLAS project contribution to Blue Growth research needs

The **ATLAS** project has made an important contribution to increasing the scientific knowledge of the North Atlantic basin, helping to inform policy and management processes at that scale.

- **ATLAS** is developing a scientific knowledge base that can inform the development of international policies to ensure deep-sea Atlantic resources are managed effectively.
- This knowledge will contribute for example to the European Commission's long-term Blue Growth strategy to support sustainable growth in the marine and maritime sectors as a whole.
- **ATLAS** findings also have a key role in supporting MSP for effective use of marine space and enhanced collaboration/reduced conflict between Blue Economy sectors to effectively utilize marine space.
- The basin-scale resolution of environmental data collected by **ATLAS** may not provide the information needed for specific decisions on infrastructure placement (site scale). However, **ATLAS** science does provide important insight into the additional environmental considerations and challenges that will need to be assessed in the move to deeper waters.
- Scientific findings at the basin scale, in terms of currents, circulation, habitat suitability and biogeography, are also important in the context of the Regional Environmental Management Plan for the northern Mid-Atlantic Ridge being developed by the International Seabed Authority for polymetallic sulphide mining activities.

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[15] iAtlantic - An Integrated Assessment of Atlantic Marine Ecosystems in Space and Time: www.iatlantic.eu

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