

BLUE DIMENSIONS OF THE EUROPEAN GREEN DEAL – THE WAY FORWARD

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Abstract:

Over the past ten years, the European economy has faced a number of challenges: Britain's exit from the EU, the COVID 19 pandemic, Russian aggression in Ukraine that escalated into war, the struggle for energy independence on the continent, the migration flow, and the increasing influence of far-right political movements. This line of events, however, is accompanied by one fundamental goal of the Union, namely sustainable development. A key instrument for achieving this is the so-called Green Deal, which has acquired a new blue hue in recent years. The aim of this study is to analyse how the blue economy contributes to the European Green Deal objectives, as oceans and seas cover a vast area of the EU territory and around two thirds of the Earth's surface.

Keywords: Blue economy, Green Deal, EU, sustainable, climate change

Introduction

In the past decade, the European Union has navigated a period marked by profound political, economic, and social upheaval. Events such as Brexit, the global COVID-19 pandemic, Russia's military aggression in Ukraine, growing energy insecurity, and heightened migratory pressures have tested the EU's institutional resilience and strategic priorities. Concurrently, the rise of far-right political movements has posed new challenges to democratic governance and policy continuity across the continent. Amid these turbulent dynamics, the European Green Deal has emerged as one of the central policy frameworks aimed at guiding the EU towards a sustainable and climate-neutral future. Within this transformative agenda, increasing attention is being given to the so-called „blue dimensions“ of sustainability, recognising the vital role that oceans, seas, and coastal ecosystems play in supporting environmental, economic, and social resilience.

This report seeks to explore the intersection between the European Green Deal and the Blue economy, with particular emphasis on the evolving contri-

bution of marine and maritime sectors to the Union's climate and sustainability goals. The central thesis of this study is that the blue economy is not merely a peripheral component of the European Green Deal, but a foundational pillar without which the EU's broader environmental and economic objectives cannot be fully realised. Given that marine areas constitute over 65% of the EU's territory and 71% of the Earth's surface, their strategic importance in the fight against climate change, biodiversity loss, and resource depletion is indisputable.

The purpose of this report is therefore to analyse the current state, policy integration, and future potential of the Blue economy within the framework of the European Green Deal. To achieve this, the report employs a multidisciplinary qualitative approach. Key EU documents, including the European Commission's communications, legislative proposals, and sectoral strategies, are examined in order to evaluate the coherence and effectiveness of the blue policy agenda. Furthermore, the report considers the geopolitical and socio-economic context in which blue economy policies are being developed, including external shocks and internal governance challenges.

Through this analysis, the report aims to contribute to a deeper understanding of how marine resources, ocean governance, and maritime innovation can be leveraged to advance decarbonisation, foster inclusive growth, and strengthen ecological resilience. It also highlights areas where policy integration remains insufficient or fragmented, proposing pathways for more effective alignment between green and blue objectives. In doing so, the study positions the blue economy not as an ancillary aspect of EU sustainability, but as a dynamic and indispensable vector of long-term transformation.

Defining the Blue Economy

To begin, it is essential to delineate the principal dimensions of the blue economy within a structured analytical framework. In this context, the concept should be examined along three interrelated axes. First, attention must be given to the conceptual foundations and historical evolution of the term „blue economy“. Second, the analysis should encompass the key economic sectors that constitute the operational core of the blue economy, including but not limited to fisheries, aquaculture, maritime transport, marine renewable energy, and coastal tourism. Third, the examination should address the critical role of ecosystem services and the economic valuation of marine natural capital, acknowledging their importance in shaping sustainable maritime policy and informing the broader objectives of the European Green Deal.

The concept of the „blue economy“ emerged from international discourses that sought to link the use of marine resources with the broader goals of sustainable development. It marked a paradigmatic shift from a narrow focus on resource extraction to more integrated frameworks that consider both economic growth and environmental stewardship. Initially articulated in the early

2000s, the blue economy has evolved through the influence of global institutions such as the United Nations, the World Bank, and the Organisation for Economic Co-operation and Development (OECD), which collectively promoted the alignment of ocean-based economic activities with sustainability principles.

Within the European Union, the concept gained significant policy traction following the European Commission's 2012 Communication on „Blue Growth“, which emphasised the untapped potential of the seas and oceans to contribute to Europe's economic recovery and long-term growth. This initiative was later embedded in broader strategic instruments, including the Integrated Maritime Policy and the Common Fisheries Policy, thereby institutionalising the blue economy across multiple EU governance frameworks. The 2025 EU Blue Economy Report further highlights how this concept is being employed to align marine economic activities with the European Green Deal's overarching goals, including resilience, sustainability, and competitiveness in the face of climate change and global uncertainty.¹

The blue economy reframes marine ecosystems as dynamic arenas of economic opportunity rather than zones designated solely for conservation. This reconceptualisation reflects a broader trend in public policy toward the use of „nature-based solutions,“ where ecological integrity is seen not as a constraint on development but as a foundational asset.² In this context, marine spatial planning emerges as a key governance tool for balancing competing sectoral interests while maintaining ecosystem health. The EU's Marine Strategy Framework Directive plays a critical role in operationalising this vision by linking the sustainable use of marine resources to the achievement of „Good Environmental Status“ in European waters.³

Over time, the scope of the blue economy has expanded to include not only the direct outputs of marine sectors such as fisheries, aquaculture, and tourism but also the indirect economic impacts and the valuation of ecosystem services like carbon sequestration, coastal protection, and nutrient cycling. This evolution represents a significant departure from earlier extraction-based models, replacing them with regenerative, innovation-driven approaches to marine governance. The blue economy is now viewed as a strategic framework that connects economic innovation with environmental preservation. As such, it functions as a bridge between the EU's ecological and economic agendas, and plays a significant role in the successful implementation of the European Green Deal.

¹ European Commission (2025). *The EU Blue Economy Report. 2025*. Publications Office of the European Union. Luxembourg

² Official web site of UNEP, *The Mediterranean Action Plan (MAP)*, available at: <https://www.unep.org/unepmap/>

³ Official web site of European Commission, *Marine environment*, available at: https://environment.ec.europa.eu/topics/marine-environment_en

According to the EU Blue Economy Report 2025, the core sectors of the blue economy including marine living resources (fisheries and aquaculture), maritime transport, marine renewable energy, port activities, shipbuilding and repair, and coastal tourism employed approximately 4.82 million people across the European Union in 2022. Among these, coastal tourism remained the dominant employer, accounting for 53% of total blue economy employment. This subsector alone generated €82 billion in gross value added (GVA) and €30 billion in profits, representing 33% of the overall GVA in the blue economy that year.⁴

The marine living resources sector, encompassing both fisheries and aquaculture, contributed -€37.9 billion in GVA in 2022, employing over 1.09 million individuals. The average annual wage in this sector was €22,300, reflecting both the labour-intensive nature of the work and the challenges of wage competitiveness within primary marine production. Maritime transport experienced significant growth in 2022, generating €61.8 billion in GVA an increase of 39% compared to the previous year and employed nearly 393,000 individuals. Notably, the average annual remuneration in this sector reached €45,700, making it one of the higher-paying segments within the blue economy.⁵

Marine renewable energy, driven primarily by offshore wind development, also showed strong performance. In 2022, its GVA increased by 42% to €5.3 billion, while profits rose by an impressive 56% from 2021, reaching €4.1 billion. This expansion is indicative of the sector's critical role in advancing EU climate goals, particularly through the decarbonisation of maritime industries. Meanwhile, shipbuilding and repair, along with port activities and emerging subsectors such as marine biotechnology and digital maritime services, demonstrated solid growth between 2015 and 2022.⁶ Over this period, GVA increased by 54% in shipbuilding, 11% in port operations, and further documented rises in ancillary and innovation-driven segments.⁷

In aggregate, these established and emerging blue economy sectors generated a total turnover of €890.6 billion in 2022. This economic activity translated into €250.7 billion in direct GVA and €120.6 billion in gross operating surplus, underscoring the sector's strategic importance to the EU economy.⁸ While maritime transport's growth reflects increased global demand and efficiency gains, its employment share remains lower compared to labour-intensive industries such as tourism. Conversely, the rapid rise of marine renewable energy signals a transformative shift toward sustainability, with clean energy becoming increasingly embedded in ocean-related industries. Collectively, these trends

⁴ European Commission (2025). *The EU Blue Economy Report. 2025*. Publications Office of the European Union. Luxembourg

⁵ Ibid.

⁶ Ibid.

⁷ Ibid.

⁸ Ibid.

highlight the scale, diversity, and resilience of the European blue economy as it aligns more closely with the objectives of the European Green Deal.

The economic analysis presented in the EU Blue Economy Report 2025 offers a comprehensive quantification of the direct contributions of key maritime sectors to the Union's gross value added and employment. While the report estimates a direct GVA of €250.7 billion and approximately 4.82 million jobs in 2022, it explicitly acknowledges that these figures do not capture the full economic footprint of the blue economy. When indirect and induced effects are included – such as upstream and downstream economic linkages and multiplier effects – the total impact could exceed €350 billion in GVA and support over six million jobs across the European Union.⁹ These extended estimates underscore the systemic importance of the blue economy in contributing not only to coastal regions but also to the broader EU economic framework.

Incorporating natural capital accounting into policy frameworks fundamentally alters the economic rationale for environmental investments. For instance, research by the Joint Research Centre (JRC) and the European Commission has demonstrated that nature-based coastal flood protection yields returns exceeding costs by a factor of more than 3.5, illustrating the economic efficiency of ecosystem-based approaches.¹⁰ The integration of these values also directly supports key biodiversity targets under the EU Biodiversity Strategy for 2030. Recognition of the economic value of ecosystem services is also driving the development of innovative governance models, such as Blue Parks and marine restoration missions under Horizon Europe.

Further institutional support is provided through initiatives like the European Marine Observation and Data Network (EMODnet) and marine spatial planning, both of which incorporate ecosystem data into spatial and economic planning models. These instruments facilitate a more holistic assessment of marine space and its uses, enabling policy coherence across environmental, economic, and social objectives. As such, the inclusion of ecosystem service valuation and natural capital metrics into national accounts and regional development strategies enables a more sustainable and economically rational allocation of public and private resources within the blue economy. This shift marks a fundamental transformation in the Union's strategic economic policy, wherein the health of marine ecosystems is no longer treated as an externality but as a core economic asset vital to long-term prosperity and resilience.

Integration of Blue Economy Objectives within EU Policy Frameworks

This section of the analysis will explore the integration of Blue Economy objectives within the broader framework of European Union policy, focusing

⁹ Ibid.

¹⁰ Ibid.

on three key dimensions. First, it will undertake a critical examination of major strategic documents, including the EU Biodiversity Strategy, the Blue Growth Strategy, and the Mission Ocean initiative under Horizon Europe, assessing their relevance and alignment with Blue Economy principles. Second, it will analyse the institutional mechanisms designed to promote policy coherence across sectors and governance levels, highlighting the role of cross-sectoral coordination and regulatory integration. Third, the discussion will evaluate the financial instruments and innovation support mechanisms – such as Horizon Europe and the European Maritime, Fisheries and Aquaculture Fund – that facilitate the implementation of Blue Economy initiatives, with particular attention to research funding, technological advancement, and capacity building.

The **EU Biodiversity Strategy for 2030** outlines ambitious and legally binding targets to protect and restore at least 30%¹¹ of both terrestrial and marine environments within the European Union. This overarching commitment to halting and reversing biodiversity loss has profound implications for the governance of Blue Economy sectors, directly influencing how marine resources are accessed, managed, and conserved. The policy imperative to rehabilitate degraded marine ecosystems mandates a reorientation of economic activities such as coastal tourism, fisheries, and offshore energy toward more sustainable, ecosystem-sensitive models of growth.

Complementing this, the **Blue Growth Strategy**, originally launched in 2012, seeks to unlock the economic potential of marine and maritime sectors while maintaining alignment with ecological integrity under the broader umbrella of the EU's Integrated Maritime Policy. It promotes sustainable development by identifying five key areas of growth – offshore renewable energy, aquaculture, maritime tourism, blue biotechnology, and seabed mining – encouraging innovation within the bounds of marine environmental limits. This strategic vision is further operationalised through the **Mission Ocean and Waters**, one of the EU's Horizon Europe missions, which has earmarked €120 million in 2025 for targeted investments in marine restoration, pollution reduction, and circular economy innovations within the maritime domain.

Collectively, these instruments articulate a vision of interdependence between economic development and environmental protection. They emphasise that biodiversity targets, climate resilience in coastal tourism, decarbonisation of marine transport, and expansion of renewable energy infrastructures are mutually reinforcing, not contradictory. In this context, the strategies maintain coherence with other pillars of the European Green Deal, including the **Circular Economy Action Plan**, the **Farm to Fork Strategy**, and the **Renovation Wave**.¹²

This convergence reflects an intentional effort by EU institutions to embed environmental priorities at the core of maritime economic planning. It also

¹¹ Ibid.

¹² Ibid.

fosters increased participation and consultation among stakeholders through advisory bodies, research consortia, and cross-national coordination mechanisms, thereby enhancing the inclusivity and responsiveness of policy frameworks. The strategic synergy between **Blue Growth** and **biodiversity restoration** offers a replicable governance model that integrates ecological goals into mainstream economic planning. As a result, the EU policy architecture now systematically incorporates Blue Economy imperatives within the broader framework of the European Green Deal, ensuring that marine-based economic development is consistent with long-term environmental sustainability and resilience objectives.

The integration of Blue Economy objectives within EU policy frameworks is underpinned by a robust institutional and financial architecture aimed at aligning economic development with environmental sustainability. Central to this architecture are legislative instruments such as the Integrated Maritime Policy (IMP), the Marine Strategy Framework Directive (MSFD), and the Maritime Spatial Planning Directive, which collectively promote coherence across marine sectors while ensuring the achievement of Good Environmental Status. At the supranational level, the Directorate-General for Maritime Affairs and Fisheries (DG MARE), alongside inter-institutional cooperation with DG ENV, DG CLIMA, and others, facilitates coordinated policy implementation and stakeholder engagement. Financial instruments such as Horizon Europe, the European Maritime, Fisheries and Aquaculture Fund (EMFAF), the LIFE Programme, and European Investment Bank funding collectively mobilise billions of euros to support marine innovation, biodiversity restoration, and sustainable maritime infrastructure. Altogether, this multi-level, interlinked policy and investment system enhances the EU's capacity to promote a resilient, competitive, and ecologically integrated Blue Economy in line with the European Green Deal.

Contribution of the Blue Economy to Green Deal Pillars

The focus in this point will be on analysing the contribution of the Blue Economy to Green Deal Pillars through the prism of mitigation of and adaptation to climate change, circular economy and sustainable resource use and marine spatial planning and sustainable ocean governance.

Marine renewable energy, particularly offshore wind, has experienced significant expansion in recent years, positioning itself as a cornerstone of the European Union's climate and energy transition. According to the EU Blue Economy Report 2025, gross value added from the marine renewable energy sector reached €5.3 billion in 2022¹³, representing a 42% increase compared to 2021. Profits in the sector also grew substantially, rising to €4.1 billion in the same year. This rapid growth underscores the strategic importance of offshore energy infrastructures in decarbonising the maritime domain and reducing dependence on fossil

¹³ Ibid.

fuel imports. The sector's expansion is aligned with the EU's broader commitment to achieving climate neutrality by 2050, a central objective of the European Green Deal.

Parallel trends in emission reductions across other maritime sectors reinforce this trajectory. Emissions per tonne of coastal freight declined by 10% between 2013 and 2022¹⁴, while the EU's fishing fleet has achieved a 31% reduction in carbon dioxide emissions since 2009. Fuel consumption by this fleet has also decreased by 17% over the same period, reflecting technological innovations and increased operational efficiency. These data points illustrate the climate mitigation potential embedded within maritime sectors through clean energy deployment and improved resource use.

In addition to technological solutions, nature-based approaches are increasingly recognised for their dual environmental and economic benefits. Coastal habitat restoration – such as the rehabilitation of wetlands, mangroves, and seagrass meadows – not only sequesters atmospheric carbon but also reduces the risk of coastal flooding. According to European Commission analysis, the benefit-to-cost ratio for such interventions exceeds 3.5¹⁵, making them both ecologically and economically effective. These ecosystems serve as natural carbon sinks and buffer zones, protecting coastal infrastructure and communities from sea-level rise and storm surges.

The contribution of the Blue Economy to climate adaptation is thus as vital as its mitigation functions. Enhanced coastal resilience lowers economic damages from climate-induced disasters, which currently cost the EU around €1 billion per year. Without significant intervention, projections suggest that such damages could escalate to between €137 billion and €814 billion annually by 2100, depending on the severity of climate scenarios. By fostering the expansion of offshore renewables and integrating ecosystem restoration into spatial planning, the Blue Economy simultaneously enhances Europe's energy security and environmental resilience.

This dual contribution – reducing emissions and increasing adaptive capacity – demonstrates the Blue Economy's pivotal role in realising the climate objectives enshrined in the European Green Deal. In the context of recent geopolitical instability and growing urgency around climate action, the strategic alignment of maritime economic activities with sustainability and resilience goals offers not only ecological dividends but also a foundation for long-term economic stability and independence.

The Blue Economy plays a critical role in supporting the principles of the circular economy by fostering practices that reduce waste, enhance resource efficiency, and promote sustainable industrial transformation across maritime sectors. In particular, sustainable fisheries and low-impact aquaculture systems

¹⁴ Ibid.

¹⁵ Ibid.

increasingly incorporate circular processes, such as waste minimisation and the reuse of materials, including feed and water. The shipbuilding and repair industries are progressively integrating recycling protocols for construction materials and components, thereby reducing raw material input and environmental impact. Marine energy infrastructure, including offshore wind installations, and port operations are also embracing circular approaches, such as component reuse and the recovery of energy from maritime waste. The European Marine Litter Toolbox, developed under Horizon Europe initiatives, offers operational guidance to authorities for combating marine plastic pollution across aquatic systems, from rivers to coastal waters. In parallel, the European Investment Bank has channelled approximately €881 million toward wastewater treatment and marine pollution reduction infrastructure, reflecting strong financial support for circular maritime systems. These efforts are closely aligned with the EU's Circular Economy Action Plan, which prioritises waste prevention, resource efficiency, and sustainable product design across all industrial sectors. Horizon-funded sustainable aquaculture technologies further exemplify this alignment, reducing chemical usage and improving feed efficiency in line with ecological sustainability. Under the Blue Deal and the LIFE Programme's „Circular Economy and Quality of Life“ sub-portfolio, ports are being modernised to reduce emissions, recycle water, and minimise operational footprints. Ultimately, the incorporation of circular economy principles into the Blue Economy not only mitigates ecological pressures but also advances the European Green Deal's aim of establishing a regenerative, closed-loop economic model across all marine and coastal domains.

The Maritime Spatial Planning Directive (2014/89/EU) marks a pivotal shift in EU maritime governance by institutionalising spatial planning as a tool to mitigate conflicts among competing marine uses such as fisheries, maritime transport, energy infrastructure, and biodiversity conservation. By mandating an integrated approach to spatial allocation, Marine Spatial Planning (MSP) facilitates cross-sectoral coordination that aligns economic activities with environmental sustainability, thereby advancing both development and ecological protection objectives. This is reinforced by the Marine Strategy Framework Directive, which requires member states to systematically assess anthropogenic pressures and work toward achieving Good Environmental Status (GES), embedding ecological thresholds into legal and policy frameworks. These data-driven tools enhance the capacity for spatial planning to balance economic growth with the preservation of marine ecosystem integrity, in accordance with the objectives of the European Green Deal.

Moreover, MSP supports transboundary cooperation across shared sea basins, promoting policy coherence and strategic alignment among EU member states. The participatory architecture of both MSP and the MSFD, which mandates stakeholder engagement throughout planning processes, fosters transparency, inclusivity, and legitimacy in marine governance. Taken together, these mechanisms signify a structural evolution from fragmented, sector-specific regulation toward a holistic, ecosystem-based management model

that enhances the resilience of maritime sectors. Ultimately, spatial planning and integrated governance frameworks not only prevent spatial conflicts but also serve as critical instruments for embedding Blue Economy objectives within the institutional fabric of the Green Deal.

Conclusion

This study demonstrates that the blue economy is a strategic pillar within the European Green Deal, not an ancillary subset. Data from Eurostat and the EU Blue Economy Report confirm that the blue economy exhibited substantial growth in 2022 – with nearly 4.82/million jobs, €890.6 billion turnover, and €250.7 billion GVA – and continued to expand in 2023 and onwards. Despite this momentum, structural fragmentation, unequal national capacities, and sensitivity to external shocks remain significant hurdles. Emerging sectors, including offshore wind and biotechnology, offer compelling avenues for sustainable innovation, but require stronger integration in policy, finance, and regional strategy. In light of geopolitical instability, migration pressures, and climate hazards, the study underlines the urgency of aligning blue economy development with the Green Deal’s decarbonisation, circularity, biodiversity and resilience objectives. The empirical evidence affirms that sustainable investment in blue sectors enhances economic growth, regional competitiveness, and ecological integrity. Accordingly, policy recommendations include: strengthening institutional coordination across EU, national, and local levels; increasing dedicated climate finance via instruments like the EIB; promoting skills, gender equity and stakeholder inclusion; and fostering crossborder collaboration and innovation ecosystems.

In conclusion, the Blue-Green transition constitutes not merely a policy preference but a structural imperative for the European Union. The comprehensive integration of the Blue Economy within broader sustainability frameworks is fundamental to achieving the EU’s strategic objectives of climate neutrality, enhanced resource efficiency, and long-term socio-economic resilience. Rather than representing an isolated sectoral initiative, the Blue Economy must be understood as a critical vector for systemic transformation toward sustainable prosperity.

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