Bulgaria: Toward Blue Economy Development

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Abbreviations and acronyms

BEDF	Blue Economy Development Framework
BPI Co.	Bulgarian Ports Infrastructure Company
CCMS	Centre for Coastal and Marine Studies
CMA	Common Maritime Agenda
EAFA	Executive Agency of Fisheries and Aquaculture
EC	European Comission
ECA	Europe and Central Asia
EEA	European Environment Agency
EEZ	Exclusive Economic Zone
EGD	European Green Deal
EMFF	European Maritime and Fisheries Fund
EU	European Union (28 member states, including the United Kingdom)
FLAGs	Fisheries Local Initiative Groups
GDP	Gross Domestic Product
GES	Good Environmental Status
GIS	Geographic Information System
GVA	Gross Value Added
ICZM	Integrated Coastal Zone Management
IMO	International Maritime Organization
IO-BAS	Institute of Oceanology-Bulgarian Academy of Sciences
IUU	Illegal, Unreported, and Unregulated
LNG	Liquefied Natural Gas
MoAFF	Ministry of Agriculture, Food and Forestry
MoEc	Ministry of Economy
MoEn	Ministry of Energy
MoEW	Ministry of Environment and Water
MoRDPW	Ministry of Regional Development and Public Works
MoT	Ministry of Tourism
MoTITC	Ministry of Transport, Information Technology and Communications
MPA	Marine Protected Areas
MS	Member State
MSFD	Marine Strategy Framework Directive
MSP	Maritime Spatial Planning
MU	Multi-Use
MW	Megawatt
NM	Nautical Miles
NSI	National Statistical Institute
NUTS	Nomenclature of Territorial Units for Statistics codes of Bulgaria
OECD	Organization for Economic Co-operation and Development
PoMs	Program of Measures
R&D	Research and Development
SDGs	Sustainable Development Goals
SMEs	Small and Medium-Sized Enterprises
SRIA	Strategic Research and Innovation Agenda for the Black Sea
TAC	Total Allowable Catches
UCH	Underwater Cultural Heritage
WFD	Water Framework Directive
WWTP	Wastewater Treatment Plant

Krapets North beach

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Executive Summary

i. This Policy Note reviews the challenges and opportunities that are central to the transition of the Republic of Bulgaria's key marine-based economic sectors to blue economic development. The term "blue economy" refers to the sustainable use of ocean and maritime resources for economic growth, improved livelihoods and jobs, and the lasting health of ocean and maritime ecosystems. The note takes a closer look at sector opportunities as a mix of interconnected economic activities that complement or build on each other. The **objective** is to inform Bulgaria's vision and strategy for transitioning to a blue economy. The note highlights development risks and charts a way forward, factoring in future challenges and drivers to substantially advance Bulgaria's policy and investment alignment with the European blue economy initiatives. It also identifies the challenges and opportunities in shaping blue economy development based on a holistic ecosystem approach to the management of coastal and marine resources.

Why is the maritime economy so important to Bulgaria?

ii. Situated in one of the most attractive regions of Europe, Bulgaria boasts a beautiful coastline that is a mosaic of marine and terrestrial systems of great natural value and substantial socioeconomic benefit. The Black Sea coast is a solid center of economic growth and home to a burgeoning number of coastal residents who make up 10 percent of Bulgaria's total population. The coast draws significant numbers of domestic and international visitors during the tourist season.

iii. The Black Sea's unique coastal and marine resources offer opportunities for the sustainable growth of the industries that depend on them. A large part of the Bulgarian coastal economy continues to rely on traditional sectors, such as beach tourism, fisheries, maritime transport, and mineral extraction. However, there has been an increasing fragmentation in the management of coastal environmental and marine natural resources, due to a lack of consistency in sector policies and market development at the regional and national levels.

iv. The input of Bulgaria's maritime economy into the national economy, including employment, is significant relative to EU standards. Several marine-based sectors, including coastal and maritime tourism, fishery and aquaculture, shipping, ports, ship building and repair, and oil and gas exploitation, generated roughly €995 million in gross value added (GVA) in 2018, which is roughly 2 percent of the national GVA of all economic sectors and accounts for 3.4 percent of all jobs,[1] placing Bulgaria above European Union (EU) averages and above Italy and France. Given Bulgaria's relatively smaller coastal and maritime space, these results illustrate the strategic importance of its maritime economy. Coastal tourism alone generated 80 percent of all blue economy jobs[2] and contributed 69 percent to the blue economy GVA in 2018.[3] The favorable conditions in Bulgaria for wellness and spa tourism along the coast represents a potential for additional jobs. The country's fisheries sector, which includes capture fisheries, aquaculture, and fish processing, contributed €85 million to the economy, or 1.7 percent of the national GVA in 2018; it also employed 9,250 people, generating 9 percent of the blue economy jobs. In view of increasing seafood consumption globally, this sector offers major economic potential.

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1 EC, *The EU Blue Economy Report* 2020 (Brussels: European Commission, 2020).
2 The contribution of the established blue economy sectors to the EU-28 economy in 2018 was 1.5 percent in terms of GVA and 2.2 percent in terms of employment. See EC, *The EU Blue Economy Report* 2020.
3 Ibid.

Table E.1. Bulgaria's Maritime Economy at a Glance (2018)

Established Sectors	Persons Employed (2018)			GVA (2018)		
	Thousand ('000)	% of national employment	% of blue economy employment	EUR million	% of national GVA	% of blue economy GVA
Coastal tourism	82.5	2.6	79	692	1.40	69.9
Marine living resources	9.25	0.3	9	85	0.2	9.0
Marine non-living resources	0.09	0.2	0.9	11	0.02	1.1
Port activities	4.39	0.1	4.3	78	0.16	8.0
Shipbuilding and repair	4.95	0.2	4.9	91	0.18	9.0
Maritime transport	1.83	0.05	1.9	37	0.07	4.0
Blue economy employment/GVA	**102.96**	**3.4**	**100.00**	**995**	**2.0**	**100.00**
National employment/GVA	**3,069**		**NA**	**48,634**		**NA**

Source: EC, The EU Blue Economy Report 2020 (Brussels: European Commission, 2020).

v. The economic potential of Bulgaria's coastal and maritime ecosystem is at risk from human and climatic pressures. Urbanization, pollution, climate change, coastal erosion, and cliff retreat – all natural and human-induced impacts – are putting serious stresses on the coast. The estimated average rate of sea level rise along the Bulgarian Black Sea coast varies from 1.5 to 3 millimeters per year.[4] Along the coast, 11 sensitive stretches, with a total length of approximately 267 kilometers, are prone to a heightened risk of floods.[5] Concentrated urbanization, together with increased industrial development, including ports and marine infrastructure, has strained the coastal environment, threatening habitats and the very values that draw the interest of visitors and investors.

vi. A new challenge will be to find the metrics to gauge the extent to which Bulgaria's blue economy transition could also foster growth and accelerate the pace of job and income creation in the hinterland regions. An upsurge in blue economy innovation and technology development could drive maritime economic expansion, and emerging new industries could create opportunities for high-quality jobs beyond the traditional sectors. Therefore, any future blue economy strategy should highlight that the distributional economic effects of the traditional and emerging sectors on onshore communities could well expand to those communities that may not be considered strictly coastal.

Where does Bulgaria currently stand on its maritime policy?

vii. As an EU member state, Bulgaria adheres to the *acquis communautaire*[6] that shape the context in which gaps in the management of marine ecosystems and economies are to be addressed. Bulgaria has set in motion the Marine Spatial Planning (MSP) procedures to bring together blue economy stakeholders and beneficiaries for the sustainable management of coastal and marine resources. Yet, the

4 L. Pashova and I. Yovev, "Geodetic Studies of the Influence of Climate Change on the Black Sea Level Trend," *Journal of Environmental Protection and Ecology* 11, no. 2 (2010): 791–801.

5 Flood Risk Management Plan of the Black Sea Region (2016–2022).

6 *Acquis communautaire* refers to the cumulative body of European Community laws, consisting of the European Commission's objectives, substantive rules, policies, and in particular, primary and secondary legislation and case law, all of which form part of the legal order of the EU. This includes all the treaties, regulations, and directives passed by European institutions, as well as judgments laid down by the European Court of Justice.

lagging horizontal integration across the maritime sectors and the lack of inclusive planning, which are central to the integration of policy and decision making, could undermine the country's future economic opportunities. EU blue economy policies are the cornerstone of the transformational framework for coordinated actions between national and local stakeholders and societal organizations toward the goal of reducing the impacts of production and consumption on the coastal and marine environment.

viii. The EU is and will remain an important driving force in defining many aspects of Bulgaria's national maritime economy policy development. Among other guidelines, this includes the policies on fisheries and aquaculture, integrated coastal zone management (ICZM), the Maritime Spatial Planning Directive, the Marine Strategy Framework Directive (MSFD), the Water Framework Directive (WFD), the Environment Impact Assessment/Strategic Environment Assessment, access to environmental information, the Habitat and Birds Directive, and so on. The relevant Bulgarian legal acts that transpose these EU directives include: the Republic of Bulgaria Act on Maritime Spaces, Inland Waterways and Ports; the Black Sea Coast Development Act; the Tourism Act; the Fisheries and Aquaculture Act; the Energy Act; the Concessions Act; the Mineral Resources Act; the Waste Management Act; the Biological Diversity Act; the Protected Areas Act; the Water Act; and the Environment Protection Act.

ix. The EU's MSFD, which has been in force since 2008 and according to which member states are to achieve, or maintain where it exists, "good environmental status" (GES) by 2020,[7] is mostly unrealized. The Black Sea Marine Strategy up to 2021, which aims to support MSFD implementation, concludes that, due to significant pressures from human activities in the Black Sea countries, conditions for marine habitats and ecosystems have worsened, particularly in the coastal marine waters. Bulgaria has transposed the MSFD into national legislation through the Regulation for the Protection of the Environment in Seawaters. The National Advisory and Coordination Council for Protection of Black Sea environment[8], chaired by the Minister of Environment and Waters, is responsible for reviewing and coordinating the national Marine Strategy prepared in compliance with the MFSD and for establishing a Program of measures for reaching good environmental status of Bulgarian part of the Black sea. However, Bulgaria's delay in meeting the MSFD's reporting obligation has led to a legal procedure initiated by the European Commission (EC), which recently reminded Bulgaria[9] that it is overdue on this requirement. This means that Bulgaria needs to review, in a coordinated manner, the initial assessment for GES determination and the environmental targets as elements of its marine strategies, a review that is required every six years after the targets have initially been established. Given that the noncompliance persists, the Commission has decided to refer Bulgaria's case to the EU Court of Justice.

x. Several sector strategies that have already been developed and are central to Bulgaria's transition to a blue economy may benefit from a more thorough look into the potential synergies in and conflicts over the use of resources within the sector. These include the Concept for Tourist Zoning in the Republic of Bulgaria; the Updated National Strategy for Sustainable Tourism Development (2014–2030); the Multiannual National Strategic Plan for Aquaculture; the Energy Strategy up to 2020; the Integrated Transport Strategy for the period until 2030; the Marine Strategy; and the National Climate Change Adaptation Strategy and Action Plan.

xi. Bulgaria is stepping up efforts to adapt to climate change and flood risks. The National Climate Change Adaptation Strategy[10] and Action Plan for the Republic of Bulgaria was approved by the Council of Ministers in 2019. The Strategy will serve as a reference document for adaptation actions and priorities until

7 The full definition is: "the environmental status of marine waters where these provide ecologically diverse and dynamic oceans and seas which are clean, healthy and productive within their intrinsic conditions, and the use of the marine environment is at a level that is sustainable, thus safeguarding the potential for uses and activities by current and future generations." See EC, The EU Blue Economy Report 2020.

8 https://saveti.government.bg/web/cc_501/1

9 See EC, "Marine Environment: Commission Decides to Refer Bulgaria to the Court of Justice of the EU over Late Reporting under the Marine Strategy Framework Directive," July 2, 2020, https://ec.europa.eu/commission/presscorner/detail/en/IP_20_1234.

10 Documents are available at: https://www.moew.government.bg/en/climate/international-negotiations-and-adaptation/adaptation/.

2030. Flood risk maps of risk-prone areas have been produced to meet EU and national requirements.[11] They are included in the first Flood Risk Management Plan for the Black Sea Basin, prepared in 2018, and address all aspects of flood risk management, taking into account the basin's particular characteristics. As noted, there are 11 areas with significant potential risk of sea floods, including high and medium risk locations, within the Black Sea Basin, with a total length of approximately 267 kilometers. In the different flood scenarios, the most at risk would be the critical infrastructure of the Burgas district, and the municipalities of Nessebar and Burgas are the most vulnerable in terms of the potential number of people affected.

From crisis to recovery: Bulgaria's transition to a blue economy

xii. The outbreak of the coronavirus pandemic has placed substantial pressure on the Bulgarian economy. The GDP contracted by 10 percent in the second quarter of 2020, the deepest quarterly GDP slump on record amid efforts to contain the rapid spread of COVID-19 (IMF Policy Tracker, 2020). The national GVA decreased by 8 percent year over year.[12] The biggest drops were recorded in the entertainment and recreation industry, trade and transport, accommodations, and manufacturing.[13] To build back better, the recovery models need to clearly articulate how they will fundamentally redefine the relationship between economic growth and sustainability.

xiii. The blue economy sectors have been severely affected by the COVID-19 pandemic. The crisis took its toll on the fisheries and aquaculture sectors, where many fishermen, producers, and processors have been forced to suspend or severely reduce their activities. The closure of sales venues, markets, outlets, and distribution channels has caused a substantial drop in prices and volumes. Tourism was among the sectors hardest hit. In July 2020, the total number of visitors from abroad to Bulgaria declined 66 percent from a year earlier, with the biggest decline in holiday travel and recreation (-85.6 percent). Maritime transport has suffered a similar setback in recent months.

xiv. Adding to the pandemic's impacts are the elevated levels of harmful substances[14] in surface waters around industrial centers, large cities, and ports that are affecting health and tourism development.[15] Bulgaria has made some progress in addressing the lack of coherent environmental monitoring and in increasing the accuracy of data on the marine environment. Although these actions will enable the country to devise policy responses and support the transition to a sustainable and more synergetic blue economy, more timely actions to prevent pollution are required. The monitoring results of sea water quality in the Varna Bay at the mouth of the Kamchia River indicate a need for major improvements. The situation in the Bay of Burgas is similar, although less problematic. Along the coast there are 105 industrial sites in the basin area, 77 of which have been identified as significant sources of wastewater. Unabated marine pollution can affect many sectors and could also affect the revenues of industries that depend on the quality of marine resources.

xv. To comply with the MSFD, Bulgaria has to monitor the quantity and quality of different categories of recyclable waste. The reuse and recycling of waste in Bulgaria is still significantly lower than the EU-28 average. Moreover, Bulgaria does not yet have a circular economy policy program, a gap that needs to be addressed in line with the European Green Deal (EGD). This includes lowering the quantities and quality of micro- and macro-waste on Black Sea beaches as well as floating surface marine litter, including what has been deposited on the seabed and in the biota. The monitoring program will provide information

11 Cf. Art. 6 of the Flood Directive 2007/60/EC and Art. 146d of the Water Act of Bulgaria.
12 Ministry of Finance "Monthly Report on Bulgarian Economy," Ministry of Finance, Sofia, https://www.minfin.bg/en/870. Based on statistical data up to September 17, 2020.
13 Ibid.
14 This includes heavy metals, pesticides, and other persistent organic pollutants.
15 Black Sea Commission, "State of the Environment of the Black Sea (2001–2006/7)" (Istanbul: Commission on the Protection of the Black Sea Against Pollution, 2008).

on the origin and sources of marine litter and its impacts, which include economic damage, habitat loss, declines in biodiversity, injured animals, and so forth.

xvi. Leveraging the COVID-19 crisis and excessive pollution levels, Bulgaria can use the new EU recovery funds to promote reforms with lasting benefits for coastal and marine natural capital that could turn the tide of the recovery effort. The blue economy is an opportunity to define new poles of growth and job-creating options that will accelerate the transition to a new, sustainable, and more inclusive coastal and marine economy. Bulgaria critically needs a proactive strategy and good data to accurately assess the impacts of the pandemic on the maritime sectors and to grasp the opportunity to rebuild with a blue economy fit for the future. Managing marine-related activities in a more coordinated manner will raise the efficacy of investment initiatives and improve the livelihoods of local communities. Reducing policy uncertainties affecting the stocks of natural capital and promoting high-quality public and private investments that reverse the pressure on coastal and marine resources are equally important steps. A COVID-19 crisis economic recovery program aiming to catalyze sustainable and equitable blue economic growth has the prospect of delivering long-term gains. Realizing the blue economy potential requires the balancing of short- and long-term objectives in the national plan for recovery and resilience, using financial resources to spur innovation and progress in the blue economy sectors.

xvii. Bulgaria is an active player in the Black Sea regional cooperation effort. By embracing blue economic development in its governance and operational frameworks in line with the Common Maritime Agenda (CMA)[16] for the Black Sea and its scientific pillar, the Strategic Research and Innovation Agenda for the Black Sea (SRIA), Bulgaria could elevate its regional leadership position in the Black Sea region. Both the CMA and SRIA encourage national initiatives and projects that are complementary to enhancing regional dynamics, promoting blue economy regional value chains, and untapping investment opportunities. Mainstreaming their spirit and pillars in the country's national policies and funding programs, in line with the recommendations provided in this report, would advance blue economy development in Bulgaria and serve as a good practice example for other CMA countries. The World Bank is also proactively involved in the Black Sea blue economy cooperation agenda through the preparation of a multiyear program for "Blueing the Black Sea" (BBSEA). This program intends to provide comprehensive support to assist the Black Sea countries in expanding the knowledge platform for mobilizing investments and technical assistance.

How Bulgaria can realize its blue economy potential?

xviii. The World Bank and the EC launched the Blue Economy Development Framework (BEDF) in 2019 to promote holistic consideration of the ocean economy and ecological systems in policy design and investments. The ensuing discussion on Bulgaria's framework for a transition to more holistic blue economy development points toward the BEDF's complementarity and usefulness as a set of tools to implement EU blue economy policies and directives in order to address higher-level policy issues through integrated and coordinated management of all marine-related activities at the country level. BEDF tools, such as MSP, the valuation of natural capital, and the ecosystem approach, offer a unique point of entry for Bulgaria to step up the blue transformation of established industries by strengthening the linkages between productive and healthy ecosystems and the local economy and to generate spin-off benefits from sector synergies and new investment opportunities.

16 Bulgaria endorsed the "Common Maritime Agenda for the Black Sea" (CMA), which aims to expand the scope of cooperation in the Black Sea basin on key sectors and to advance the commitments of the 2018 Burgas Ministerial Declaration "Towards a Common Maritime Agenda for the Black Sea." The CMA facilitates cooperation and the advancement of political commitments among the Black Sea countries and underscores the current barriers to addressing pollution issues at the regional level, namely, the triple gaps of knowledge, policy, and finance.

xix. MSP stimulates intersectoral and cross-border cooperation, fosters environmental protection, and enables private sector investment. MSP is promoted by the MSFD and BEDF as an effective blue economy tool. MSP initially identifies the impacts of and opportunities for the multiple use of space and includes the participatory determination of synergies and the planning of sector priorities. For example, if the priority is to support the shipping sector, MSP could set aside the free space needed for shipping rather than limiting shipping activities to designated areas. MSP should also ensure that safety zones to activities incompatible with shipping are sufficient. Once approved, MSP reduces the risks to private sector investment. As such, MSP could be a vehicle to advance wider stakeholder and institutional engagement, both at the country and regional levels.

xx. The MSP process includes the identification of synergies and conflicts between maritime sectors to provide important information for decision making in support of economic development and job growth.[17] Traditional fishing communities are attractive destinations for tourists and support local growth by: i) increasing the demand for local fish consumption, ii) participating in events promoting local traditions,[18] and iii) taking part in activities, such as recreational fishing, that can be further developed in Bulgaria. Capture fisheries frequently benefit from positive spillover effects generated by the marine protected areas (MPAs) where fisheries resources are safeguarded effectively.[19] Aquaculture, coastal tourism, ports, shipping, offshore oil and gas, marine mineral extraction, and fishing are all competing for access to marine space. For example, the localization of offshore wind turbines needs to account for possible interference with radar operations[20] and the safety concerns of smaller boats whose sight is impaired by the infrastructure. Similarly, fishing, aquaculture, and coastal tourism that are dependent upon healthy resources and ecosystems can be impacted by the pollution generated by offshore oil and gas, marine mining, and poor waste management.

xxi. The valuation of natural capital and ecosystem services is a central policy instrument to the blue economy that is also promoted by the BEDF. By utilizing the ecosystem valuation approach, Bulgaria could complement public policies and regulations, help improve marine resource governance, and enhance the effectiveness of public investments in the marine space. Natural capital valuation can also inform policy decisions toward the sustainable growth of marine-based industries by considering all costs and benefits, both internal and external. Using these tools will help address the current plethora of challenges and risks to coastal and marine resources.

How can the blue economy sectors move forward?

xxii. The post-pandemic recovery of the economy, the ambitious targets of the EGD, and the new EU multiannual financial planning for 2021–27 all pose challenges and opportunities for the Bulgarian authorities in their effort to restore growth and jobs. Given the economic value of Bulgaria's maritime economy, which is significant by EU standards, the blue economy sectors could provide a sizable contribution to the country's post-pandemic economic recovery. Stimulating investments in bluer tourism, reducing carbon emissions from shipping through "green" shipping and ports initiatives, harnessing the potential of blue value chains, restoring coastal ecosystems, and promoting emerging maritime sectors could help maximize the long-term benefits while supporting a short-term recovery. Setting in motion the necessary structural reforms, optimizing inter-institutional coordination, diversifying supply chains, and better integrating circular economy principles in the blue economy additionally offer a path to economic revival. This course of action will also help Bulgaria to assume an exemplary role in tackling common challenges in the Black Sea regional basin and strengthen its leadership position for CMA implementation.

17 ICF Consulting, "Study on the Economic Benefits of Marine Protected Areas," Task 4 Stakeholder Consultation, Final Report (Brussels: European Commission, 2017), http://publications.europa.eu/resource/cellar/bbee9116-b0c5-11e8-99ee-01aa75ed71a1.0001.01/DOC_1.

18 For example, the mussel festival in in the town of Kavarna on the North Bulgarian coast.

19 EC, *The EU Blue Economy Report 2019* (Brussels: European Commission, 2019).

20 See EC, "Shipping and Ports," Sector Fiche, https://www.msp-platform.eu/sites/default/files/sector/pdf/mspforbluegrowth_sectorfiche_shipping-ports.pdf.

xxiii. Established blue economy sectors could do better if specific challenges from competing uses were addressed. This could unlock the potential of traditional blue economy sectors and create more jobs, but it will require the better management, planning, and enhanced protection of coastal and near-shore resources. Raising the efficacy of investment initiatives could improve the livelihoods of local communities. These considerations have to trickle down in the sectors' strategies to shape the policies for a blue economy transition. A future blue economy strategy will have to promote actions to help monitor the established sectors to ensure that they embrace circularity and resource-efficient practices to reduce marine pollution.

- **Adopt a vision, strategy, and roadmap for the blue economy.**

xxiv. A national vision and strategy accompanied by a blue economy roadmap will help accelerate the transition to a holistic approach and the consolidation of governance structures under strong national leadership and clearly defined institutional mandates. The roadmap will identify common priorities and actions to be implemented in the coming years to steer up the transition to a blue economy in an integrated, consistent, and comprehensive way, with a multisectoral approach and the continuous engagement of all stakeholders.

xxv. Bulgaria's blue economy strategy could create multiple opportunities for addressing the post-pandemic financial shortfall to build forward a better and "greener" coastal and marine economy. Taking a holistic approach to sustainable blue economy development and applying integrated coastal and marine planning will facilitate the more efficient programming of public financial resources, open up opportunities for private businesses and stakeholders to access funding, and help to shape coherent national responses to transboundary and regional challenges.

- **Strengthen blue economy governance, institutional collaboration, and stakeholder participation in policy making.**

xxvi. Setting a clear direction for the blue economy path will provide a platform for improved governance and coordination among all institutions and stakeholders in the blue economy sectors. Such coordination will ensure a consistency of sector development plans, facilitate synergies, help reduce competition over marine resources, and enable the formulation of priority investments.

xxvii. The consolidation of existing governance structures will bring together institutions and specialized government agencies with a mandate to regulate the use of marine resources. This includes the harmonization of legislative frameworks for a "green transition" and the application of instruments that promote an ecosystem approach to sustainable blue economy development. In addition, to ensure that MSP is implemented in a transparent manner, Bulgaria needs to introduce tools to quantify and evaluate trade-offs among competing uses, users, and finite resources and to accurately determine the positive and negative consequences of the different options.

- **Protect natural assets and address marine pollution.**

xxviii. An essential element of the sustainable blue economy is safeguarding blue natural capital. A dedicated effort in this respect is the development of a National Action Plan for marine litter as part of the implementation of the Black Sea Marine Litter Regional Action Plan adopted by the Commission on the Protection of the Black Sea Against Pollution in 2018.[21] This plan will include: a) the adoption of specific policies, legal instruments, and institutional arrangements, including management plans for solid waste,

21 The overall objective of the Plan is to consolidate, harmonize, and implement the necessary environmental policies, strategies, and measures for the sustainable integrated management of marine litter issues in the Black Sea region. See http://blacksea-commission.org/Downloads/BS_Marine_Litter_RAP_adopted.pdf.

that incorporate prevention and cleanup programs for the removal and disposal of marine litter; (b) a monitoring program to assess the current status of the marine environment with respect to marine litter; and (c) awareness raising and education programs and campaigns.

xxix. Furthering a national vision and strategy on mainstreaming government policies for the uptake of the circular economy by all economic sectors will provide a springboard from which to ascertain the effectiveness and efficacy of marine protection policies. It will allow a shift away from "take-make-dispose" linear models in the value chains to restorative and regenerative ones. Bulgaria can use the blue economy policies to overcome the strict delineation of marine sector value chains and to design and roll out circularity in the business models of these sectors for the optimal sustainability performance of Black Sea resources.

- **Leverage financing for the blue economy transition.**

xxx. The blue economy can play an important role in the transition to carbon neutrality, as implied by the EGD, making it an important area for investment. Ahead of the new EU programming period, Bulgaria has a real chance to shape an effective COVID-19 recovery plan for its coastal communities, and the ecosystems these communities are dependent upon, and to support the business operators and stakeholders active in the different sectors of the blue economy. Considering the growing number of financing avenues for innovative blue business solutions, notably by EU institutions and development banks, a program of measures at the national level could consider targeted assistance to small and medium-sized enterprises (SMEs), start-ups, and entrepreneurs to help them prepare better project proposals and working patterns and also to promote sustainability principles in the real economy.

xxxi. It will be crucial to plan measures in support of key blue economy sectors (e.g., fisheries, aquaculture, maritime transport, and tourism) in the national recovery and resilience plan to unlock the funds under the €750 billion EU recovery package. Against the strong conditionalities for accessing these funds, highlighting the blue economy's potential to contribute to the EU green and digital transitions could be beneficial. The recovery funds can be instrumental in helping to scale up innovative activities, such as sustainable offshore food and biomass production and renewable energy, in a way that it is environmentally sound and preserves ecosystems.

xxxii. Catalyzing investments could be hindered only by a weak capacity to identify bankable sectoral investments that mutually reinforce the economic, environmental, and coastal community benefits. Sources and diverse funding avenues that could be potentially tapped include government budgets, EU public funding, commercial loans, lending from international financial institutions, and financing from capital markets. Marine and maritime-related investments can get support through a variety of EU funding instruments. For instance, the European Maritime and Fisheries Fund (EMFF) supports the implementation of the common fisheries policy and investments to advance maritime policy at the national level. Reducing pollution in the marine environment and the adverse effects of climate change can be funded through the next generation of interregional and cross-border cooperation programs (e.g., the Interreg NEXT Black Sea Basin program). To help the economy navigate through the "green" and "blue" transitions, Bulgaria can access additional EU-powered investments for specific areas, such as the EU BlueInvest platform[22] and the future InvestEU program. The EU Recovery Fund, through a dedicated allocation for Bulgaria, will be instrumental in the short and medium term in scaling up investments in innovation in sustainable food and biomass offshore production and renewable energy in ways that preserve ecosystems. The World Bank, under its regional BBSEA program, is looking at avenues to support projects that address marine pollution and marine litter in the Black Sea countries.

22 BlueInvest aims to boost innovation and investment in sustainable technologies for the blue economy by supporting readiness and access to finance for start-up businesses, SMEs, and scale-ups. It is enabled by the European Maritime and Fisheries Fund and open for stakeholders in Bulgaria. See https://webgate.ec.europa.eu/maritimeforum/en/frontpage/1451.

xxxiii. There is a need to strengthen institutional and stakeholder capacity for better economic planning and investment decisions. The blue economy could open a space for collaboration among stakeholders and opportunities for enhanced knowledge exchange and partnerships among various agencies using blue economy tools. This could unlock more opportunities for innovation, private investments, and local growth.

- **Invest in innovation and human capital.**

xxxiv. Emerging blue economy sectors could turn into growth centers if the policies to promote innovation and private sector uptake are in place. Of the new emerging and innovative sectors, offshore wind energy stands out as having the highest potential. This needs to be studied further. Prospects for a blue bio-economy and biotechnology, along with coastal protection through nature-based solutions, are growing and also need further assessment. The outlook for environmental monitoring and technology development through research and innovation is also improving and could be an area to stimulate, given the strong technical and scientific potential of the Bulgarian academic and research community.

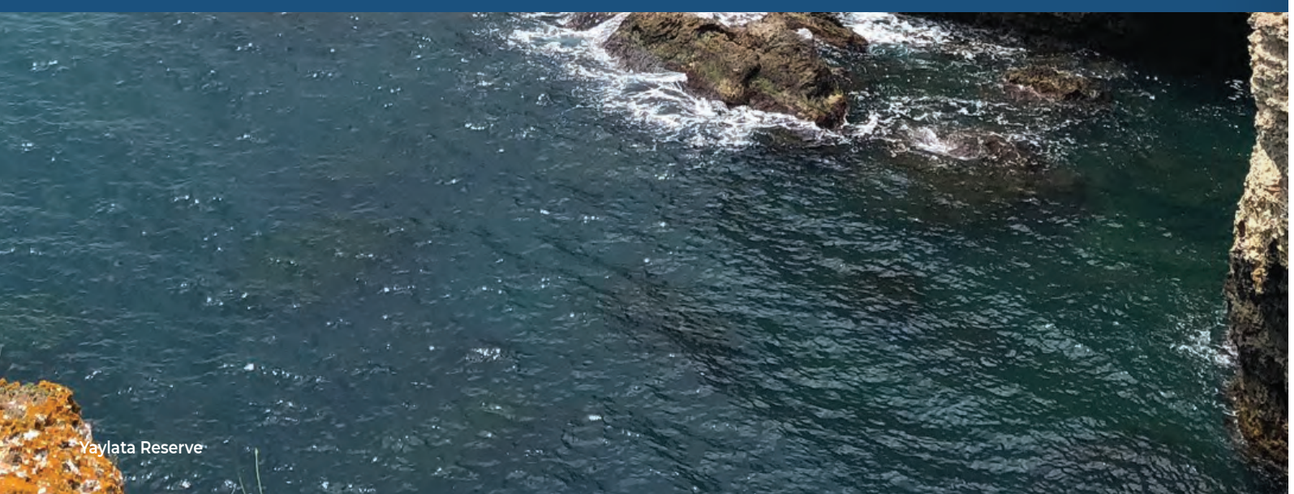
xxxv. Support to scientific and research capacity in blue economy sectors will be key to the implementation of MSP and coordination on priority investments. Sensitizing the decision makers in Bulgaria to opt for nature-based solutions in the prospective blue sectors and in job creation could help expand the benefits of transitioning to blue development. Science could help reduce the policy uncertainties affecting the stocks of natural capital and also promote the kind of investment that reverses the existing pressure on natural resources.

xxxvi. Calibrating existing and new sectoral funding programs for skills development could (i) take advantage of the available EU-funded networks and schemes,[23] and (b) help to attract young talent to the blue economy, stimulate productivity, and increase the competitiveness of Bulgaria's blue economy development.

St Ivan island (view from Sozopol)

23 The Blueprint for Sectoral Cooperation on Skills was one of the key initiatives of the Skills Agenda for Europe 2016. Within the Pact for Skills of the Updated Skills Agenda 2020, it will be expanded and opened to more sectors.

Introduction



Yaylata Reserve

The concept of the blue economy is progressively gaining an important status in the economic development of European Union (EU) member states. The term "blue economy" refers to the sustainable use of ocean and maritime resources for economic growth, improved livelihoods and jobs, and the lasting health of ocean and maritime ecosystems. Global advancement of the blue economy paradigm has spurred a new momentum for EU policy makers to rethink the development path of coastal and marine spaces and put in place policies and investments that support sustainable development across all member states. In the case of Bulgaria, the country's coastal and marine areas will face unique challenges and opportunities related to the transition to a blue economy.[24]

The Black Sea coastline of Bulgaria is a mosaic of marine and terrestrial systems of great natural value and socioeconomic benefit. The coastline stretches over 432 kilometers and borders Romania on the north of Cape Sivriburun, and the Republic of Turkey on the south of the Cape of Rezovo (Stanchev, Young, and Stancheva 2013). In the north, the Black Sea marine shelf is 120 kilometers wide, dropping down to 30 kilometers southeast of Cape Kaliakra. The maximum depth of the Bulgarian part of the Black Sea is 2,150 meters. Most of the rivers that flow from the coast to the Black Sea are small, with the exception of the Kamchia River. The coast supports important Ramsar sites that were included in the EU's Natura 2000. Coastal lakes, lagoons, and marshes sustain habitats of high ecological and conservation value. Marine areas under Natura 2000 protection regimes cover roughly 2,827 square kilometers, which is 8 percent of the total marine area of Bulgaria.[25]

Urbanization, pollution, climate change, coastal erosion, and cliff retreat – all natural and human-induced impacts – are putting pressure on Bulgaria's coast. The estimated average rate of sea level rise along the Bulgarian Black Sea coast varies from 1.5 to 3 millimeters per year (Pashova and Yovev 2010). There are 11 stretches along the coast, with a total length of approximately 267 kilometers, that are under a heightened risk of sea floods.[26]

A large part of the Bulgarian coastal economy relies on traditional sectors, such as beach tourism, fisheries, maritime transport, and mineral extraction. However, recent years have witnessed an increasing fragmentation in the management of the coastal environmental and marine natural resources, inconsistent sector development policies, and untapped markets and labor force opportunities at the regional and national levels.

EU blue economy policies are the cornerstone of the transformational actions of national and local stakeholders and societal organizations to reduce the impacts of production and consumption on the coastal and marine environment. As an EU member state, Bulgaria adheres to the acquis communautaire that shape the context in which management gaps of marine ecosystems and economies are to be addressed. Bulgaria has set in motion the Maritime Spatial Planning (MSP) procedures to bring together blue economy stakeholders and beneficiaries for the sustainable management of coastal and marine resources. Yet, the lagging horizontal integration across sectors and a lack of inclusive planning – central to the integration of policy and decision making – could undermine Bulgaria's opportunities for potential gains from the transition to a blue economy.

The EU will remain an important stakeholder in this process by defining many aspects of the national blue economy policy development. Among other guidelines, this includes the policies on fisheries and aquaculture and integrated coastal zone management (ICZM), the Marine Strategy Framework Directive (MSFD), the Water Framework Directive (WFD), the Habitat and Birds Directive, the Environmental Impact Assessment/ Strategic Environmental Assessment, access to environmental information, and the Maritime Spatial Planning Directive. The EU's MSFD has been in force since 2008 and requires member states to set up national marine strategies to "achieve, or maintain where it exists, 'good environmental status' by 2020."[27] The Black Sea Marine Strategy for Bulgaria up to 2021, developed to support MSFD implementation, concludes that, due to the significant pressure from human activities in the

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24 By "transitioning to the blue economy" this report refers to the transitioning to a more comprehensive and holistic approach to the management of blue economy assets across marine-based sectors in Bulgaria and in the context of the EU Blue Economy and Blue Economy Development Framework (BEDF).

25 Natura 2000 terrestrial and marine areas in Bulgaria cover 41,560 square kilometers.

26 Flood Risk Management Plan of the Black Sea region (2016–2022).

27 The full definition is: "the environmental status of marine waters where these provide ecologically diverse and dynamic oceans and seas which are clean, healthy and productive within their intrinsic conditions, and the use of the marine environment is at a level that is sustainable, thus safeguarding the potential for uses and activities by current and future generations." See EC (2020).

Black Sea countries, conditions for marine habitats and ecosystems have worsened, particularly in the coastal marine waters.

The World Bank and European Commission (EC) launched the Blue Economy Development Framework (BEDF) in 2019 to promote the holistic consideration of the ocean economy and ecological systems in policy design and investments. The ensuing discussion of Bulgaria's framework for the transition to a blue economy points to the complementarity and utility of the BEDF, in addition to other EU blue economy policies and directives, in addressing higher-level policy issues through the integrated and coordinated management of all marine-related activities at the country level. BEDF tools, such as MSP, the valuation of natural capital, and an ecosystem approach, offer another unique point of entry for Bulgaria to step up the "blue" transformation of established industries by strengthening the linkages between productive and healthy ecosystems and the local economy and to generate spin-off benefits from sector synergies and new investment opportunities.

Bulgaria has endorsed the "Common Maritime Agenda for the Black Sea" (CMA), supported by the EU, which aims to expand the scope of cooperation in the Black Sea basin on key sectors and to advance the commitments of the 2018 Burgas Ministerial Declaration "Towards a Common Maritime Agenda for the Black Sea." The Strategic Research and Innovation Agenda for the Black Sea (SRIA) will support research in key sectors, including biodiversity, cultural heritage, and local, national, and transboundary policy measures. Although the CMA has facilitated and advanced the political commitment of the Black Sea countries to cooperate, it has also underscored the current barriers to addressing pollution issues at the regional level, which include a lack of knowledge, policy, and financing. Both the CMA and SRIA set a new dynamic for better governance of the sea based on enhanced political and operational coordination, while recognizing the added value of joint projects to implement the shared objectives. Bulgaria's evolution to better stewardship of marine resources could provide a valuable example in the Black Sea region, where environmental challenges remain a substantial deterrent to development. The BEDF toolkit could facilitate a Black Sea development shift with a focus on the environmental and social dimensions.

Many of the worrisome signs of economic decline due to the COVID 19 pandemic have manifested themselves in the national economy. National gross value added (GVA) has decreased by 8 percent year over year (Bulgaria 2020).[28] The biggest drops were recorded in the entertainment and recreation industry, trade and transport, accommodations, and manufacturing (Bulgaria 2020). In the second quarter of 2020, the revenue from tourism, a major contributor to the economy, posted a slump of 31 percent.[29] To build forward better, the recovery models need to clearly articulate how they will fundamentally redefine the relations between economic growth and sustainability. The blue economy is an opportunity to define new poles of growth and job-creating opportunities that will accelerate the transition to a new, sustainable, and more inclusive coastal and marine economy. At the same time, avenues to establish the right balance between economic pursuits and the protection of natural resources and natural assets (a "sustainable blue economy") are highlighted.

This policy note analyzes the challenges and opportunities central to Bulgaria's transition to a blue economy in the key economic sectors that depend on coastal and marine resources. It highlights the drivers for growth that could support the development of evidence-based policy reforms and investment plans for the sustainable economic development of coastal and marine areas. The method used for the analysis is a baseline review of the established blue economy sectors and an assessment of the synergies and potential user conflicts over coastal and marine resources. The analysis uses predominantly secondary data sources. An essential component of the analysis is a review of the underpinning policy and institutional context for the transition to blue economic development. Economic indicators used in Chapter 1 for the overview of Bulgaria's maritime economy are based on the *EU Blue Economy Report from 2019* (EC 2019a). The note then undertakes a deeper analysis of key established and emerging maritime sectors. For the sector analyses, the note uses data from EU sources and national agencies, and the recommendations focus on areas that significantly contribute to the economy but where challenges and unsustainable patterns could undermine future growth. In doing so, policy recommendations concentrate on interconnected areas of critical importance to protecting the coastal and marine ecosystem to preserve the substantial economic opportunities that could be derived from a healthier coastal and marine space. Importantly, the policy recommendations also factor in actions to align with the EU's blue economy framework where enhancing the potential complementarity with the BEDF toolkit could stimulate sustainable blue economy investments.

The objective of this Policy Note is to inform Bulgaria's vision and strategy for transitioning to a blue economy by identifying the challenges and opportunities in shaping a development framework based on a holistic ecosystem approach to the management of coastal and marine resources. It aims to engage the primary audience from the government of Bulgaria, including the coordinator of the CMA for the Black Sea, the Ministry of Transport, Information Technology and Communications (MoTITC), other government stakeholders in the blue economy sectors, and local authorities of coastal municipalities. The broader stakeholder community involved in the blue economy sectors, such as industrial associations, scientific organizations, civil society, and local communities, will also benefit. The EC (the Directorate-General [DG] for Maritime Affairs and Fisheries, DG for the Environment, and DG for Regional and Urban Policy), the Black Sea Economic Cooperation (BSEC), and the Commission on the Protection of the Black Sea against Pollution (the Black Sea Commission, or BSC) are important stakeholders in the Black Sea CMA and will likewise find the information useful.

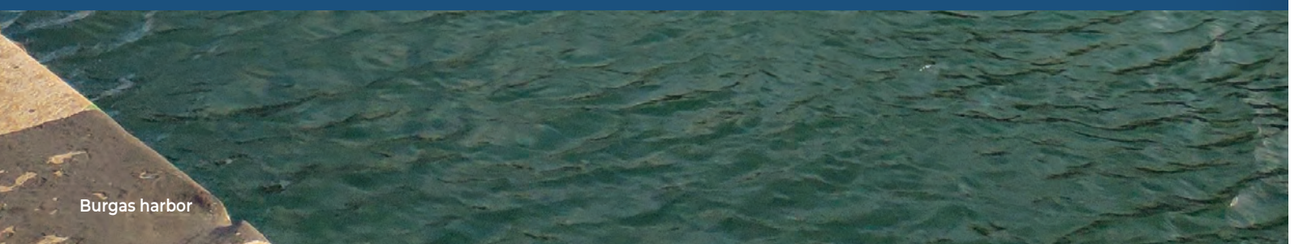
The note is organized into six chapters. Following the Introduction, Chapter 1 introduces the macroeconomic context of the coastal and marine economy in Bulgaria. Chapter 2 presents the blue economy concept – its known definitions and the holistic thinking that underpins it – by introducing the BEDF and its use in strengthening the governance of the blue economy in Bulgaria, as inspired by the momentum created at the regional forefront with the adoption of the CMA for the Black Sea. Chapter 3 presents a snapshot of the established sectors of the Bulgarian blue economy (coastal and marine tourism, fisheries and aquaculture, marine non-living resources, maritime transport, and ship building and repair), and also reveals some of the potential in the emerging sectors, such as blue energy, coastal protection, and environmental monitoring. Chapter 4 elaborates on the current and potential options and opportunities for financing the blue economy in Bulgaria, while Chapter 5 reviews the institutions and other stakeholders that are directly involved in its advancement. Chapter 6 summarizes the recommendations on priority measures and investments in selected marine-based sectors that are key to the transition to blue economic development.


North of Durankulak beach

28 Based on statistical data up to September 17, 2020.
29 Based on data from Bulgaria's National Statistical Institute (NSI) for the second quarter of 2020 on total expenditure on tourist trips.

CHAPTER 1.

Snapshot of Bulgaria's Coastal and Marine Economy



Burgas harbor

Situated in one of the most attractive regions of Europe, Bulgaria's Black Sea coast is endowed with abundant natural resources and a deep cultural heritage. The western shore of the Black Sea features a diverse coastline of wide sandy beaches and dunes and magnificent cliffs. It offers a temperate climate, favorable for seaside holiday tourism. There are more than 70 significant sand beaches along the coast, covering an area of approximately 7 million square meters. The Black Sea is tideless and its waters have a low salinity (16–18 percent), which, together with its moderate temperature during the summer (22–25°C), makes it suitable for swimming and bathing and other marine-based activities. Through interregional transport and connections to the Black Sea region and the rest of the world, two areas bordering the Black Sea, the North East and South East regions, make essential contributions to Bulgaria's economy. In addition, there are advantages to the country's location on important gas transmission corridors, including the prospective exploration in new gas fields.

Bulgaria supports important maritime infrastructure that services passengers, cargo, and fishing activities. The two largest sea harbors are in the district centers of Burgas and Varna. Both ports operate as multi-modal terminals with the technical capacity to support maritime industry and transport. Port locations benefit from new offshore uses and offer a wide range of industrial production facilities. Coastal aquaculture has grown rapidly over the past couple of decades. Moreover, the existence of numerous marinas and other relevant port infrastructure supports the development of cruise tourism, boating, and other forms of marine-based recreational tourism, though these developments are still on a lower scale.

Bulgaria's Black Sea coast offers an attractive living environment. It is home to 726,923 people, which is 9.87 percent of the nation's population.[30] Population density in the coastal municipalities is 126 persons per square kilometer, much higher than the 63 persons in the rest of Bulgaria's cities. The coast offers job opportunities and has traditionally well-established blue economy sectors that include the following:

- coastal and maritime tourism, including subsectors or diverse forms of tourism, such as beach tourism; cultural and underwater cultural heritage (UCH)/adventure tourism; historical, wellness, and spa tourism; eco- and nature-based tourism; cruise and yachting tourism; and recreational boating
- extraction and commercialization of marine living resources (fishery, aquaculture, and processing and distribution)
- maritime transport, ports, shipbuilding, and ship repair, including smart/green shipping and the maritime industry
- marine extraction of minerals, oil, and gas (marine non-living resources)

Table 1. Bulgaria's Maritime Economy at a Glance (2018)

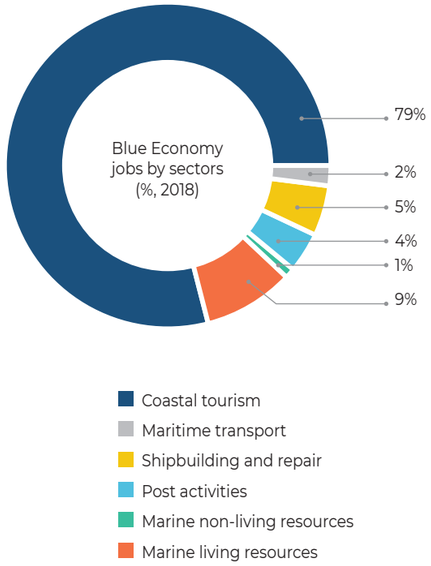
Established Sectors	Persons Employed (2018)			GVA (2018)		
	Thousand ('000)	% of national employment	% of blue economy employment	EUR million	% of national GVA	% of blue economy GVA
Coastal tourism	82.5	2.6	79	692	1.40	69.9
Marine living resources	9.25	0.3	9	85	0.2	9.0
Marine non-living resources	0.09	0.2	0.9	11	0.02	1.1
Port activities	4.39	0.1	4.3	78	0.16	8.0
Shipbuilding and repair	4.95	0.2	4.9	91	0.18	9.0
Maritime transport	1.83	0.05	1.9	37	0.07	4.0
Blue economy employment/GVA	**102.96**	**3.4**	**100.00**	**995**	**2.0**	**100.00**
National employment/GVA	**3,069**		**NA**	**48,634**		**NA**

Source: EC (2020).

30 Last census (2011) data from the National Statistical Institute of Bulgaria

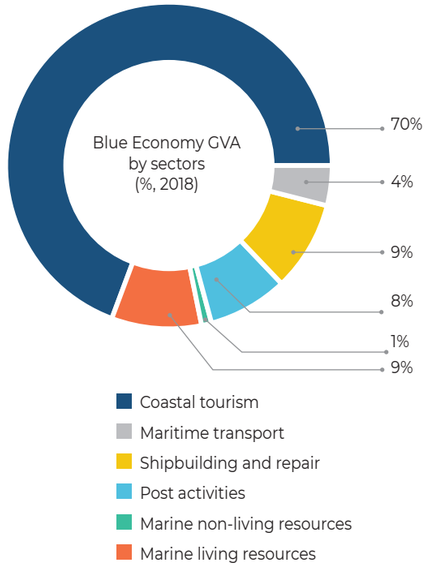
The key marine-based sectors of Bulgaria – coastal and maritime tourism, fishery and aquaculture, shipping, ports, ship building and repair, and oil and gas exploitation – employed 102,962 people and generated roughly €995 million in GVA in 2018 (EC 2020). This is 2 percent of the national GVA of all economic sectors and 3.4 percent of all jobs, placing Bulgaria above EU averages[31] and above Italy and France. Coastal tourism alone generated 80 percent of all blue economy jobs and contributed 69 percent to the blue economy GVA in 2018 (EC 2020). Bulgaria's fisheries sector, which includes capture fisheries, aquaculture, and fish processing, contributed €85 million to the economy, or 1.7 percent of the national GVA in 2018; it also employed 9,250 people, generating 9 percent of the blue economy jobs. Noting increasing seafood consumption globally, this sector offers significant economic potential. Given the relatively smaller coastal and maritime space of Bulgaria, these results illustrate the strategic importance of Bulgaria's maritime economy (see table 1 and figures 1 and 2). Taking a closer and more holistic look at the opportunities that each sector brings to the blue economy as a mix of interconnected economic activities would make it possible to better understand the development risks and chart a way forward that factors in the future challenges.

Figure 1. Blue Economy Employment in Established Sectors



Source: EC (2020).

Figure 2. Blue Economy Contribution to GVA of Established Sectors



Source: EC (2020).

A new challenge will be to find the metrics to gauge the extent to which Bulgaria's blue economy transition could foster growth and accelerate the pace of job and income creation in the hinterland beyond the coast. An upsurge in blue economy innovation and technology development will drive maritime economic expansion, and emerging new industries will create new opportunities for high-quality jobs beyond the traditional sectors. Therefore, any future blue economy strategy should highlight that the distributional economic effects of the traditional and emerging sectors on onshore communities could well expand to those communities that may not be considered strictly coastal.

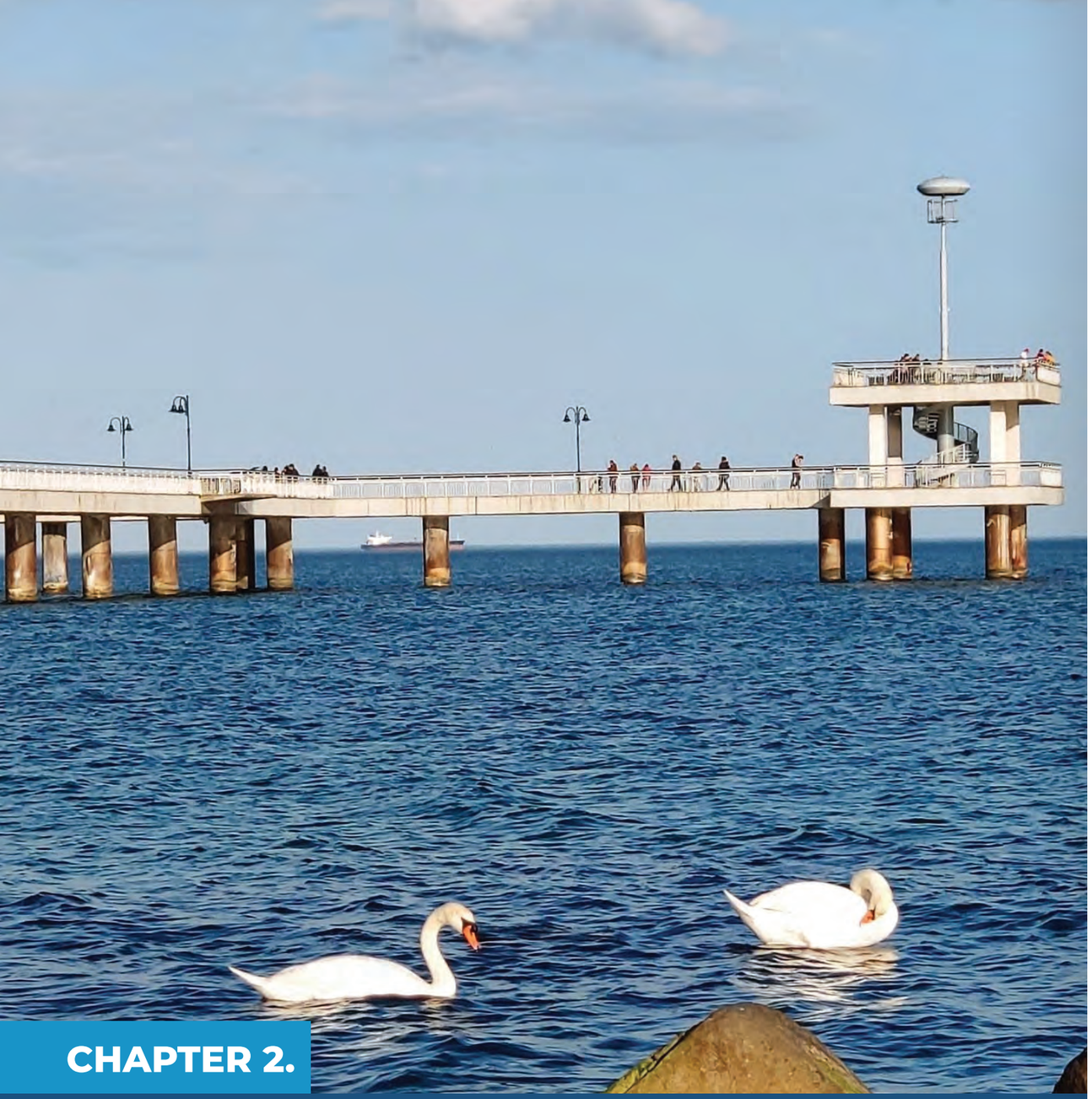
31 The contribution of the established blue economy sectors to the EU-28 economy in 2018 was 1.5 percent in terms of GVA and 2.2 percent in terms of employment (EC 2020).


Sozopol marina

The outbreak of the coronavirus pandemic has placed substantial pressure on the Bulgarian economy. Bulgaria's GDP contracted by 10 percent in the second quarter of 2020, more than the preliminary estimates of 9.8 percent. This was the deepest quarterly GDP slump on record amid efforts to contain the rapid spread of COVID-19 (IMF 2020).

Blue economy sectors have been affected by the COVID-19 pandemic in many ways. The crisis has taken its toll on the fisheries and aquaculture sectors, where many fishermen, producers, and processors have been forced to suspend or severely reduce their activities. The closure of sales venues, markets, outlets, and distribution channels has caused a substantial drop in prices and volumes. Tourism was among the sectors hardest hit. In July 2020, the total number of visitors to Bulgaria from abroad declined 66 percent from a year earlier, with the highest decline in holiday travel and recreation (-85.6 percent). Maritime transport has suffered a similar setback in recent months. Despite the rapid deployment of compensation measures for these sectors, the path to recovery might be longer than anticipated. Bulgaria critically needs a proactive strategy and good data to accurately assess the pandemic's impacts on the blue sectors and to grasp the opportunity to build a blue economy fit for the future. Leveraging the crisis to promote reforms with lasting benefits on coastal and marine natural capital could turn the tide of the recovery effort. One way will be by reducing policy uncertainties affecting the stocks of natural capital and promoting high-quality public and private investments that reverse the pressures on coastal and marine resources.

Designing a COVID-19 economic recovery program with a view to catalyzing sustainable and equitable blue economic growth has the potential "to deliver short-term economic, social, health and environmental benefits for affected communities and sectors, while building longer-term social, economic and ecological resilience" (Northrop et al. 2020). This potential could be realized by balancing short- and long-term objectives in a national plan for recovery and sustainability, using the financial resources to spur innovation and progress. For instance, investments in the restoration of the coastal and marine ecosystem, newly emerging sectors and the decarbonization of the marine economy, traditional and green infrastructure for protecting coastal and marine ecosystems, and diversified job opportunities in traditional sectors would all be instrumental in advancing Bulgaria's transition to a blue economy.



CHAPTER 2.

The Blue Economy's Development Context

Burgas central beach, view from the Sea garden

The "blue economy" has emerged as an umbrella term related to the development of oceanic and maritime economic activities in an integrated and sustainable way. According to the World Bank, "the Blue Economy concept seeks to promote economic growth, social inclusion, and the preservation or improvement of livelihoods while at the same time ensuring environmental sustainability of the oceans and coastal areas" (World Bank and United Nations 2017). It emphasizes that "blue" economic development depends not only on governments but also on the active and sustained engagement of all stakeholders, including national, regional, multilateral, and international organizations, the public and private sectors, civil society, and other relevant participants, as well as the effective management of knowledge.

The EU has been particularly active in promoting economic growth based on the sustainable use of oceans and seas (blue growth). The EU Integrated Maritime Policy (EC 2007) builds on the notion of the interconnectedness of industries and human activities centered on the sea. It promotes a holistic approach to all sea-related policies with a view to supporting sustainable sea and ocean development and establishing coordinated and transparent decision-making processes in the EU's sectoral policies on seas and marine activities, including via its sea-basin and macro-regional strategies. Consequently, the EU's blue growth strategy (EC 2012) has identified five innovative, high-potential maritime sectors – blue energy, aquaculture, coastal and maritime tourism, blue biotechnology, and sea-bed mining – where great opportunities exist for exploitation by expanding industries in a sustainable way.

EU legislation on the marine environment and on MSP is particularly forward looking. It aims to strike a balance between the protection of marine biological and natural systems and rule-based economic development at sea. Although key blue economy sectors, such as coastal and maritime tourism, fisheries, and aquaculture, are severely affected by the coronavirus pandemic, the EU blue economy as a whole is projected to grow in the future and has the potential to significantly contribute to a recovery without lowering environmental standards and undermining natural systems.

In December 2019, the EC adopted a new growth strategy based on the notion of decarbonization and sustainability by announcing the European Green Deal (EGD) for the EU and its citizens (EC 2019b). The EGD package of measures suggests a successful "transition towards digital, knowledge-based, decarbonized and more circular industry in Europe,"[32] thus aiming to make Europe the first climate-neutral continent by 2050 to improve the health of the planet, economy, and people. This means, for instance, that fossil-intensive maritime industries must decarbonize to keep their license to grow. Conversely, the blue economy is seen as a critical enabling vector to reach the EGD objectives, including in mitigating and adapting to climate change. For example, the growing potential of offshore renewable energy and more sustainably managed maritime space is considered an important contributor to the EU's "green" transition.

2.1. Blue Economy Development Framework

In 2019, the World Bank and the EC launched the BEDF to promote the holistic consideration of the ocean economy and ecological systems in policy design (see figure 3). The entry point of the framework is economic development that is attuned to the changes in the flow of blue natural capital as inputs to the economy over time and also aims to reduce the negative outputs, such as pollution and marine litter, that undermine the quality of the ocean's natural capital. The BEDF promotes a multisectoral, integrated, and participatory approach to coastal and marine development at multiple levels. Central to the framework are (a) knowledge management; (b) governance, fiscal reforms, and public investments that help create an enabling environment for sustainable private sector growth (de-risking growth); and (c) the promotion of private investment, all underpinned by a number of key cross-cutting considerations.

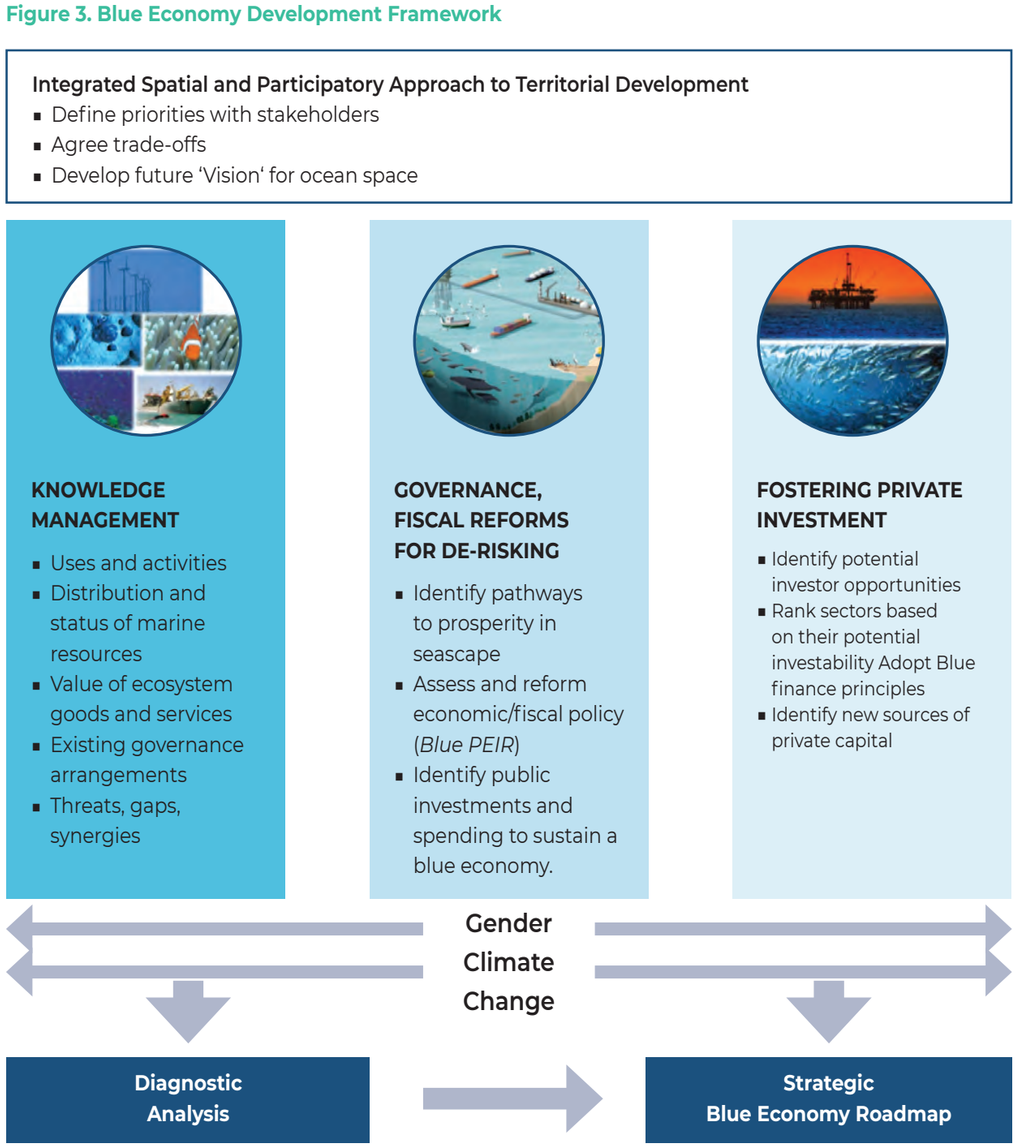
The BEDF factors in environmental degradation and the impacts of climate change into marine resource governance strategies. It supports the tran-

32 European Parliament, "Industrial Policy," Briefing (Brussels: European Union, 2019), https://www.europarl.europa.eu/RegData/etudes/BRIE/2018/630309/EPRS_BRI(2018)630309_EN.pdf.

sition to more diverse and sustainable blue economies, while building resilience to climate change. It is also a new tool in developing a systematic and scalable approach to defining a country's blue economy opportunities, constraints, and priority investments.

Contrary to the single-sector approach that leads to disconnected decisions, inefficient resource use, and missed opportunities, the BEDF promotes an integrated and coordinated application of different sectoral policies in the coastal zone and maritime space. Development of this kind of framework at the country level is an iterative process that builds on active stakeholder participation and collaboration; sectoral coordination on a variety of approaches, such as mapping, delineation, and the demarcation of blue economy activities specific to the country; and the determination of synergies for coordinated management and investments in common priority areas. The BEDF offers a toolkit to enable countries to adapt a blue economy development paradigm to country-specific conditions (see box 1).

Figure 3. Blue Economy Development Framework



Box 1. BEDF Toolkit Elements Enabling Adaptation to Country-Specific Conditions

Building a detailed picture of a country's current marine natural capital and its productivity, including through blue Public Expenditure and Institutional Reviews

- Identifying constraints to developing a more productive blue economy in a country
- Assessing the potential for generating greater value and creating more and better jobs
- Understanding and managing synergies and trade-offs across sectors
- Improving climate resilience

These tools include but are not limited to:

- integrated marine spatial planning and coastal zone management
- blue public expenditure review
- value chain assessment
- natural capital

BEDF tools could be used to effectively strengthen institutional and stakeholder capacity. It is a space for collaboration, enhanced learning, and partnerships among various agencies, using the toolkit to unlock more options for innovation and investments. Importantly, the BEDF could serve as a platform for engaging the private sector in new investment opportunities and accessing public initiatives and resources that promote an integrated approach to the sustainable development of coastal and marine areas.

MSP as an essential BEDF tool helps national authorities to accommodate the blue economy transition by creating a framework for evidence-based and inclusive maritime spatial plans. It can also help assess the future spatial needs of maritime sectors, including emerging blue economy sectors. Other BEDF tools supporting equally important actions to address the current challenges facing the coastal and marine economy – and that are attuned to the CMA and SRIA – include fostering knowledge transfer from research to business and accelerating technology innovations; promoting the needed maritime skills development in the labor force to apply the new technologies; producing better and more relevant data and information; and developing initiatives that facilitate and streamline investments, including risk funding for innovative maritime technologies.

The blue economy approach is opportunistic yet highly strategic in initiating and tapping into sector synergies, as it can be tailored to the country's specifics. Thus, the BEDF offers complementary applications that could be chosen concurrently, depending on each country's development stage and objectives. International examples of specific applications of BEDF tools are in boxes 2 and 3.

Box 2. Integrated Management Plans for Norway's Marine Areas

With the aim of providing a multisector basis for decision making, the Barents Sea plan was developed jointly by four of Norway's ministries: the Ministries of the Environment, Foreign Affairs, Fisheries and Coastal Affairs, and Petroleum and Energy, with the Ministry of the Environment acting as the Secretariat. The plan was presented to parliament as a government white paper in March 2005 and ratified by parliament in June 2006. This national plan covers the Norwegian Economic Zone and the Fisheries Protection Zone around Svalbard and provides a framework for the sustainable use of natural resources and goods derived from the Barents Sea-Lofoten area and the continued health and safety of the entire marine ecosystem, as well as the human communities that depend on it.

The Norwegian marine management plans were developed to provide a foundation for the coexistence of all the industries within the planning area, as well as a decision-making framework based on a broad knowledge of the environmental and economic consequences of current and future activities in the designated areas. The management plans also ensure that Norway fulfills its international obligations (e.g., the Law of the Sea Convention, the Convention on Biological Diversity, the Johannesburg Declaration, the Malawi-Protocol, the UN Agreement on Management of Straddling Fish Stocks, the Stockholm Convention, the Convention for the Protection of the Marine Environment of the North-East Atlantic [the OSPAR Convention], the Convention for the Safety of Life at Sea, and the Convention for the Prevention of Pollution from Ships), although these also put constraints on the design of the management plans. Furthermore, an ecosystem approach to management is an important theme for Norway in international cooperation within a range of forums (e.g., the International Council for the Exploration of the Sea, the North-East Atlantic Fisheries Commission, the Arctic Council, the EU, the Nordic Council, Norwegian-Russian cooperation [environment and fisheries], and the UN International Maritime Organization).

Source: *UNEP, Blue Economy: Sharing Success Stories to Inspire Change (Nairobi: United Nations Environmental Programme, 2015).*

"Blue governance" is a recently emerging concept defined as the formal and informal processes of collective decision making, planning, deliberating, and capacity building by government, market, and civil society actors connected to marine and coastal environments. Blue governance integrates blue economy with governances principles and encompasses structures and processes that are designed to ensure accountability, transparency, responsiveness, rule of law, stability, equity and inclusiveness, empowerment, and broad-based participation.

Box 3. China's Blue Economy Experience

China formulated the Principles of Developing Marine and Fishing Industries based on the blue economy concept as an input to national economic development and environmental protection policies. The highlights of China's blue economy include: developing marine fisheries, marine transportation, tourism, energy, and material production industries; further improving and coordinating marine and land economy national policies; developing blue economy demonstration zones; strengthening the connections between trade and infrastructure; and promoting the development of technology and human resources.

China has long followed the blue economy growth idea and has instituted a Five-Year Development Plan for National Marine Economy that monitors the progress of various marine sectors. China's State Council has published a White Paper on the Chinese Maritime Economy. The country emphasizes the scientific innovation of the marine industry and has established six national marine economic innovation and demonstration development areas and seven industrial innovation bases for the rejuvenation of the marine industry, science and technology, and strategic cooperation among marine parks. Several successful blue economy projects have achieved noteworthy results: the Shandong Peninsula Blue Economic Zone Development Plan, approved by the State Council, established the Shandong Blue Economic Zone as a modern marine industrial cluster with strong international competitiveness and a world-leading education center of marine science with a demonstration zone for marine ecology and the terrestrial environment. Scientific innovation and achievements in marine science research and education are incubated in the "China Qingdao Blue Silicon Valley," which aims to improve China's utilization of marine resources and contribution to global marine science and research.

Source: *L. Wenhai and others, "Successful Blue Economy Examples with Emphasis on International Perspectives," Frontiers in Marine Science 6 (2019).*

The transition to a blue economy in Bulgaria, with an emphasis on strengthened governance, has the potential to bring an array of benefits related to the enhanced protection of coastal and nearshore resources and increased resource use efficiency. It could unlock multiple opportunities to plan and manage marine-related activities in a more coordinated manner, raising the efficacy of investment initiatives and improving the livelihoods of local communities.

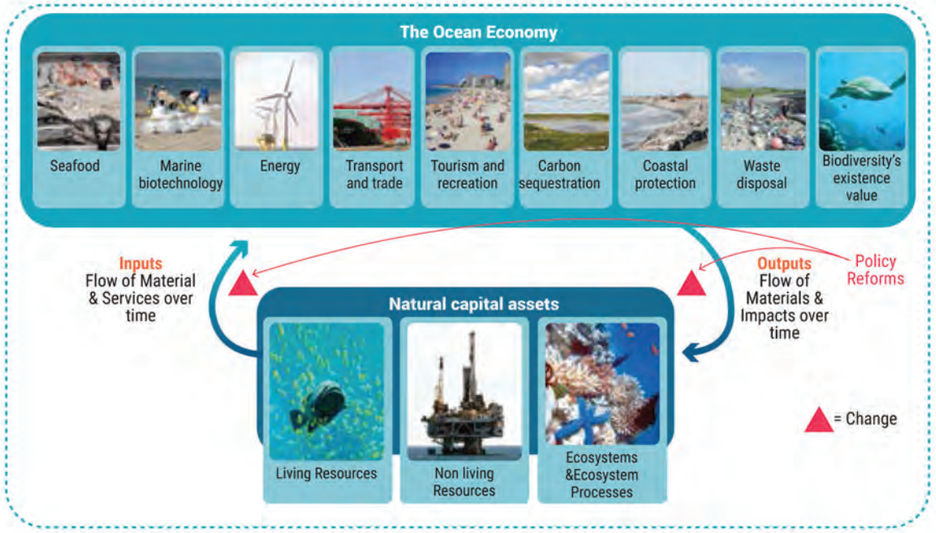
2.2. The Value of Natural Capital is Central to the Blue Economy

The blue economy concept is shifting the development paradigm from a sole focus on economic growth to one that includes sustainability aspects and green economy principles. By doing so it could potentially drive a transformative change and address the underestimated value of natural capital.[33] The traditional method of using GDP to measure outputs in the ocean economy does not account for the changes to natural stocks and future benefit streams that they provide (World Bank and United Nations 2017). Conversely, economic valuation methods that measure the value of blue assets overcome this limitation by measuring the contributions of nonmarket goods and services provided by the natural systems (see figure 4).

Valuation of natural capital and ecosystem services is a central policy instrument in the blue economy concept. The ecosystem approach communicates the importance of marine ecosystem values, reduces the impacts on those values, and creates a context for promoting market-based instruments, such as taxes, fees, and subsidies. These could complement public policies and regulations, help improve marine resource governance, and enhance the effectiveness of public investments in the marine space. Natural capital valuation can also inform policy decisions toward the sustainable growth of marine-based industries by considering all costs and benefits, both internal and external.

33 Nonfinancial, nonproducing assets make up natural capital. It is the extension of the economic notion of (produced) capital to the natural environment, that is, the "stock" of natural (eco-)systems that yields a flow of valuable (ecosystem) goods or services into the future.

Figure 4. The Blue Economy and Natural Capital



Source: *P. Patil and others, "Toward a Blue Economy: a Promise for Sustainable Growth in the Caribbean; an Overview" (Washington, DC: World Bank, 2016).*

In the face of increasing competition for valuable coastal and marine resources, the blue economy aims to overcome the challenge of using them as a "free good" and seas and oceans as a cost-free repository space. This in turn means (a) shifting current economic planning trends that negatively affect the quality of coastal and marine resources and livelihoods, (b) investing in the human capital required to harness employment and development benefits, (c) investing in innovative blue economy sectors, and (d) adequately valuing the marine resources and ecosystem services provided by the oceans to break the silos of isolated sectoral management and investments.


Dunes north of Krapets

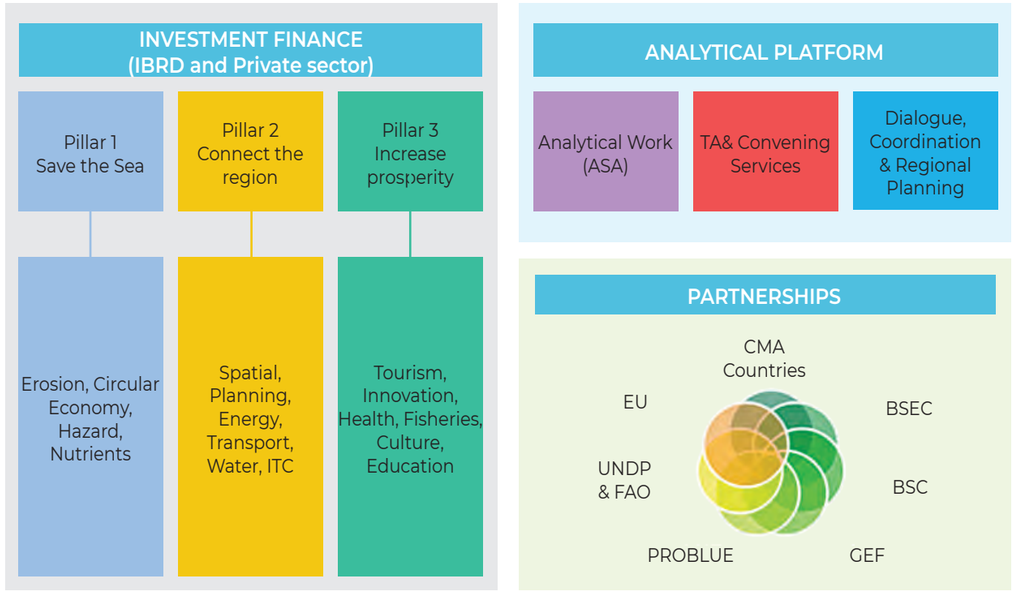
2.3. Blue Economy for the Black Sea: The Common Maritime Agenda

The CMA[34] sets the main objectives for sustainable blue economy development in the Black Sea. It reflects the priorities of the coastal countries (together with the Republic of Moldova) in core areas aligned with the blue economy, such as improved ecosystem services and management, blue research and innovation to increase resilience, investments to foster decarbonization, capacity building, and job creation. The CMA and its scientific pillar, the SRIA, support regional and national initiatives to enhance the uptake of the blue economy and to stimulate the development of new regional value chains and untapped investment opportunities.

The World Bank, in cooperation with the EC, has strived to develop regional programs in support of the development of integrated, sustainable, and healthy marine and coastal resources. In response to the ambitious political commitments under the CMA, the World Bank has launched the preparation of the Blueing the Black Sea Program (BBSEA).

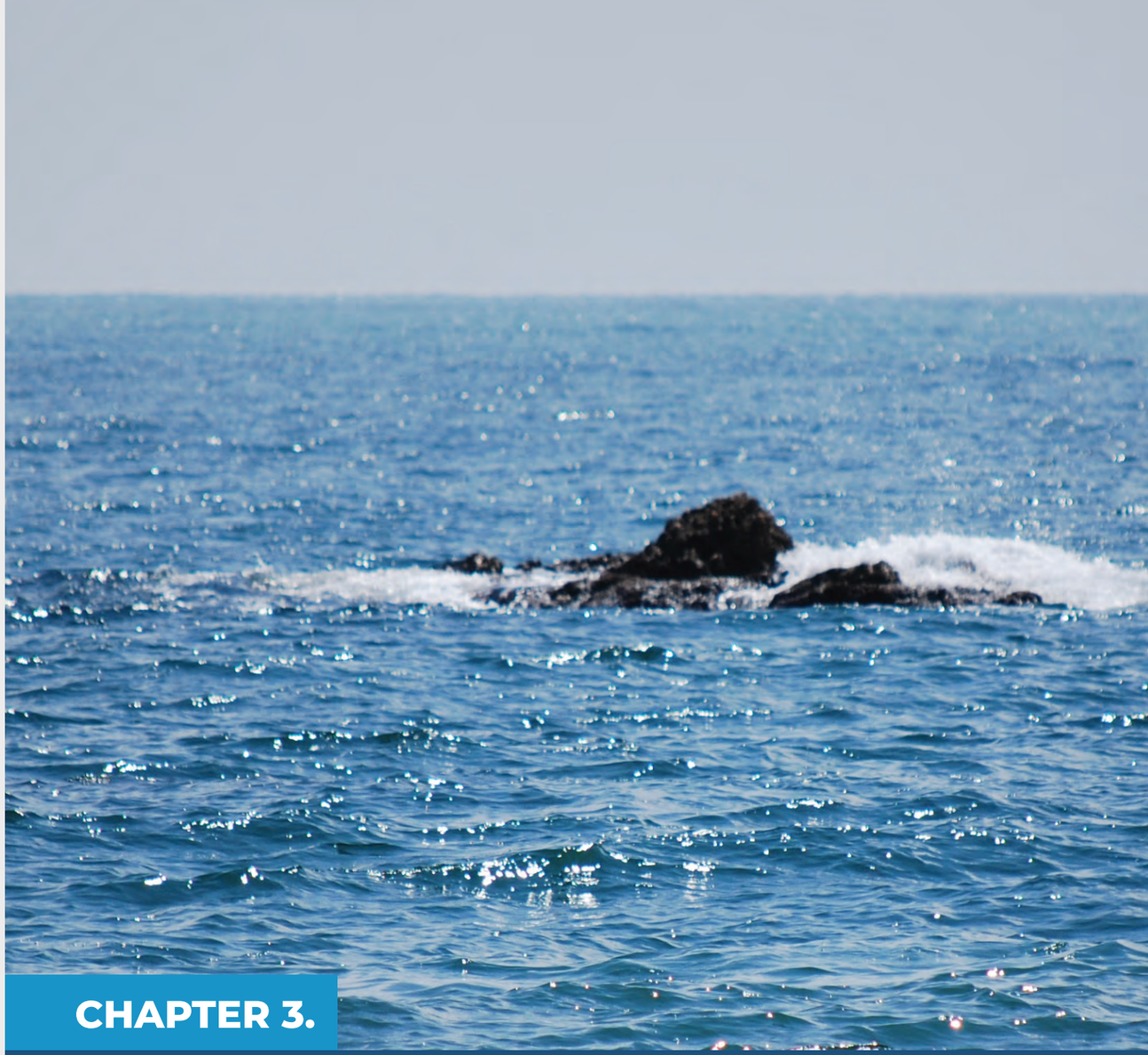
34 EC, "Black Sea Ministers Endorse Common Maritime Agenda," May 21, 2019, https://ec.europa.eu/maritimeaffairs/press/black-sea-ministers-endorse-common-maritime-agenda_en.

Figure 5. BBSEA Components



Source: *World Bank BBSEA team (2020).*

The BBSEA initiative is being developed as a program of activities to assist the Black Sea countries in building a knowledge platform for mobilizing investments and technical assistance. The program is being prepared to strengthen the analytical and institutional framework for environmental protection of Black Sea maritime resources by connecting key regional and national authorities and facilitating knowledge sharing on common issues. The BBSEA program could include an investment and an analytical component (see figure 5 above).



CHAPTER 3.

Bulgaria's Coastal and Marine Economy

View from Kamen Briag

3.1. Economic Geography of Coastal and Marine Space

The coastal territory of Bulgaria is a solid growth center with a growing population and a vibrant economy. The coastline comprises 14 municipalities covering 5,770 square kilometers (5.2 percent of the country's territory) and is home to 726,745 people[35] (10.4 percent of the population). Varna and Burgas are the third and fourth largest urban centers in Bulgaria, with important robust industries and transport and tourism infrastructure. Both cities are established education and university centers. Administratively, there are three major districts – Dobrich, Varna, and Burgas – that border on the east of the Black Sea, encompassing a total area of 16,888 square kilometers and accommodating a total number of 1,055,414 residents in 2018.[36]

Figure 6. Bulgarian Black Sea Coastal and Maritime Area

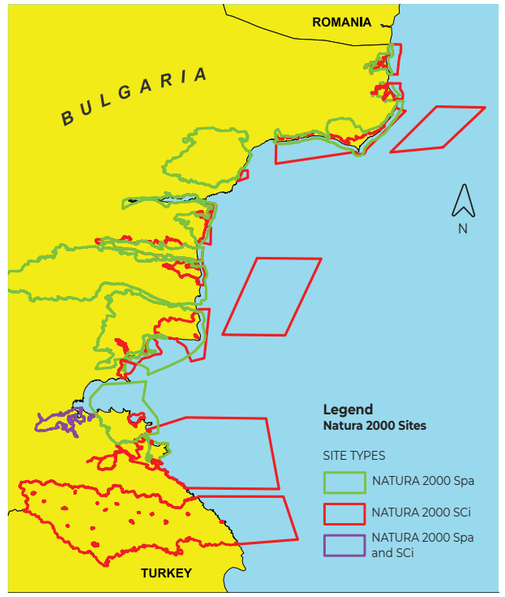
Source: Center of Coastal and Marine Studies (2020)

In accordance with the 1982 United Nations Convention on the Law of the Sea (UNCLOS),[37] Bulgaria established an exclusive economic zone (EEZ) extending 200 nautical miles (370 kilometers) off its state shore with a sovereign right to explore and exploit, conserve, and manage marine mineral and living resources. The Bulgarian Black Sea EEZ covers 25,557 square kilometers (see figure 6 above).

Coastal and marine natural capital is an essential economic factor. The coastal and shelf zones are complex ecosystems of rich natural resources in constant interaction with human activities. Diverse marine ecosystems provide vital habitats for many commercial and endangered species. The increasing pressures and impacts of human activities on marine ecosystems have caused habitat degradation and biodiversity loss, seriously undermining their capacity to provide ecological and economic benefits. Nonetheless, the coastal region retains significant economic potential compared to inland areas that the blue economy could enhance.

There are multiple protected areas which border the Black sea shore among which Kaliakra strict nature reserve, Chengene skele and the Koketrays stand out. By its origin Koketrays is a sand bank, located south of cape Emine covering an area of 7,6 km^2. Kaliakra Natural Reserve stretches on a coastal strip of 4 km[38]. The marine space belonging to Kaliakra, Emine and Ropotamo protected areas comprises 6.85 percent of the total area and is under the UN Habitats Directive protective regime. The Bulgarian Natura 2000 network, fully or partly covering marine parts, consists of 31 zones. Some of these zones are primarily landwards, located within a narrow strip, up to 1 nautical mile offshore (see figure 7). Fourteen zones are protected under the Birds Directive, seventeen zones – under the Habitats Directive [1] and two zones – under both Directives.

Figure 7. Marine Parts of the Natura 2000 Network in Bulgaria



Source: Center of Coastal and Marine Studies (2020)

The current mapping and evaluation methodology used in Bulgaria does not include a full valuation of and reporting cycle for ecosystem services. Expanding the methodological tools for marine ecosystem valuation over the marine protected area (MPA) networks will enable decision makers to devise policies and spatial protection measures that will contribute to "good environmental status" (GES) in the EU (see below). The modalities of the Natura 2000 network should be duly taken into consideration when marine spatial uses and designations of sea areas are planned under the EU MSP Directive.

3.2. Threats to the Black Sea Marine Environment

Environmental threats and impacts that can alter natural marine conditions and cause systemic damage to the coastal economy, communities, and the natural capital on which they depend have a variety of causes and originate from different sectors of the economy. Marine resources in the Black Sea have declined due to overfishing, the unplanned development of coastal zones, and intense maritime traffic.

The Black Sea is the largest anoxic water basin in the world, with unique hydrological characteristics. These distinctive natural conditions, with nearly 90 percent of its deeper waters anoxic,[39] determine the health of the sea and marine biodiversity. There is limited interaction between the oxygen-rich surface waters and the Black Sea's deeper areas. Research on the Black Sea ecosystem[40] indicates significant changes during the past 50 years and heightened vulnerability to anthropogenic effects.

3.2.1. Pollution

Land-based pollution is a major threat that accounts for more than 70 percent of all marine pollution. Untreated nutrients entering the sea through rivers is one of the worst pollutants and causes eutrophication. Nutrient inflow from the Danube River, mainly involving nitrates and phosphates, is significant but has been stable in recent years (BSC 2008). To combat the diffuse pollution, Bulgaria has established a system of measures aiming at full implementation of Directive 91/676/EEC concerning the protection of waters against pollution caused by nitrates from agricultural sources. Although significant surface water pollution and substantial levels of eutrophi-

35 NSI 2018.
36 Population data in 2018 from the NSI: https://www.nsi.bg/en/content/6704/population-districts-municipalities-place-residence-and-sex.
37 United Nations, "United Nations Convention on the Law of the Sea," with Index and Final Act of the Third United Nations Conference on the Law of the Sea (New York: United Nations, 1983), https://www.un.org/depts/los/convention_agreements/texts/unclos/unclos_e.pdf.
38 http://eea.government.bg/zpo/bg/result1.js (last accessed 17/02/2021)
39 At a depth greater than 150–200 meters, there is a permanent hydrogen sulfide zone devoid of life.
40 The major causes of ecosystem change in the Black Sea were reviewed in 2008 for the General Fisheries Commission for the Mediterranean by Caddy, which drafted an internal document. A causal analysis of the factors and drivers causing the decline of fish commercial stocks was developed by the Black Sea Environmental Program – Transboundary Diagnostic Analysis (TDA) in 2007. Recently, a global review of regime shifts in the Black Sea was also provided by Daskalov (2012).A significant number of projects are currently underway.


Marine litter at Nestinarka beach, Tsarevo

cation have not been detected on the territory of Bulgaria, the implementation of measures under the Directive[41] provides for the prevention and reduction of surface water pollution from agricultural sources. The Black Sea Coast Development Act[42] establishes two kinds of protection zones: up to 2.1 kilometers from the sea line and alongside the entire coastal stretch, where the use of unregistered mineral fertilizers and pesticides is banned.

The effects of eutrophication include changes to the structure and functioning of the entire marine ecosystem, resulting in instability and serious environmental problems (EEA 2019b). Excess nutrients originate from fertilizers, fossil fuel burning, and wastewater from humans, livestock, aquaculture, and industry, all of which lead to air, water, soil, and marine pollution. Nutrient enrichment by nitrogen, phosphorus, and sometimes organic matter can result in a series of undesirable effects. Wastewater is a major source of pollution that has a direct impact on the biological diversity of aquatic ecosystems, disrupting the fundamental integrity of the life support systems on which a wide range of blue economy sectors depend – from coastal and marine tourism to fisheries and aquaculture. Threats to ecosystem health lead to a decreased quality of ecosystem services and subsequently have a negative effect on blue economy sectors, such as fisheries, aquaculture, and recreational tourism.

A significant part of Bulgaria's population lives in areas without adequate wastewater treatment infrastructure. In recent years, there has been a more positive trend, as the percentage of the population connected to wastewater treatment plants (WWTPs) increased from 47.8 percent in 2010 to 63.9 percent in 2018. At the beginning of 2017, almost all coastal settlements had WWTPs except the southernmost part of the Bulgarian coastal zone. Nonetheless, the pace of national investments in wastewater treatment facilities is rather slow.

Oil pollution in the Black Sea along the main shipping routes and in the coastal areas around river mouths, sewage outfalls, industrial installations, and ports is an ongoing concern. There is no evidence of significant heavy metals, pesticides, or other persistent organic pollutants in surface waters, although elevated levels of these substances can be found around industrial centers, large cities, and ports (BSC 2008). The worst ecological conditions are the sea waters in the Varna Bay, at the mouth of the Kamchia River. A similar, though less problematic, situation can be found at the Bay of Burgas. Along the coast, there are 105 industrial sites in the basin area, 77 of which have been identified as significant sources of wastewater.

Marine litter in the Black Sea originates primarily from solid waste pollution – various land- and sea-based sources – as a result of human activities. It affects the health of coastal and marine ecosystems, biota, and humans alike and incurs high economic costs (e.g., on tourism, fisheries, and marine traffic) for coastal municipalities. A recent study on beach litter in Bulgaria identified 10 beaches along the Bulgarian Black Sea coast that were highly polluted, with indications that plastic waste accounts for 84.3 percent of the items found on the beaches (Simeonova, Chuturkova, and Yaneva 2017). Dominant in this category were cigarette butts and filters (OSPAR[43] code 64), plastic caps/lids of beverages (OSPAR code 15), and other plastic packaging (OSPAR code 21). The seasonal fluctuations for most marine litter showed the highest quantities during the summer period (tourists pick) compared to the rest of the year. The total number and weight of waste for 2019 were less compared to previous years (2017 and 2018). This is the result of a number of public awareness-raising activities on the negative effects of litter on the environment and human health through coordinated campaigns to clean up the beaches and increase civil culture with regard to the protection of the marine environment.

3.2.2. Depleting marine resources

Fish stock in the Black Sea has deteriorated dramatically over the past three decades. Fish types of high commercial value declined from 26 to six species. After a near collapse of fish stock in 1990 due to significant anchovy fishing by Turkey, accounting for almost 80 percent of the total catch,[44] the stock has partially recovered, and the catch volume has recently increased. Other factors behind the decline of fish stocks are ecosystem changes due to eutrophication, increasing populations of alien species, and illegal, unreported, and unregulated (IUU) fishing. Illegal fishing in the Black Sea is increasing, affecting marine biodiversity and the fish industry alike in the entire Black Sea region.[45]

The prospects of deep-sea exploration and the extraction of hydrogen sulfide and gas/oil in the Black Sea could increase the economic significance of the region. At the same time, full-scale extraction of some of these resources will necessitate the use of complex and possibly environmentally damaging technologies. Efforts should be made to ensure that the technologies used in large scale exploration and extraction are environmentally safe. Given the high vulnerability of Black Sea ecosystems, it is important to carefully assess the long-term impacts of large-scale economic activities that could potentially affect the marine ecosystem. The high dependence on primary blue economy sectors to enable their production calls for policies that mitigate user conflicts to ensure the protection of valuable habitats and landscapes.

3.2.3. Climate change

The Black Sea area's vulnerability will be exacerbated by the impacts of climate change. If the Black Sea becomes more polluted, it will possibly become more prone to an increase in water temperature, thus multiplying certain developments, such as the alteration of fish habitats and algae bloom outbreaks, and threatening the region's health and economy. It is estimated that the average rate of sea level rise along the Bulgarian Black Sea coast would vary from 1.5 to 3 millimeters per year (Pashova and Yovev 2010). The frequency and intensity of extreme weather events occurring along the coast, such as winter storms with severe north and northeast winds, could increase. Such storms could have devastating effects on the natural environment and coastal infrastructure, both on and offshore, but could be especially dramatic when combined with

41 See https://www.moew.government.bg/static/media/ups/tiny/Vodi/Dokladi%20kam%20EK/UWWTD/report%202018/UWWTDArt17-2018-template-f-rev2-fin-za%20website.xls (in Bulgarian).
42 Black Sea Coast Development Act. 2008. Promulgated, State Gazette No. 48/15.06.2007. Last amended SG No 21/13.03.2020.
43 The Convention for the Protection of the Marine Environment of the North-East Atlantic (OSPAR).
44 G. Daskalov, C. Osio, and A. Charef, eds., "Assessment of Black Sea Stocks," JRC Scientific and Policy Report STECF-12-15 (Ispra, Italy: Scientific, Technical and Economic Committee for Fisheries, 2012).
45 FAO, "Black Sea Fish, Indications on IUU Fishing in the Black Sea" (Rome: Food and Agriculture Organization, 2013).

additional events like surge waves or heavy rainfalls. There are already examples of such events along the Bulgarian coast: the storm in February 1979 that was accompanied by an extreme sea level rise and the storm in June 2006 that brought heavy rains.

The value of coastal natural assets can be undermined by coastal erosion that is exacerbated by weather-related hazards. Large beach segments on the Bulgarian coast have experienced a continuous reduction in area (Dachev, Trifonova, and Stancheva 2005; Stancheva 2013). Based on data from more than 30 years of investigations on beach dynamics, it was found that roughly 48 percent of sand beaches in Bulgaria are affected by erosion. The highest cliff erosion rates were observed in the north, where the coast is formed of loess sedimentary deposits between Capes Sivriburun and Shabla at a rate of 0.30 meters per year, and the areas of clay formations on the south coast between the town of Pomorie and Cape Lahna at 0.22 meters per year. In the south, the rates are much lower, at around 0.01 meters per year, where volcanic rocks are less prone to erosion (Peychev and Stancheva 2009).

Assessing weather and flood hazards in coastal areas and introducing disaster preparedness measures is a key factor in protecting economic assets and human lives in the sustainable blue economy and should be part of Bulgaria's blue economy vison and strategy. Bulgaria uses modern geospatial data to construct a sensitivity map of its coastline, which is now showing vulnerability to coastal erosion/cliff retreat (Stanchev, Young, and Stancheva 2013). Using predictive modeling of coastline sensitivity to coastal erosion, the Geological Institute at the Bulgarian Academy of Sciences has mapped coastal erosion and geological risks along the entire coastline.

The National Climate Change Adaptation Strategy[46] and Action Plan for the Republic of Bulgaria was approved by the Council of Ministers in 2019. The Strategy will serve as a reference document of adaptation actions and priorities until 2030. In accordance with the requirements of Article 6 of Flood Directive 2007/60/EC and Article 146d of the Water Act of Bulgaria, flood risk maps of risk prone areas have been produced. They are included in the first Flood Risk Management Plan for the Black Sea basin[47] prepared in 2018 and address all aspects of flood risk management, taking into account the basin's specific characteristics. There are a total of 11 areas with significant potential risk of sea floods, which include high and medium risk locations within the Black Sea Basin Directorate, with a total length of approximately 267 kilometers. In the different flood scenarios, the most at risk would be the critical infrastructure of the Burgas district, and the municipalities of Nessebar and Burgas are the most vulnerable in terms of the potential number of people affected.

3.3. Pillars of the Blue Economy

The EU determines the established blue economy sectors listed below that depend on coastal and marine resources (EC 2019a). They are considered in this Policy Note to be relevant for the Bulgarian maritime economy and include: coastal and marine tourism, marine living resources, maritime transport, port activities, shipbuilding and repair, and marine non-living resources. These sectors are the backbone of the blue economy of Bulgaria, and they depend on the quality of the natural ecosystems.

- **Coastal and maritime tourism**, including subsectors or diverse forms of tourism, such as beach/bathing tourism; cultural and underwater cultural heritage (UCH)/adventure tourism; historical, wellness, and spa tourism; eco- and nature-based tourism; cruise and yachting tourism; recreational boating, and so forth
- **Extraction and commercialization of marine living resources:** fisheries, aquaculture, and processing and distribution
- **Maritime transport, ports, shipbuilding, and ship repair,** including smart/green shipping and the maritime industry
- **Marine extraction of minerals, oil, and gas:** marine non-living resources

Several emerging and innovative sectors discussed here bring new opportunities for investment and hold huge potential for the future development of coastal communities. These include:

46 Documents are available at: https://www.moew.government.bg/en/climate/international-negotiations-and-adaptation/adaptation/.
47 Flood Risk Management Plan of the Black Sea Region (2016–2021).

- **Blue energy:** offshore wind energy potential
- **Blue bio-economy and biotechnology:** algae, harvesting and new uses of aquatic biomass, blue biomass production
- **Coastal protection:** traditional, hard, and soft approaches applied in Bulgaria and perspectives for nature-based solutions
- **Environmental monitoring and technology,** including research and innovation

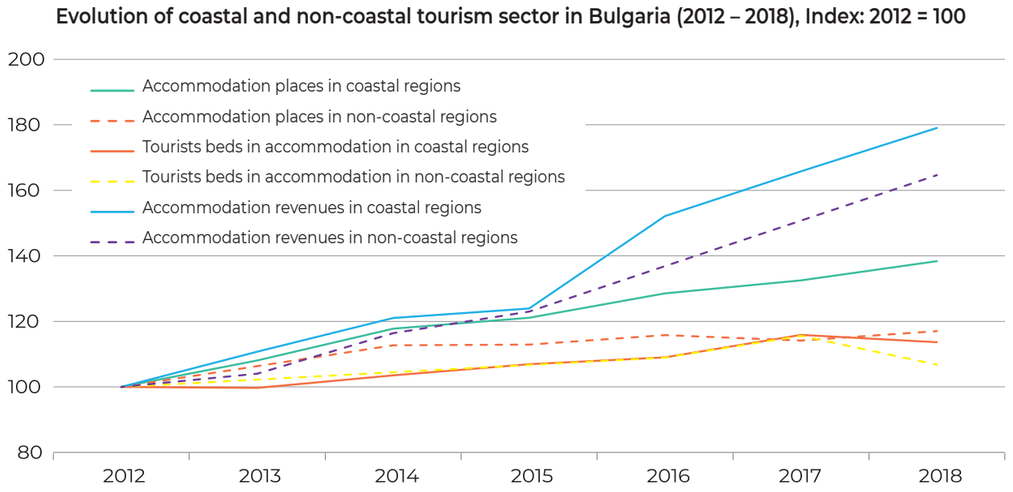
Advancing data development beyond established sectors in Bulgaria would make it possible to assess the market opportunities and niches for more emerging and innovative blue sectors, such as marine renewable energy (i.e., floating offshore wind, wave and tidal energy, floating solar energy, offshore hydrogen, desalination, and submarine cables), that are not discussed in this note. Identifying opportunities for accessing carbon-neutral solutions based on marine resources will be important for all sectors of the Bulgarian economy.

3.3.1. Coastal and marine tourism

Tourism is a central pillar of the Bulgarian economy. In 2018, it formed 10.4 percent of GDP (€6.46 billion) and provided a total of 346,800 jobs.[48] Coastal tourism is the most significant subsector and is still the fastest growing part of the local economy. It contributed 66 percent to blue economy jobs (48,300 persons employed) and 55 percent of the GVA (or €399 million) in 2017 (EC 2019a). According to the National Statistical Institute (NSI)[49] in 2018, more than 12 million international visitors visited Bulgaria, of which 6 million came for holiday stays and recreational tourism. In 2018, international tourist receipts reached more than €4 billion. During 2012–18 there was a steady increase in the number of tourists, with over 1 million in 2018, more than half of them from EU member states.

The tourism industry in Bulgaria is heavily concentrated in the Black Sea coast. Almost two-thirds of tourist accommodation infrastructure and tourists are in the coastal areas (Stanchev, Stancheva, and Young 2015). Compared to other segments of the sector, coastal tourism posted the highest growth during 2012–18 (see figure 8). The coastal regions of Dobrich, Varna, and Burgas posted faster tourism growth relative to inland regions. In 2018, the revenue from accommodations in the three coastal regions increased by 79 percent compared to 2012, while the non-coastal regions posed only a 65 percent increase. Much of the revenue is from accommodations in large resorts with national importance, such as Albena, Golden Sands, and Sunny Beach.

Figure 8. Growth of Coastal and Non-Coastal Tourism in Bulgaria (2012–18)



Source: National Statistical Institute of Bulgaria

48 World Travel and Tourism Council (WTTC), "Data Gateway, Bulgaria," 2018.
49 National Statistical Institute of Bulgaria, 2018: https://infostat.nsi.bg/.

The distribution of tourists is uneven, with large crowds flocking to the main resorts in the peak season. In summer, the coastal population typically increases by 20 percent, and in some coastal municipalities by 320 percent (Stanchev, Stancheva, and Young 2015). In 2018, the three sea resorts accounted for 8.8 percent of all accommodation places in Bulgaria, and the number of tourist beds is much larger: 37 percent. The revenues from these three resorts alone accounted for almost 43 percent of all tourist revenues in Bulgaria for 2018. The existing facilities and infrastructure in the coastal municipalities have limited treatment capacity, raising concerns of the potential impacts on coastal ecosystems and natural resources.

Coastal beach tourism is driving the vast majority of visits. However, it remains limited to the summer season. Traditional coastal tourism activities are taking more diverse forms, including nature-based and eco-tourism, cultural tourism, health and wellness, and wildlife viewing in some areas, aiming to extend the tourist season.

The Bulgarian coast is endowed with pristine natural landscapes. Coastal wetlands and lagoons, sand dunes and rocky cliffs, and underwater caves attract a special segment of visitors for scuba diving, bird watching, cycling, running, or just walking. Even though the last three decades witnessed a major urbanization of a significant part of the Bulgarian coast, there are still large areas that retain their natural value. Bulgaria has a network of coastal and MPAs comprising 31 Natura 2000 zones covering 41,6 km^2.[50] Most of the coastal areas are under protected regimes pursuant to the Protected Areas Act[51] (1998) of Bulgaria. Nature parks and reserves play an important role in local economies by creating economic development and employment opportunities. The prospects for expanding coastal nature and eco-tourism would grow, since further urbanization around the world will increase the demand for these activities. Blue economy tools could be employed to assess the natural capital assets and their capacity for service provision as drivers of local development where nature-based tourism businesses operate.

Cultural heritage is part of Bulgarian's daily life, culture, and tourism industry. Cultural tourism accounts for 11 percent of all tourist products in the country (Bulgaria 2017). Bulgaria ranks third in Europe after Italy and Greece in the number of significant archaeological and cultural sites. Eleven Bulgarian sites are included on the list of UNESCO's tangible and intangible world cultural and natural heritage. This ranks Bulgaria 21st in the world in terms of cultural resources. The Black Sea coast is rich with underwater and coastal archaeological sites from different historical periods: prehistory, antiquity (ancient Greek, Hellenistic, Roman), and mediaeval (early Byzantium, Bulgarian). For example, the HERAS project[52] promoted underwater heritage diving adventure tourism in the West Black Sea cross-border area of Bulgaria and Romania. The project produced an Underwater Heritage Tourism Management Plan, aiming to support the development and promotion of integrated tourism products between borders while supporting the preservation of coastal and MPAs.

With its great diversity the coastal and underwater cultural wealth will remain an indispensable part of the economic potential of Bulgaria's blue space. Valuation of coastal and marine natural capital linking it with cultural heritage and the potential of creative industries will add cumulative economic value through jobs, innovation, and more value of blue tourism. Cultural heritage has also an important role in the national maritime planning process. 'Good practice' MSP identifies cohesive zones of archaeological repositories and spaces for archaeological park(s) in areas of more intense development to protect the existing cultural heritage objects.

Yachting and boating tourism are developing at a slower pace, with peaks in the summer. Compared to yachting tourism in the Baltic and Mediterranean Seas, Bulgaria's yachting segment is underdeveloped. Despite the fact that the basic prerequisites for development are available – port infrastructure, piers, marinas, and hydrotechnical facilities – boating and yachting encounter many problems, including shortcomings in the legal framework

50 https://www.moew.government.bg/bg/priroda/natura-2000/registri-za-zastiteni-zoni/prieti-s-reshenie-na-ministerski-suvet/
51 Protected Areas Act. 1998. Promulgated in State Gazette No 133/11.11.1998. Last amended by State Gazette No. 1/03.01.2019.
52 GeoEcoMar, "HERAS: Submarine Archaeological Heritage of the Western Black Sea Shelf," Romania-Bulgaria Cross Border Cooperation Programme (Bucharest: National Institute of Marine Geology and Geo-ecology, 2015.


Obzor South beach

affecting the maritime industry and yachting; deficiencies in tourist security and safety due to a lack of modern satellite service units in ports; the absence of an advertising strategy and national advertising for yacht tourism; and insufficiently qualified marina staff, among other concerns (Bulgaria 2017). In recent years, investments in the yachting sector have increased due to the construction of marinas for small and medium-sized yachts. The number of yachts and motorboats in Bulgaria, however, remains low (around 1,000), and only 14 marinas are licensed. Despite the increase in investment, this "niche" segment is growing only modestly, as the number of end users is limited. Total employment in this activity is estimated at 800 people (EUNETMAR 2014).

Cruise tourism is less developed and of lower socioeconomic value to the Bulgarian economy. Its contribution to the tourism sector's GVA was 0.23 percent (2014) and it was only 2.2 percent of the sector's employment (EUNETMAR 2014). Varna and Burgas are the main centers of cruise tourism, although infrastructure is insufficiently developed. The port of Nessebar has the facilities needed to accommodate large cruise ships, but voyages are infrequent even during the summer season (EUNETMAR 2014). Expansion of this segment of blue tourism comes with serious challenges. Ports in Bulgaria cannot receive large cruise ships, and deepening the receiving facilities requires significant investment. At the same time, cruise ships are a large source of pollution both for the coast and the waters.

There are favorable conditions for wellness and spa tourism along the coast. Mild summers and rich natural coastal resources offer a competitive advantage that could extend the active summer beach season. In recent years, health tourism in Bulgaria has combined traditional spa therapeutic activities, such as balneotherapy, rehabilitation, and prevention, with modern wellness and other spa programs. Bulgaria is second in Europe after Iceland and ahead of many other countries in its proven traditions in balneology in terms of existing, developed, and registered (certified) mineral water springs. However, less than 0.4 percent of mineral water deposits are currently used for balneotherapy, indicating a significant untapped potential.

Coastal and maritime tourism in Bulgaria has been severely affected by the impacts of COVID-19. Although the full-scale impacts of the pandemic are still to be assessed and quantified, it is clear that Bulgaria is facing the same consequences as other EU countries. The Organization for Economic Co-operation and Development (OECD)[53] points to an estimated decline of 60 percent in international tourists in 2020. This number could rise to 80 percent if recovery is delayed until December. According to Bulgaria's NSI, in the second quarter of 2020 the revenue from tourism posted a slump of 31 percent.[54] International tourism in the EU in specific regions is expected to rebound, but public health concerns will remain paramount in the recovery from the economic downturn caused by the pandemic. Therefore, the full-scale re-opening of the tourism economy in Bulgaria will be a complex and challenging task. The Ministry of Tourism has implemented mitigation measures to support tourism businesses during the crisis, including tour operator vouchers to customers for canceled trips; extended deadlines for tourism businesses on tax obligations; and guidelines and recommendations for pandemic-safe tourism packages. Yet, planning for future coastal and marine sector growth needs to consider the ongoing uncertainties, which will mean balancing short- and long-term concerns and leveraging policies to achieve a resilient and sustainable recovery.

Coastal and maritime tourism heavily depends on the quality of the environment as well as on mitigating the potential conflicts of competing uses of the maritime space. Any maritime or land-based activity that damages the environment can negatively affect tourism. Coastal areas may also be directly or indirectly affected by climate change–related impacts, such as flooding, erosion, saltwater intrusion, increases in air and seawater temperatures, and droughts.

The economic potential of Bulgaria's blue sectors could be assessed further in relation to their societal and environmental impacts, and in comparison to other blue and non-blue sectors. Where these sectors are using common resources, the potential of one sector could be impacted by the synergies and conflicts with other sectors. The blue economy potential is based not only on economic capital (finance and investments) but also on social capital (expertise, cooperation, networks, trust, institutions) and natural capital (sustainably managed ecosystem services), all of which have to be factored into development planning.

Sector synergies and resource user competition

Blue economy sectors are traditionally strong where challenges from competing uses are being addressed through sector synergies. The natural environment plays a major role in tourism. Understanding the value of natural coastal and marine systems can enable smarter investments in management and conservation that both support tourism businesses and help sustain coastal economies. Nevertheless, transition to a blue economy could lead to conflicts over the use of coastal and marine space. For instance, conflicts between recreational boating and other uses are linked to overcrowding, space restrictions, and safety hazards. Boating may compete with other recreational activities (e.g., swimming) or with different types of boating (e.g., sailboats, motorized vessels, personal watercrafts, etc.). However, codes of conducts, proper planning, and good communication between users can minimize these conflicts. Other potential conflicts are related to areas where boating may not occur due to the presence of other blue sector infrastructure (e.g., aquaculture farms, oil and gas platforms). Synergies between these various uses may emerge through alternative activities, including eco-tourism and MPAs. Synergies between coastal and marine tourism and other blue economy sectors, such as the extraction of living and non-living marine resources, could be reinforced by a multisector approach to spatial planning based on an assessment of the competitiveness of traditional sectors or the discovery of new niche markets.

53 OECD, "Tourism Policy Responses to Coronavirus (Covid-19)" (PARIS: OECD, 2020), https://read.oecd-ilibrary.org/view/?ref=124_124984-7uf8nm95se&title=Covid-19_Tourism_Policy_Responses.

54 Data from Bulgaria's NSI for the second quarter of 2020 on total expenditure on tourist trips.

Byala marina

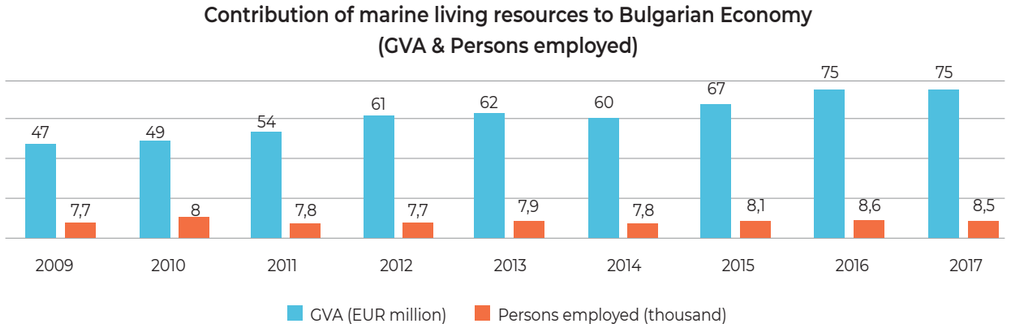
3.3.2. Fisheries and aquaculture

Bulgaria's fisheries sector consists of capture fisheries, aquaculture, and fish processing. The total sector value contribution to the economy is €75 million, or 0.17 percent of the national GVA. The fisheries sector employed 8,500 people, or 0.28 percent of the total national workforce in 2017 (see figure 9). The biggest share is that of the fish processing and distribution industry, which directly employs 5,900 people and contributes around €61 million to the economy (EC 2019a).

Due to many years of unsustainable fishing practices in the Black Sea, commercial fish stock and other marine living resources have declined and reached biologically unsustainable levels. Over 99 percent of the capture fishery production in Bulgaria comes from the Black Sea.[55] The majority of capture fisheries are carried out in territorial waters (within the 12 nautical mile area). Consequently, catch from commercial fisheries in marine waters has declined significantly (see figure 10). Capture fisheries as an established subsector contributed about €3 million to the national GVA in 2017 and employed 1,500 people (EC 2019a).

55 See https://ec.europa.eu/eurostat/databrowser/view/tag00116/default/table?lang=en.

Figure 9. Economic Contribution of the Fisheries Sector

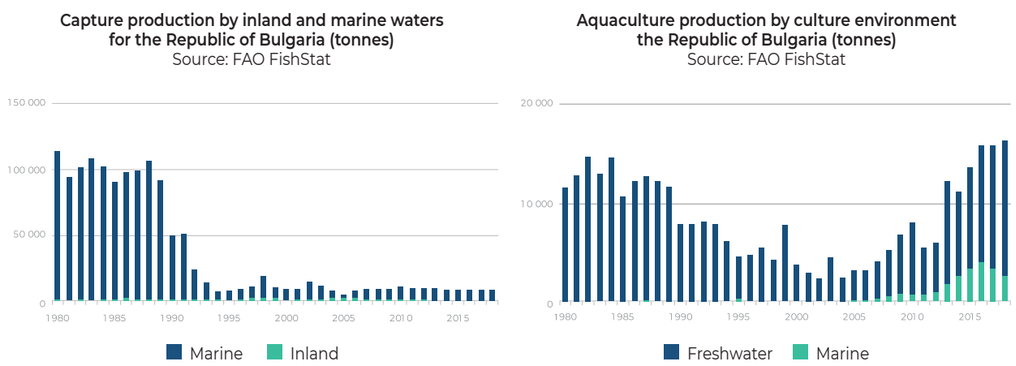


Source: EC (2019a).

The main commercial species harvested in the Black Sea are: (i) pelagic species: European sprat, Mediterranean horse mackerel, flathead grey mullet, bonito, and bluefish; and (ii) demersal species: red mullet, piked dogfish, thornback ray, turbot, gobies, rapana snail, and white sand clam. Bulgaria has applied total allowable catch (TAC) and quota regimes since 2007 only for turbot and European sprat. In recent years, catch of rapana snail have overtaken those for sprat, due to high export demands.

The majority of the Bulgarian fishing fleet is made up of small fishing vessels with lengths of up to 12 meters. In 2019, the total number of registered fishing vessels was 1,843.[56] The number of fishing vessels that are larger than 12 meters in 2019 was 101, or less than 5.5 percent. There are 74 landing sites along the coast for commercial fisheries, the most important of which are Varna, Kavarna, Balchik, Byala, Burgas, Nesebar, Sozopol, Tsarevo, Pomorie, and Shabla.

Figure 10. Fish Production by Inland and Marine Waters and Aquaculture (tones)



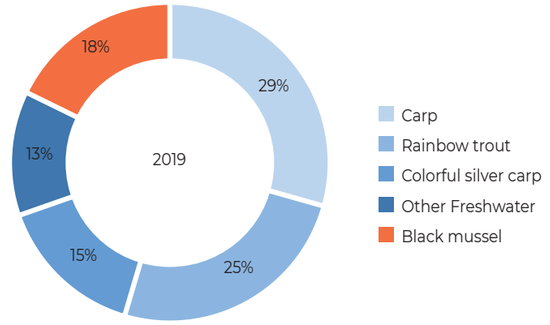
Source: FAO Yearbook. Fishery and Aquaculture Statistics 2018/FAO annuaire 2018. Rome https://doi.org/10.4060/cb1213t

Aquaculture farms make up 13 percent of sector production with a total value contribution of €13 million to the GVA (EC 2019a). Some 1,100 people are employed in the aquaculture subsector.[57] As of March 2020, a total of 26 aquaculture farms were registered in Bulgarian Black Sea waters, most of which are small and medium-sized enterprises (SMEs) or micro-enterprises. There are 24 farms for black mussels, one fish cage farm, and one farm for rainbow trout.

56 "Fishing Fleet, Number of Vessels," https://ec.europa.eu/eurostat/databrowser/view/tag00116/default/table?lang=en.
57 "Consumption," https://ec.europa.eu/fisheries/6-consumption_en;
and https://www.nsi.bg/sites/default/files/files/data/timeseries/HH_3.1.3.xls (in Bulgarian).

The aquaculture sector in Bulgaria developed steadily during the 2008–12 period followed by a rapid increase in the volume of marine aquaculture sales. In 2016, total sales by weight and value doubled compared to 2008 (Nielsen, Carvalho, and Guillen 2018). In 2019, the total volume of aquaculture production (see figure 11) was 16,502 tons, with 18 percent of the total volume (2,928 tons) black mussels.[58] Recent outcomes highlight the positive gains that could be made from aquaculture.

Figure 11. Main Aquaculture Species in Bulgaria (2019) by volume



Name	Total weight (tons)
Carp	4 848 t
Rainbow trout	4 156 t
Colorful silver carp	2 488 t
Other Freshwater	2 080 t
Black mussel	2 929 t

Source: Executive Agency of Fishery and Aquaculture of Republic of Bulgaria

Aquaculture, as one of the pillars of the EU's blue economy strategy, has been witnessing growing interest in the Bulgarian marine space. The National Strategic Plan for Aquaculture (2014–2020) is in line with the provisions of Article 34 of Regulation (EU) № 1380/2013 on the Common Fisheries Policy and Regulation (EU) № 508/2014 of May 15, 2014, of the European Parliament and of the Council for the European Maritime and Fisheries Fund. It covers all activities related to the production of fish and other marine living organisms and is complemented by measures to diversify the activities of producers and opportunities for sales. Future authorization of aquaculture farms needs to pay attention to species used, to prevent entry of invasive alien species.

Across global and European markets, consumption of fish and seafood is on the rise. In 2016, it was almost 13 million tons in Europe.[59] Bulgaria's seafood consumption of 7.3 kilograms per person per year[60] is rather low compared to the EU average of 24.4 kilograms (2019). Fisheries and aquaculture products provide important sources of protein and are crucial components of a healthy diet. In the long run, fish consumption is likely to increase, given the motivation of consumers to eat healthy food. The strategy could thus be to expand the aquaculture industry to meet future demand for fish produce and to contribute to blue economy diversification. Understanding the needs of the different fish and seafood market targets in synergy with other blue economy sector markets would help rationalize the planning of sector growth and identify potential new opportunities.

Sector synergies and resource user competition

There are important synergies between coastal tourism and fisheries (ICF Consulting 2017). MPA managers, conservation researchers, and fishermen acknowledge the benefits of recreational fisheries in professionally managed MPAs. Capture fisheries may benefit from positive spillover effects generated by the MPAs where fisheries resources are protected effectively (EC 2019a). Outside MPAs, local communities may also benefit from spillover effects that could translate into opportunities for artisanal fishing.

The synergies between fishing and aquaculture are well recognized. For example, shellfish farms provide habitats and feed for fish. Mussel farms

58 See http://iara.government.bg/download.php?id=369 (in Bulgarian).
59 CBI, "What is the Demand for Fish and Seafood on the European Market?" (The Hague: Centre for the Promotion of Imports from Developing Countries), https://www.cbi.eu/market-information/fish-seafood/what-demand.
60 "Consumption," https://ec.europa.eu/fisheries/6-consumption_en; and https://www.nsi.bg/sites/default/files/files/data/timeseries/HH_3.1.3.xls (in Bulgarian).

help to decrease and mitigate nutrient pollution, reduce local climate change impacts (e.g., carbon sequestration[61]), support fish stocks, and so on. Although not popular in Bulgaria, recreational fishing tourism is another example of a potential synergy to explore between fishing and tourism.

Synergies with other uses may also be developed for shared infrastructure between recreational fisheries and UCH. Synergies also exist between coastal tourism and offshore windfarms (e.g., multi-use platforms). Fisheries are part of the history of many coastal towns in Bulgaria and have contributed to the development of local identities and culture. Traditional fishing communities represent attractive destinations for tourism that may support the local community by: i) increasing the demand for local fish consumption; ii) participating in events promoting local traditions (e.g., the mussel festival in the town of Kavarna on the North Bulgarian coast); and iii) taking part in activities such as recreational fishing.

Commercial fishing is a classic example of competition over marine resources with other maritime activities. This is particularly true with respect to coastal tourism, shipping, offshore oil and gas, marine mining (aggregates), and offshore windfarms. Aquaculture also may compete for access to space with coastal tourism, ports, shipping, offshore oil and gas, marine mining (aggregates), and fishing.

3.3.3. Marine non-living resources: extraction of minerals, oil, and gas

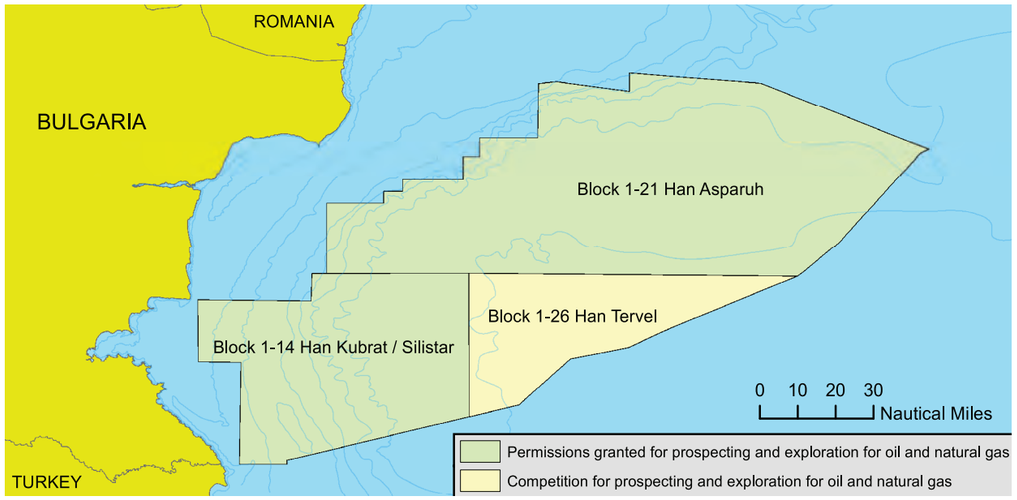
Bulgaria's geographical location coincides with important transport corridors of gas resources recently discovered in the Black Sea. This is perceived as an advantage for bluing the coastal economy. Bulgaria's strategic location in the Black Sea basin is also a favorable factor for transiting oil from the Caspian Sea oil deposits to European refineries. Although most of Bulgaria's oil imports go through the Burgas port terminal, in-country oil and gas exploration is mostly in the northern shelf of the Black Sea. Potential reserves of the Shabla block in the northern part of the sea, recommended for exploration in 2005, are estimated at approximately 200 million barrels (EUNETMAR 2014). Currently, there is only one company that extracts offshore gas, Melrose Resources Plc, but more players are expected in the coming years.

The extraction of non-living resources contributed roughly €83 million to the GVA in 2017, which is 11.3 percent of the national GVA. The sector employed some 4,200 persons, or 5.8 percent of the total blue economy workforce (EUNETMAR 2014). Four offshore natural gas fields are under exploitation in the Bulgarian shelf of the Black Sea. The Galata Platform, located on the continental shelf approximately 25 kilometers southeast of Varna, and its associated infrastructure (pipelines) is the only production facility located in the Bulgarian part of the Black Sea. This field production capacity meets 16 percent of domestic gas demand. Offshore oil and gas exploration in the deep Black Sea continues. A "do-no-harm" sector growth could be introduced through the installation of new offshore infrastructure using high-efficiency technologies. Prospective offshore deep sea exploration has been implemented at different locations (see figure 12).

Galata gas extraction site

61 One method for achieving the removal of carbon from the ocean would be through the ancient practice of shellfish farming. The shell of a shellfish absorbs carbon as it grows. Moreover, the shellfish secretes calcium carbonate ($CaCO_3$) to form its shell.

Figure 12. Offshore Blocks for Exploration and Extraction of Oil and Gas



Source: Ministry of Energy of Republic of Bulgaria

Traditional sea salt production in the coastal lagoons and lakes is based on solar evaporation of seawater. The lagoons of Pomoriysko and Atanasovsko Lake are in the Burgas area on the south coast of Bulgaria where production facilities are located. The region has the necessary resources to produce sea salt, with running capacity currently underutilized. There are opportunities in the alternative uses of salt lye for therapeutic, medicinal, and pharmaceutical purposes. There are functioning health and spa facilities in the area that use salt lye and its derivatives, which indicates untapped opportunities in spa tourism. However, the expansion of salt operations may lead to the seizure of additional coastal land.

Sector synergies and resource user competition

Marine extraction of minerals, oil, and gas often competes for access to marine space with fishing, aquaculture, and shipping. In addition, there are specific ecological risks from marine extraction activities. Oil spills, although of increasingly low risk, could have dire ecological consequences on marine and coastal ecosystems, depending on the location and intensity of the incident. Particularly sensitive are the coastal areas and habitats of conservation importance, such as coastal lagoons and wetlands. Another challenge to marine extraction is the potential conflict with or impact on other maritime sectors. Namely, conflicts could arise with coastal/maritime tourism, fishing, conservation of natural habitats, and concerns about environmental quality. Therefore, ecosystem risks, user conflict challenges, and other spatial aspects of the extraction of marine minerals will be significant determinants in future considerations for granting extraction concessions.

A holistic approach to priority sector developments applied in the blue economy could mitigate the conflicts over resource use and offer balanced alternatives based on the economic, ecosystem, and societal benefits. MSP could be used as a tool to highlight the intersectoral synergies and evaluate the economic feasibility of the blue sectors. MSP will determine the risks, impact areas, and mitigation measures, the technical safety parameters and exclusion zones, and the infrastructure needs/supply vessel activity. For example, extraction of oil and gas may compete for access to space with fishing, aquaculture and shipping, and pipelines and cables, as well as environmental protection goals. At the same time, with the depletion of exploited fields and the dismantling of infrastructure, new offshore activities could be developed, for example, floating offshore windfarms or geothermal power and structures such as multi-use platforms.

3.3.4. Maritime transport, ports, shipbuilding, and ship repair

Maritime transport, ports, and shipping are part of a well-established industry in Bulgaria. Altogether, maritime transport/shipping, port activities, and shipbuilding and ship repair generated 3,073 jobs in 2017, of which 1,700 were in maritime transport alone. The sector gradually recovered from the economic recession in 2009, and in 2017 contributed €44.8 million to the national GVA.

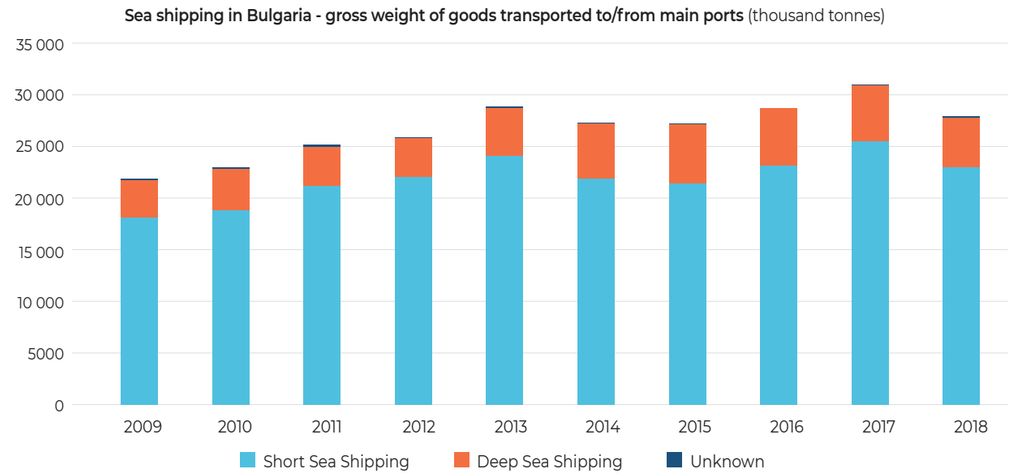
Table 2. Evolution of Maritime Transport, Port Activities, and Shipbuilding and Repair (GVA)

GVA (EUR million)	2009	2010	2011	2012	2013	2014	2015	2016	2017
Maritime transport	34	33	35	36	36	25	28	32	32
Port activities	120	109	81	72	67	86	102	68	68
Shipbuilding and repair	63	46	38	48	62	66	52	76	75
National GVA (EUR billion)	32.400	33.200	36.100	36.300	36.000	37.200	39.100	41.500	44.800

Source: EC (2019a).

The Bulgarian commercial fleet consists of 81 ships with a total deadweight (DWT) tonnage of 1,279,000 in 2014. About 80 percent (1,026,000) of the DWT is registered under foreign flags, and only 20 percent (254,000) is under the national flag.[62] Maritime's transport contribution was €32 million to the GVA in 2017 compared to €34 million in 2009, which is 4.4 percent of the GVA and 2.3 percent of jobs (see table 2). In 2018, the total amount of goods transported through the seaports of Bulgaria was 27.9 million tons, an increase of 27 percent compared to 2009 (see figure 13).

Figure 13. Volume of Goods Transported via Bulgarian Ports 2009–18



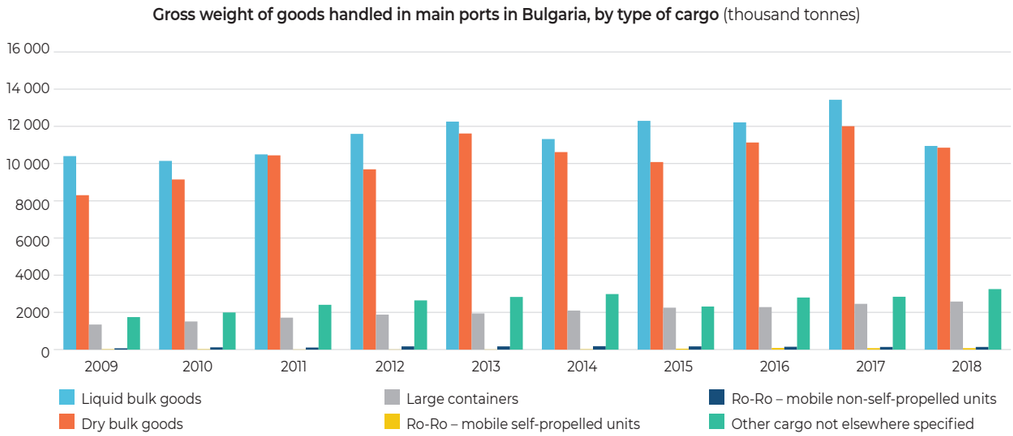
Source: Eurostat

62 Information found at UNCTADstat, https://unctadstat.unctad.org/wds/ReportFolders/reportFolders.aspx. https://www.mtitc.government.bg/sites/default/files/integrated_transport_strategy_2030_bg.pdf (in Bulgarian).

Liquid bulk was the dominant type of cargo in sea shipping. Liquid bulk accounted for 39.3 percent of the total sea shipping of goods in 2018 (see figure 14).

Bulgaria is part of the European maritime transport infrastructure and international cooperation. National maritime port infrastructure consists of 14,628 meters of quay fronts, 69 cargo units, and eight passenger and 11 ship service stations. Fully 1,748 meters of the quay fronts service public transport of regional importance.[63] In 2017, the ports employed 4,700 people, which is 35 percent less than in 2009. Ports contributed €68 million to the national GVA in 2017. Compared to the contribution of €120 million in 2009, the latter indicates a sizable decline in value added (EC 2019a). Almost two-thirds of the 61 functioning seaports are in the municipality of Burgas and one-third in the municipalities of Varna and Dobrich.

Figure 14. Gross Weight of Goods Handled in Seaports in Bulgaria, by type of cargo



Source: Eurostat

Table 3. Maritime Ports Infrastructure

Port type	Regional maritime administration		Total
	Burgas	Varna	
Ports for public transport with national importance	9	4	13
Ports for public transport with regional importance	7	3	10
Fishing ports	9	4	13
Yacht ports	7	7	14
Ports of special purpose	3	8	11
Total	**35**	**26**	**61**

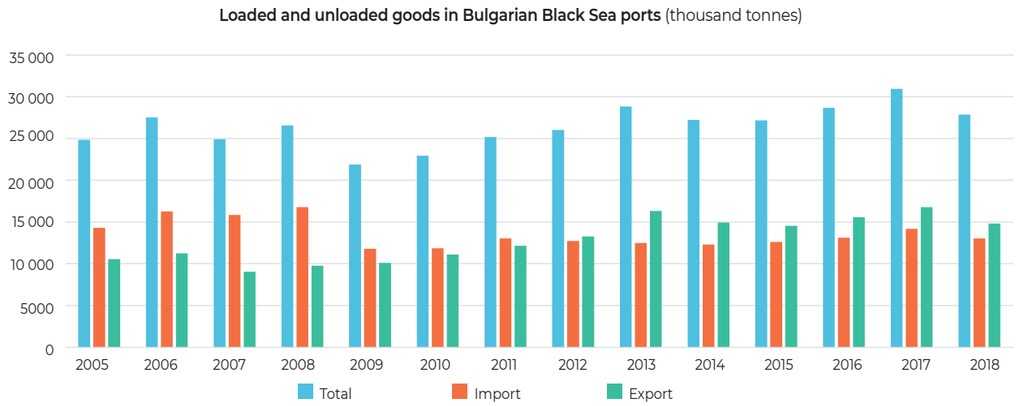
Source: EAMA (Executive Agency for Maritime Administration)

63 MoTITC, "Integrated Transport Strategy for the Period to 2030" (Sofia: Ministry of Transport, Information Technology and Communications, 2017), https://www.mtitc.government.bg/sites/default/files/integrated_transport_strategy_2030_bg.pdf (in Bulgarian).

Bulgaria has well-developed seaport infrastructure for servicing passengers, cargo, and fishing activities. Port infrastructure services all types of freight operations. Seventy-two percent of all cargo loads is hauled through the Black Sea seaports. Since 2012, cargo exports through the Black Sea ports have consistently exceeded imports (see figure 15). The largest maritime trade partner with Bulgaria is the Russian Federation, followed by Turkey, Romania, and Ukraine.

The shipbuilding and repair industry is a dynamic and competitive sector. It includes five shipyards in Varna and Burgas: Bulyard- Shipbuilding Industry Ltd, Burgas Shipyards Ltd, Dockyard Delfin Ltd, Dockyard Odessos Ltd, and Terem – Dockyard Fleet arsenal – Varna Ltd. The main activities are dockyards and services for ship repair and equipment maintenance. Shipbuilding and repair have expanded since the slumps posted in 2013 and 2014. In 2017, the shipbuilding and repair sector contributed €75 million to the national GVA and directly employed roughly 5,400 persons. Overall, the shipbuilding and repair sector accounted for 7.4 percent of jobs and 10.2 percent of the GVA in the Bulgarian blue economy in 2017 (EC 2019a).

Figure 15. Loaded and Unloaded Goods in Bulgarian Black Sea Ports



Source: National Statistical Institute of Republic of Bulgaria

Although the transition to a blue economy is a window of opportunity for the maritime sector, there are challenges to be addressed. A central one is the development of "green shipping solutions" in line with EU regulations. The EU has transposed most International Maritime Organization (IMO) rules[64] into its laws and added further rules to promote green shipping and connectivity, ensuring greater respect for international safety and security standards, including with regard to environmental protection.[65] The implementation of certain obligations in the International Convention for the Prevention of Pollution from Ships (MARPOL) within Directive (EU) 2019/883 has a direct impact on how EU member states comply with their international obligations, and it also has an effect on non-EU ships calling at EU ports.[66] Measures aligned with the blue economy include "green shipping" and "green ports" solutions that enable waste reduction measures, avoiding spillages and ensuring the quality of sea water, energy saving per unit of freight transported; usage of gas-powered and mazut-powered vessels; and other "greening" measures in the port sectors. "Greening" solutions are particularly visible in the shipbuilding industry by introducing new technologies, diversifying products, reducing resource consumption, and thus bringing in environmental advantages (OECD 2017). Another challenge is defining common standards for the digitalization of shipping. All of this

64 The global regulatory framework is set up by International Maritime Organization conventions to address technical matters, maritime safety and security, marine pollution, and liability and compensation issues.
65 EU member states are expected to implement Directive 2012/33/EU, which brings European national air pollution laws in line with MARPOL Annex VI.
66 G. Argüello, Marine Pollution, Shipping Waste and International Law (Abingdon, UK: Routledge, 2019).

will require investments in advanced technologies and skills that reduce energy costs. Other emerging global challenges that are affecting maritime transport are growing in importance, such as security, energy sustainability, and affordability. The maritime sector also needs to factor in the impact of the COVID-19 crisis and post-pandemic recovery challenges to maritime transport in Bulgaria and the Black Sea region as a whole.

Sector synergies and resource user competition

The maritime sectors may experience potential conflicts and synergies with other users of the maritime space. These could be related to environmental pressures, as well as to constraints on the development of other maritime sectors (e.g., tourism, fishing, aquaculture, etc.) due to existing territorial and structural limitations. Ports infrastructure has close spillover effects on, and direct linkages with, other sectors. On the one hand, shipbuilding provides assets, capacity, technologies, and inputs to several blue economy activities, such as fishing, transport, marine extraction of minerals, oil, and gas, and tourism. On the other hand, tourism, for example, creates traffic (leisure boating and sailing), which is a safety issue for other types of navigation. The deepening of fairways poses a risk to pipelines and cables, and anchoring vessels can also damage pipelines. Fishing also entails navigation, though it does not follow the navigational patterns of cargo and passenger transportation.[67] Offshore wind turbines may interfere with radar operations. Offshore wind parks may impair sight, especially on smaller boats. Shipping impacts air quality, and noise may have negative effects on marine biodiversity. More positively, the river-sea connections provide opportunities for tourism growth and transport and foster synergies across sectors (coastal and land tourism, short sea shipping and shipbuilding), which allow for the greater generation of local added value.

Both the MSFD and BEDF promote MSP as an effective blue economy tool that can stimulate intersectoral and cross-border cooperation on shipping lanes and foster environmental protection. It starts with early identification of the impact of and opportunities for the multiple use of space that precedes the participatory identification of synergies and planning of sector priorities. To support the shipping sector, MSP should keep the free space needed for shipping (rather than limiting shipping activities to designated areas) now and in the future. Furthermore, MSP should make sure that safety zones to incompatible with shipping activities are sufficient.

Burgas Harbor

67 Shipping and Ports," https://www.msp-platform.eu/sites/default/files/sector/pdf/mspforbluegrowth_sectorfiche_shippingports.pdf.

3.3.5. The potential of emerging blue economy sectors

When assessing the new, emerging, and innovative sectors in the blue economy of Bulgaria, offshore wind energy stands out as having the highest potential. In view of the prospects for a blue bio-economy and biotechnology, nature-based solutions for coastal protection are growing in prominence and need further assessment. Maritime defense, navy activities, and naval shipbuilding follow the national maritime security doctrine. Prospects for environmental monitoring and technology development through research and innovation are also improving, given the strong technical and scientific potential of Bulgaria's academic and research community.

Blue renewable energy sources

In Bulgaria, the cumulative wind power capacity in 2019 was 698.9 MW, covering 4 percent of electricity demand, though no offshore wind farm has been installed as yet. This indicates an untapped potential, including for decarbonization of the economy, through the avenues offered by the EGD. Lowering the existing barriers to steer up investments in offshore wind energy has multiple economic benefits to local economies. Offshore wind energy is the most advanced of the emerging and innovative sectors of the blue economy at the EU level (Scholaert 2020), and European offshore wind represents about 91 percent of the worldwide capacity deployed. However, there are underlying uncertainties in the Bulgarian regulatory framework that hinder investments and technology research in offshore wind farms. These uncertainties also mean that existing wind farms are struggling financially, for example, by paying (retroactively introduced) grid balancing charges of up to €24/MWh.

The multisector approach promoted by the blue economy can reinforce the dynamics between the emerging sectors. Box 5 provides an example of a multisector approach to the construction of wind power stations in Poland and the monitoring of environmental habitats.

Box 4. Wind Energy along the Bulgarian Coast

Wind power is not only abundant but also competitive in Bulgaria today. Several onshore wind farms have been put in operation along the Bulgarian coast, mostly located in the district of Dobrich, such as in the area of Kavarna, totaling nearly 400 MW. They are in Dobrich and Shabla as well.

The potential for development of offshore wind parks is the presence of a wide and shallow shelf in front of the Bulgarian Black Sea coast. Nevertheless, it is important that a balance be found between natural resources and the economic benefits of the construction of wind farms, as has occurred, for example, in the North and Baltic Seas. The wind potential is excellent but largely untapped (especially alongside the Bulgarian Black Sea coast), making the country one of the top potential candidates for investments in the sector.

Source: MARSPLAN-BS project.

Box 5. Beneficial Impacts of a Multisector Approach

The construction of wind power stations in Pomorskie, Poland occurred alongside the need to monitor bird habitats that might be exposed to the power stations' negative effects. Advancements in technology have made it possible to collect information on bird migration automatically, thus avoiding the need for workers to visit the power stations. Hence, the long-term monitoring costs have been reduced as well as the carbon emissions footprint involved in the monitoring of wind farm operations.

Source: OECD (2017).

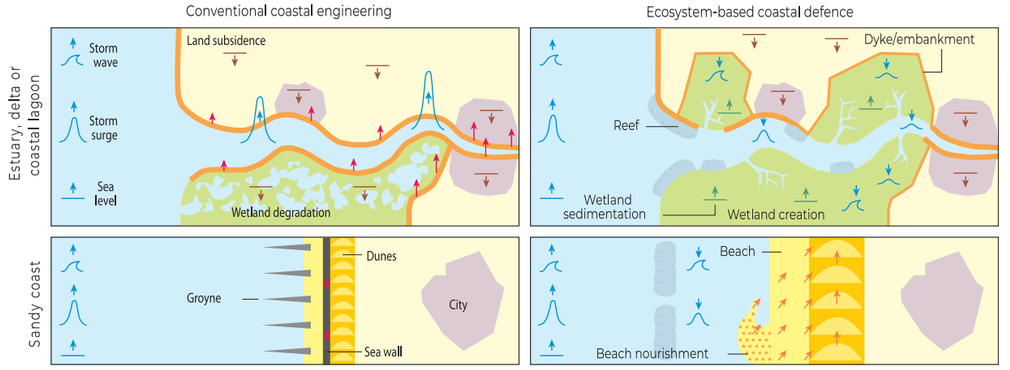
Coastal protection

Coastal protections to address coastal erosion and landslides along the Bulgarian Black Sea coast have been widely used. Along the entire Bulgarian coast, port and coastal protection interventions in 402 segments with a total length of 69.89 kilometers were mapped through orthophoto imaging. Engineered port and protection infrastructure covers 16.2 percent of the coastline. These include 178 different types of groins, 31 dikes, 26 seawalls, 73 embankments/rip-raps, 62 ports, marinas/quay walls, and navigational channels, and 14 segments representing artificial beaches (Stanchev, Young, and Stancheva 2013, 1).

Protection of economic assets and human lives in the most flood- and hazard-prone zone of the coast was carried out in the northern part of the Bulgarian coast between the town of Balchik and Cape Galata. This included 111 types of maritime structures within several stretches of a total length of 46 kilometers. Another 186 protection measures have been implemented between the towns of Nessebar and Sozopol. However, despite the numerous hard protection measures applied thus far, erosion and landslide problems have not been solved (Stanchev, Young, and Stancheva 2013, 30).

Coastal engineering through soft protection and nature-based measures is less intrusive and could provide multiple benefits to habitats and ecosystem services. Coastal armoring often causes adverse environmental impacts, including disturbance of cross- and long-shore sediment transportation and associated down drift beach reduction, accelerates bottom erosion, restricts public access to the beach, poses potential risks to bathers, and results in unaesthetic visual effects on coastal and seascapes. Nature-based solutions are an attractive alternative to traditional coastal protection in Bulgaria as they reduce wave intensity and protect coasts from erosion, thereby stabilizing shorelines. In contrast to concrete-based solutions, nature-based solutions can grow with sea level rise or, if necessary, can be easily adapted (see figure 16).

Figure 16. Conventional versus Ecosystem-Based Coastal Protection



Note: Blue arrows indicate the increase/decrease in the storm waves, storm surge, and sea level (as specified); red arrows indicate the need for maintenance and heightening of dikes/embankments/sea walls with sea level rise; and brown arrows indicate land subsidence.
Source: S. Temmerman and others, "Ecosystem-Based Coastal Defense in the Face of Global Change," Nature 504 (2013): 79–83.

Environmental monitoring

Bulgaria's Black Sea Monitoring Program, established in 1991, aims to provide a time series of marine observation data for the western part of the Black Sea.[68] Monitoring includes key marine physical, chemical, and biological parameters and is implemented by the Institute of Oceanology-Bulgarian Academy of Sciences (IO-BAS). The program is part of the Global Ocean Observing System. Since 2012, IO-BAS has performed environmental monitoring for the implementation of the WFD (Directive 2000/60/EC) and since 2015, for the implementation of the MSFD (Directive 2008/56/EC). The operational monitoring covers the coastal waters at 37 stations in a 1 nautical mile zone, in accordance with the Black Sea River Basin Management Plan. The monitoring information is used to assess the ecological status of the sea waters under the WFD on the basis of physico-chemical quality elements, priority substances and specific pollutants, chlorophyll, and phytoplankton. Oceanographic data (sea water temperature, salinity, oxygen, and fluorescence) were collected during scientific expeditions with RV "Academik." The monitoring program in Bulgaria covers only five of the 11 descriptors in accordance with the requirements of the MSFD, which is the first EU legal instrument to explicitly address marine litter.[69]

Box 6. MSFD (Directive 2008/56/EC) Objective

The Marine Strategy Framework Directive has three main goals:

1. To ensure the protection and the conservation of marine ecosystems and prevent their deterioration. In areas of high deterioration, ecosystem functioning must be restored.
2. To prevent and progressively eliminate pollution.

To contain the pressure of human activities (fishing, use of diverse services, etc.) on the marine environment within levels compatible with the achievement of good environmental status. Ecosystems must have the capacity to react to various natural and human-induced changes while enabling the sustainable use of the marine environment for future generations (e.g., Common Fisheries Policy).

Furthering a national vision and strategy for mainstreaming the circular economy in government programs and promoting uptake by economic sectors will provide a springboard from which to ascertain the effectiveness and efficacy of marine protection policies. It will also allow a shift away from "take-make-dispose" linear models in the value chains to restorative and regenerative ones. Bulgaria can use blue economy policies to overcome the strict delineation of marine sector value chains and to design and roll out circularity in these sectors' business models for the optimal sustainability of Black Sea resources. This is an opportunity for (a) aligning national goals on the improved efficiency and environmental performance of raw materials with the EU's Circular Economy Package; (b) identifying measures for "greening" the blue economy value chains, and (c) expanding the resource efficiency benefits of the circular economy beyond the boundaries of the blue economy sectors.

Bulgaria has a strategic framework for achieving resource-efficient and sustainable waste management within the National Waste Management Plan (NWMP) 2014–2020. However, a national Strategy and Action Plan for the Circular Economy for the period 2021–2030 has yet to be developed.

"Good environmental status" (GES) is defined through 11 qualitative descriptors, with a set of specific criteria and methodological standards. The Black Sea Marine Strategy for Bulgaria up to 2021 that was developed to support MSFD implementation concludes that, due to the significant pressure from human activities in the Black Sea countries, conditions for marine habitats and ecosystems have worsened, particularly in the coastal marine waters. At the same time, natural water circulation in the Black Sea and the relative proximity of the rivers that contribute to its water balance, together with marine pollution, add to the significant vulnerability of the marine ecosystems.

To comply with GES, Bulgaria has committed to monitoring the quantity and quality of different categories of recyclable waste. These include artificial polymer waste, rubber, clothing and textiles, paper and cardboard, treated wood, metal, glass and ceramics, and others, as well as the total weight and/or number of all waste collected from a specific place of macro-waste and micro-waste on the beach/coastlines along the Bulgarian Black Sea coast, floating on the sea surface, deposited on the seabed, and in the biota (gastric contents of fish, food tract of marine mammals and birds). The monitoring program will provide information on the driving forces of (including tourism, urbanization, ports, shipping, commercial and recreational fishing) and quantitative data on the pressures of waste in the marine environment. It will also examine the impacts of waste accumulation on beaches and on the sea surface and bottom, which results in habitat loss, declines in biodiversity, and injured and/or dead marine mammals and birds due to entanglement in nets and ingestion of nano plastics.

Under the provisions of the WFD (2000/60/EC), Bulgaria is divided into four river management basins. The Black Sea basin district covers: 1) rivers flowing into the Black Sea, including adjacent lakes; 2) coastal waters and territorial sea; and 3) ground waters. A water quality monitoring system of the Executive Environment Agency (EEA) in Bulgaria supports the Black Sea Basin Directorate by providing the necessary data on the status of water bodies, including discharges of wastewater, the timely identification of negative trends, forecasts of their advancement, prevention and limitation of harmful effects, and a determination of the existing measures' efficiency in achieving environmental objectives in accordance with the current Black Sea River Basin Management Plan in Bulgaria (2016–2022).

Box 7. Implementation of the MSFD: Status of the Marine Strategy

Implementation of the MSFD is coordinated by the Ministry of Environment and Water and notably by the Black Sea Basin Directorate. Development of the Marine Strategy was a two-phase process. The first part was developed in 2012[70] and the second in 2014.[71] Based on an Initial Assessment of the state of the marine environment, the Marine Strategy (https://www.bsbd.org/uk/MarineStrategy.html) defines GES and the environmental targets and indicators. The first part, together with the monitoring programs under Article 11, comprise the second part of the Marine Strategy. The Program of Measures (PoMs) under Article 13 of the MSFD is the third part. The development of the PoMs in Bulgaria started at the beginning of 2015. Current PoMs are intended to provide a reduction of anthropogenic pressures for which no measures are planned under the updated second Black Sea River Basin Management Plan under WFD 2000/60/EC[72] or when existing measures are considered insufficient to achieve GES.

PoM proposals have been developed on a wide national scale, with input from experts and policy makers and in cooperation with Romania. Several EU-funded projects coordinate the monitoring programs between Bulgaria and Romania and help to update the definitions for GES and the indicators aligned with the objectives of the monitoring programs reported to the EU. The Bulgarian Program of Measures in the Black Sea Strategy combines procedures aimed at various topics, such as encouraging biodiversity conservation, reducing the impact of human activities on the seabed, promoting sustainable use and management of marine resources (linked to the stocks of Black Sea fish species/shellfish), preventing the spread of invasive species and eutrophication, reducing the amount of pollutants, reducing the amount of waste on beaches and in the marine environment, and preventing and limiting possible noise pollution affecting Black Sea mammals and fish.

The majority of the measures planned in the Marine Strategy of Bulgaria are of an institutional nature, in response to the need to i) develop effective regulatory mechanisms for the activities and uses affecting the marine environment and ii) ensure efficient coordination between the competent authorities for implementation of the Marine Strategy aligned with MSFD requirements and its ultimate goal – achieving and maintaining a good state of the marine environment.

Source: Black Sea Basin Directorate, "Marine Strategy," https://www.bsbd.org/uk/MarineStrategy.html.

68 Palazov, H. Stanchev, and N. Valcheva, "Bulgarian Black Sea Monitoring Programme 2015. Coastal Dune Changes under Natural/Human Hazards," in Proceedings of the Twelfth Conference on the Mediterranean Coastal Environment, ed. E. Ozhan, 921–33, Varna, Bulgaria, October 6–10, 2015.

69 EC, "Our Oceans, Seas and Coasts," https://ec.europa.eu/environment/marine/good-environmental-status/descriptor-10/index_en.htm.

70 See EIONET, "Marine Strategy Framework Directive: Articles 8, 9 and 10 and Geographic Areas and Regional Cooperation Reporting," http://cdr.eionet.europa.eu/bg/eu/msfd8910/.

71 EIONET, "Marine Strategy Framework Directive: Monitoring Programmes," http://cdr.eionet.europa.eu/bg/eu/msfd_mp//.

72 "Directive 2000/60/EC of the European Parliament and of the Council of 23 October Establishing a Framework for Community Action in the Field of Water Policy," https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=CELEX:32000L0060.

The EC's main findings and conclusions, based on an evaluation of updates of the initial assessment under Article 12 of the MSFD, are:[73] "Bulgaria has not defined the good status of the marine environment for all descriptors, due to the lack of data or the necessary level of knowledge about some of the characteristics. The distinction between definitions of good status and environmental objectives is not always clear." Recently, the Commission required Bulgaria[74] to comply with an overdue reporting obligation under the MSFD, namely, to review, in a coordinated manner, the initial assessment, the determination of GES, and the environmental targets as elements of its marine strategies every six years after the targets have initially been established. Given that the non-compliance persists, the Commission has decided to refer the case to the Court of Justice of the EU.

The MSFD, in connection with the WFD, provides a framework for the management of marine pollution. Although Bulgaria has made progress on several fronts, environmental monitoring and accurate and systemic data will prevent the country from dealing with pollution and climate uncertainties and will help devising policy responses to support the transition to more sustainable blue economy development. Timely actions to prevent pollution and adapt to climate risks would help to ensure future benefits.

Regional cooperation is key to achieving GES for coastal and marine waters, and Bulgaria is actively involved in cross-border cooperation in the region in line with the MSFD and MSP Directives. Under the MARSPLAN-BS II project, an Advisory Board was established involving leading MSP experts from all over the world and representatives from other Black Sea countries, including Turkey, Georgia, and Ukraine, as well as the BSEC and BSC. The Advisory Board has strengthened cooperation between Bulgaria and Romania and improved the consistency and coordination of the two national maritime spatial plans on all issues in the cross-border context.

Box 8. Multi-Use Concept Supports a Circular Economy, Industrial Symbiosis Models, and a Blue Economy

The multi-use (MU) concept is still novel for the Black Sea and has recently been piloted under the MARSPLAN-BS II Project (2019–2021) (funded by the European Maritime and Fisheries Fund [EMFF], DG MARE, and the EC) through a dedicated MU case study for the cross-border area of Bulgaria and Romania. The case study is investigating an MU combination between the tourism, UCH, and environmental protection sectors and identifying the main drivers and barriers for this MU potential and development. The MSP Directive is still the only document that supports MU development, as it requires that EU member states seek opportunities for the co-location of maritime activities when developing their maritime spatial plans. The study explores the real opportunities and barriers for this MU in Bulgaria, including also the scope for innovation, blue growth potential, and support for the maritime blue economy. Therefore, MU is explicitly encouraged in the national maritime spatial plan, **supporting a shift from a sectoral approach to an MU opportunity planning approach.**

MARSPLAN-BS II Project: A Platform for Blue Economy Cooperation in Bulgaria

The main best practice examples and lessons learned from the project are:

- Creating stronger links between competent authorities, as well as institutional and organizational learning at the national and transboundary levels
- Bringing together key institutions in Bulgaria and Romania with the aim of identifying cross-border issues and solutions to collaborate toward transboundary Black Sea MSP
- Increasing the knowledge and understanding of national and cross-border interests and approaches to MSP
- Identifying knowledge gaps and needs for the harmonization of data collection
- Enhancing transboundary stakeholder involvement
- Identifying local and transboundary interests in sectors and key issues
- Finding common solutions to shared problems: a common vision and common goals to boost blue economy growth in the Black Sea

Source: https://www.marsplan.ro/en.

73 Ibid., 63.

74 EC, "Marine Environment: Commission Decides to Refer Bulgaria to the Court of Justice," https://ec.europa.eu/commission/presscorner/detail/en/IP_20_1234.

CHAPTER 4.

Financing the Blue Economy

Rusalka resort

There are multiple sources and diverse funding avenues that could be tapped to finance blue economy investments, including government budgets, EU funds, commercial loans, international financial institutions, and financing from capital markets. The ability of Bulgaria to raise resources to finance blue economy investments could be hindered only by a weak capacity to identify bankable sectoral investments that mutually reinforce the economic, environmental, and coastal community benefits. Further, there is need for better alignment among national and regional authorities that manage a number of EU programs and more coordination with other international donors and potential private sector investments.

Interregional blue economy value chains are promoted by the new EU policy and the financial instrument Interregional Innovation Investment initiative (I3) under the DG REGIO, with financing of €500 million. The initiative aims to strengthen interregional industrial cooperation via bottom-up mechanisms and to unlock the innovation potential with a priority on a green and digital transition. This is an interesting opportunity for the blue economy sectors.

The European Maritime and Fisheries Fund (EMFF) supports the implementation of a common fisheries policy and investments to advance maritime policy at the national level. The EMFF has the ultimate objective of enabling the community to deliver on the EU's marine and ocean conservation targets under the UN sustainable development goals (notably the SDG14). The new, simplified design of the EMFF (2021–27) provides for using the national operational program as a prime vehicle to support the integration and holistic governance of the Bulgarian blue economy, while establishing logical synergies with the other national programs under the new cohesion policy, such as "Horizon Europe," I3, DIGITAL Europe, and the Connecting Europe Facility II (CEF2).

The EC's proposals for the Multiannual Financial Framework (MFF) 2021–2027 will build on the experience gained in setting up and operating under the previous funding platform. The successor to the EMFF[76] – a major source for advancing the blue economy agenda in member states – will offer more opportunities to bring in external investors. The range of measures that can be supported by financial instruments that are managed by member states will be increased.

The EU, through the European Investment Bank, launched the Green Shipping Guarantee Program and the Green Shipping Lending Program in 2016. Both programs promote the construction or retrofitting of vessels to accelerate investment in greener ones, for instance, those that use alternative propulsion systems.

Marine and maritime-related investments can get support through a variety of EU funding instruments. These include the future "Horizon Europe" program and its specific Mission on Healthy Oceans, Seas, Coastal, and Inland Waters and the new LIFE program. If calibrated carefully (and based on smart specialization), these funds can help Bulgaria to devise effective ways to reduce marine pollution, including plastics; adapt to climate change; sustainably use and manage ocean resources; develop new materials, including biodegradable plastic substitutes and new feed and food systems; and promote better coastal and maritime spatial planning and ocean governance. To address the common Black Sea regional challenges, such as pollution, in the marine environment and the adverse effects of climate change, collaborative projects can be funded through the next generation of interregional and cross-border cooperation programs (e.g., the Interreg NEXT Black Sea Basin program). Helping the economy to navigate through the "green and blue" and digital transitions, additional EU-powered investment avenues for specific themes can be found under the EU BlueInvest platform[77] and the future InvestEU program (under the infrastructure and research windows). The CEF2 (related to upgrading port infrastructure, lowering the carbon footprint, and ensuring compliance with air quality legislation), the new Innovation Fund (for demonstrating innovative low-carbon technologies related to renewable energy and shipping), and various programs launched by the European Investment Bank (e.g., the Green Shipping Guarantee Program and the Green Shipping Program Loan) provide funds for eligible investment projects. The EU Recovery Fund can, through dedicated cross-country allocations to Bulgaria, be instrumental in the short to medium term in helping to scale up innovative activities, such as offshore food and biomass production and renewable energy, in a way that preserves ecosystems and is sustainable. The World Bank, under the future BBSEA program, will look at possible avenues to support projects that address marine pollution and litter in the Black Sea countries, including Bulgaria.

Managing a diverse pool of funding opportunities can create blue economic opportunities in a post-pandemic financial shortfall to build a better and greener coastal and marine economy. Taking a holistic approach to sustainable blue economy development through the integrated planning of marine and coastal resources will facilitate the programming of financial resources, open up opportunities for private businesses and stakeholders to access funding, and help shape coherent national responses to transboundary and regional challenges. Such an approach will also strengthen Bulgaria's leadership position in a regional sea basin context and contribute to the implementation of the CMA.

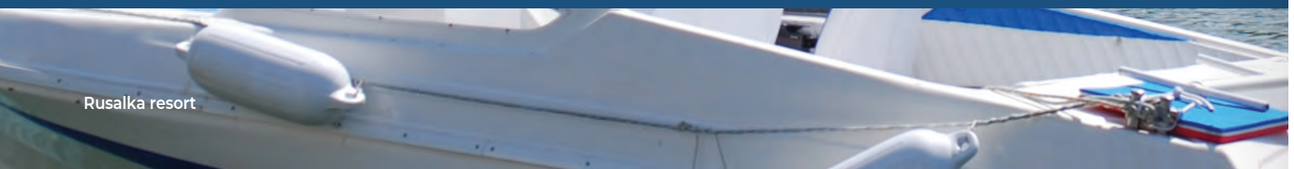
Durankulak fisherman harbor

75 See https://ec.europa.eu/fisheries/cfp/emff_en.

76 BlueInvest aims to boost innovation and investment in sustainable technologies for the blue economy by supporting readiness and access to finance for start-up businesses, SMEs, and scale-ups. It is enabled by the European Maritime and Fisheries Fund and open for stakeholders in Bulgaria. See https://webgate.ec.europa.eu/maritimeforum/en/frontpage/1451.

CHAPTER 5.

Policies and Institutions for Advancing the Blue Economy



Rusalka resort

5.1. Strategies and Legislation

Bulgaria has made good progress in aligning its sector policies with the EU blue economy framework to integrate legal, regulatory, and institutional provisions for actions and coordination among established blue economy sectors. The national strategies related to the blue economy agenda include: the Concept for Tourist Zoning in the Republic of Bulgaria; the Updated National Strategy for Sustainable Tourism Development 2014–2030; the Multiannual National Strategic Plan for Aquaculture; the Energy Strategy until 2020; the Integrated Transport Strategy until 2030; the Marine Strategy; and the National Climate Change Adaptation Strategy and Action Plan. These strategies and plans could be reviewed to identify the synergies among them with regard to their contribution to the blue economy in the country.

The MSFD was transposed into national legislation by the Regulation for the Protection of the Environment and Marine Space, adopted in 2010.[77] The Marine Strategy was developed during 2012–2014. The Program of Measures (PoMs) under Article 13 of the MSFD started in 2015 and will provide actions for reducing anthropogenic pressures to fill the gaps of the second Black Sea River Basin Management Plan under the WFD 2000/60/EC where there are no measures or where existing measures are not sufficient to achieve GES. In Bulgaria, the actions related to the MSFD are coordinated by the Ministry of Environment and Water (MoEW) and notably by the Ministry's Black Sea Basin Directorate.

The legal frameworks and instruments for pursuing integrated coastal zone management were established by the Black Sea Coastal Development Act, which came into force in 2008 (SG 48/15.06.2007)[78] and was most recently amended in 2019. The EU MSP Directive was transposed into national legislation by an Amendment to the Maritime Spaces, Inland Waterways and Ports of the Republic of Bulgaria Act (State Gazette No 28/29.03.2018).[79] The final version of the national MSP is in the planning stage and is expected to be adopted by the National Expert Council on Territorial Development and Regional Policy, and thereafter by the Council of Ministers of Bulgaria. The Designated National Competent Authority for MSP is the Ministry of Regional Development and Public Works (MoRDPW) in Bulgaria. The Advisory Council on MSP[80] chaired by the Minister of MRDPW supports the cooperation and coordination between relevant stakeholders during the MSP process.

There are several other legal acts and strategies that could support blue economy development in Bulgaria. These include: the Maritime Spaces, Inland Waterways and Ports of the Republic of Bulgaria Act; the Tourism Act; the Fisheries and Aquaculture Act; the Energy Act; the Concessions Act; the Mineral Resources Act; the Waste Management Act; the Biological Diversity Act; the Protected Areas Act; the Water Act; and the Environment Protection Act. Although all of these could advance the blue economy agenda, matching the regulatory and institutional mandates with the appropriate budget mechanisms and promoting the intersectoral coordination of investment priorities will be essential.

5.2. Institutions and Stakeholders

The main institutions with competences related to the development of the blue economy sectors at the national and local levels are various government agencies (see box 9), regional and local authorities, regional councils, district governors, coastal city mayors, and local communities. Institutional collaboration and stakeholder cooperation on the blue economy will also have to include academia, businesses, citizens, and civil society groups.

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77 Regulation for the Protection of the Environment in the Seawaters. 2010. Adopted by Decree No. 273 of 23.11.2010. Promulgated State Gazette No 94/30.11.2010. Last amended State Gazette No 14/18.02.2020. Text is available at https://www.lex.bg/bg/laws/ldoc/2135707230.

78 Black Sea Coast Development Act, 2008. Promulgated, State Gazette No. 48/15.06.2007, effective 1.01.2008, last amended by State Gazette No. 60/30.07.2019.

79 Maritime spaces, Inland Waterways and Ports of the Republic of Bulgaria Act. Promulgated State Gazette No. 12, 11.02.2000. Last amended State Gazette No. 28/29.03.2018.

80 https://www.msp-platform.eu/sites/default/files/download/bulgaria_-_v2_-_april_2020.pdf

Box 9. Blue Economy Government Stakeholders

Ministry of Transport, Information Technology and Communications (MoTITC)[81] is responsible for the implementation of the CMA provided through ad hoc ministerial meetings. Within the MoTITC are also the Executive Agency Maritime Administration [82] and the Bulgarian Ports Infrastructure Company (BPI Co.).[83]

Ministry of Tourism (MoT)[84] is responsible for implementation of tourism policy in cooperation with institutions, municipal administrations, nongovernmental organizations, businesses, and the media. The MoT includes the Tourism Policy Directorate,[85] Tourism Programs and Projects Directorate, Beach Management Directorate,[86] and Department of Strategic Planning and Product Policy in Tourism.

Ministry of Energy (MoEn)[87] is responsible for the energy sector and for guaranteeing the country's energy independence. The Ministry administers directorates with various functions, including the Natural Resources, Concessions and Control Directorate[88] and the Energy Strategies and Sustainable Energy Development Directorate.[89]

Ministry of Economy (MoEc)[90] is responsible for developing and implementing a low-carbon economy and for promoting investments, innovations, and competitiveness. The Consultative Council for Industrial Stability supports the MoEc on such topics as new industrial policy, sustainable development of the energy infrastructure, incentives to promote energy efficiency, and increases in energy competitiveness.

Ministry of Agriculture, Food and Forestry (MoAFF)[91] is in charge of fishery and aquaculture sector policy. The MAFA oversees the Executive Agency of Fisheries and Aquaculture (EAFA)[92] and the Agricultural Academy.[93] The Directorate for Maritime Affairs and Fisheries [94] and Common Fisheries Policy Directorate[95] are also part of the MoAFF.

Ministry of Regional Development and Public Works (MoRDPW)[96] is responsible for territorial and regional development policy and European territorial cooperation, and the water supply and sewerage sector. The Ministry has specific competences under the Territorial Development Act, the Black Sea Coast Development Act, and the Maritime Spaces, Inland Waterways and Ports of the Republic of Bulgaria Act. The MoRDPW is designated as a Competent Authority for the implementation of MSP in Bulgaria in compliance with MSP Directive 2014/89/EU. The National Centre for Regional Development[97] is a research and development (R&D) institute on regional and spatial planning, urban design, and many related issues supporting the MoRDPW.

Ministry of Environment and Waters (MoEW)[98] has a mandate to develop and implement the national environmental policies with regard to management, control and protection of the components of the environment. The specialized agency within the MoEW is the Executive Environment Agency. Regional Inspectorates of the Environment and Water[99] are administrative structures within the MoEW responsible for implementation of state environmental policy at the regional level. The four Basin Directorates within MoEW are the responsible bodies for integrated water management and protection at river basin level.

Ministry of Education and Science[100] is responsible for primary, secondary, vocational, and higher education, as well as science. The National Council for Science and Innovation[101] is chaired by the Minister of Education and Science. The Council oversees the development of the National Research Strategy. The Roadmap introduces the main research priorities at the EU and national levels in accordance with the National Research Strategy, the Innovation Strategy for Smart Specialization, and the agenda of the European Strategy Forum on Research Infrastructures.

81 https://www.mtitc.government.bg/en.
82 https://www.marad.bg/en.
83 http://www.bgports.bg/en.
84 http://www.tourism.government.bg/en.
85 http://www.tourism.government.bg/en/kategorii/struktura/directorate-general-tourism-policy.
86 http://www.tourism.government.bg/en/kategorii/struktura/directorate-management-sea-beaches.
87 https://me.government.bg/en/pages/about-us-1.html.
88 https://me.government.bg/en/departments/prirodni-resursi-koncesii-i-kontrol-36-1.html.
89 https://me.government.bg/en/departments/energy-strategies-and-policies-for-sustainable-energy-development-6-1.html.
90 https://www.mi.government.bg/en.
91 https://www.mzh.government.bg/bg/ministerstvo/.
92 http://iara.government.bg/?lang=en.
93 https://www.agriacad.bg/en.
94 https://www.mzh.government.bg/bg/ministerstvo/struktura/direkciya-morsko-delo-i-ribarstvo/.
95 https://www.mzh.government.bg/bg/ministerstvo/struktura/direkciya-obsha-politika-v-oblastta-na-ribarstvoto/.
96 https://www.mrrb.bg/en/.
97 http://www.ncrdhp.bg/en/.
98 https://www.moew.government.bg/en/ministry/.
99 https://www.moew.government.bg/bg/kontakti/regionalni-inspekcii-po-okolna-sreda/.
100 https://www.mon.bg/en/.
101 https://saveti.government.bg/web/cc_54/1.

The institutional options for the harmonization of maritime sector policies and environmental protection can make use of an existing governance framework for sectoral coordination. These options include: the CMA Steering Group for Implementation of the CMA; the National Advisory and Coordination Council for Environmental Protection in the Black Sea Marine Waters,[102] established as a subsidiary body to the MoRDPW to support cooperation and coordination among the relevant stakeholders during the MSP process; the Water Coordination Council[103] on activities for the development and implementation of river basin management plans (RBMPs) and flood risk management plans (FRMPs); the National Council on Biological Diversity[104] for Implementation of the National Biodiversity Strategy and Policy and Natura 2000 and its respective 5-years Action plans actions plans/land and species management; control on invasive alien species (IAS), sustainable use of biological resources; the National Tourism Council[105] on issues related to tourism, including coastal and maritime tourism; the High Level Water Advisory Board[106] for decisions related to the development of RBMPs in compliance with the WFD and the national water monitoring system; and the Black Sea Basin Directorate overseeing the implementation of water management policy, the protection of the public interest and public health, and sustainable development of the basin area.

The Union of Bulgarian Black Sea Local Authorities (UBBSLA) is a nongovernmental, voluntary, and nonprofit organization.[107] UBBSLA unites 20 municipalities bordering the Bulgarian Black Sea Coast – Avren, Aksakovo, Balchik, Beloslav, Burgas, Byala, Varna, Valchiol, Dalgopol, Devnya, Dobrich, Dolni Chiflik, Kavarna, Malko Tarnovo, Nesebar, Pomorie, Primorsko, Suvorovo, Shabla, and Tsarevo – located in three administrative regions: Burgas, Varna, and Dobrich. UBBSLA provides expertise and technical assistance to municipalities in developing plans and strategic documents, as well as expert opinions on the laws concerning the development of the Bulgarian Black Sea coast to provide a better legislative environment for local authorities. Coastal communities are revitalizing and developing the local economy and infrastructure through local development plans and funding for municipalities, businesses, and the nongovernmental sector through the Structural and Rural Development Funds, which is an effective and efficient tool for implementing local development policies.

5.3. Research and Innovation

The CMA promotes research and innovation across the blue sectors as key to unlocking the growth potential of the Black Sea region and to stimulating knowledge transfer "from labs to the market" and investments in human capital. This is all the more important given the vital role of science-based decision making for the benefit of coastal communities and sustainable economic growth in the region. In order to unlock the blue economy potential, highly qualified and skilled professionals and scientists will be needed.

Bulgaria has long scientific traditions and holds a leading position in Black Sea marine science. With the SRIA and the recently launched Black Sea Connect H2020 project, the coastal and marine science community in Bulgaria has recognized the need to work together and to collaborate in providing scientific and research support for scaling up blue economy initiatives.

The largest academic center in Bulgaria, focused entirely on maritime education, is the "*Nikola Vaptsarov" Naval Academy*[108] in Varna. It is the oldest higher education school in Bulgaria, established in 1882. The Naval Academy has faculties related to the blue economy sectors, including navigation, water transport management, logistics, port management, mechanical ship engineering, ship electrical equipment, information and communica-

102 https://saveti.government.bg/web/cc_501/1.
103 https://saveti.government.bg/web/cc_1701/1.
104 https://saveti.government.bg/web/cc_35/1.
105 https://saveti.government.bg/web/cc_47/1.
106 https://saveti.government.bg/web/cc_37/1.
107 http://www.ubbsla.org/en/x².
108 http://www.naval-acad.bg/en.


Tyulenovo

tions technologies (ICTs), cybersecurity, ship repair technology, and ocean engineering and management, all of which have well-established academic potential. The *Technical University of Varna*[109] has a long tradition in educating engineers in shipbuilding, ship repair, and ship mechanics; it also provides degrees in marine electrical and naval engineering, and more recently in marine navigation. The *Prof. Dr. Assen Zlatarov University*[110] in Burgas has strong faculties in organic and inorganic chemical technologies (oil, gas, water, etc.), biotechnology, and renewable energy.

The Institute of Oceanology (Varna) to the Bulgarian Academy of Sciences[111] conducts multidisciplinary research in the fields of marine physics and chemistry, geology, archaeology, biology, and ecology of the sea, hydrodynamics and lithodynamics of coastal zones, and ocean technologies. It also performs complex monitoring of the marine environment in the country's territorial waters and in the Bulgarian EEZ. In support of MSFD implementation, the Institute monitors the ecological status of Black Sea coastal and sea waters coordinated by the MoEW. The *Institute for Biodiversity and Ecosystem Research of the Bulgarian Academy of Sciences*[112] carries out scientific research on theoretical and applied ecology, biodiversity, environmental protection, and sustainable use of biological resources. It uses a modern methodology of environmental classification and assessment of anthropogenic pressure on surface water ecosystems and carries out ecological impact studies and research on marine biodiversity and conservation of aquatic species and habitats and integrated water management. The *Institute of Fishery Resources in Varna*[113] is an independent unit of the Agricultural Academy to the Ministry of Agriculture, Food and Forestry.

109 http://fs.tu-varna.bg/.
110 https://www.btu.bg/index.php/en/.
111 https://www.io-bas.bg/.
112 http://www.iber.bas.bg/.
113 http://www.ifrvarna.com/.


Sinemorets – Veleka river

The Institute's activities include fish stock assessments in the Black Sea and the monitoring of fish population dynamics and structure and the nutrient base of commercial marine fish species. Research topics include Black Sea marine ecosystem changes under the influence of various anthropogenic and climatic factors, fishery stock and non-fish marine resources, and marine aquaculture.

The *Centre for Coastal and Marine Studies* (CCMS)[114] is a non-profit research foundation established to conduct coastal and marine research (studies and surveys of coastal and marine processes) and to provide scientific support to the implementation of EU coastal and maritime strategies (IMP, blue growth strategy, circular economy), project development, knowledge transfer, networking, and consultancies.

Bulgaria has the potential to enhance its marine science and research capacity and to take the lead in common regional marine research in line with the SRIA and the Maritime Research Strategy for Europe.[115] Support to the scientific community in the coming years should aim to create a wider regional network within marine and maritime research organizations and to develop actions to address the scientific challenges in the implementation of the Marine Directive. By attaining the necessary scientific knowledge in support of policy making and investment decisions, Bulgaria could be more successful in achieving a good state of the marine environment.

114 http://www.ccms.bg/en/.
115 A European strategy for marine and maritime research: a coherent European research area framework in support of a sustainable use of oceans and seas /* COM/2008/0534 final *

CHAPTER 6.

Enabling Framework for a Blue Economy in Bulgaria: Policy Recommendations

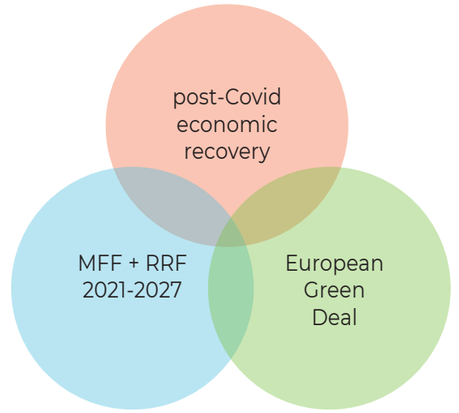
Sozopol harbor, old town

The potential of traditional and newly emerging blue economy sectors in Bulgaria to drive transformational changes and increase their contribution to the economy is strong. However, a number of obstacles related to the policy framework, decision-making processes, competing interests over the use of space, the lack of financing opportunities, and the skills shortage need to be addressed. The recommendations that follow are on selected blue economy sectors and on the important theme of preventing marine pollution. If implemented, these recommendations will have direct as well as indirect economic impacts, including from intangible contributions or from accelerating the transition to a blue economy.

Recovering from the impacts of the COVID-19 pandemic on the maritime sectors will require a redefinition of the maritime economy's relationship with nature. Many of the policy recommendations point to the potential of blue approaches to accelerate a way out of the pandemic crisis and build forward better in established sectors, such as tourism, fisheries, and aquaculture. The pandemic offers an opportunity to reinforce the effort to build a sustainable blue economy fit for the future: a blue economy that derives value from the sea and coastal areas while protecting the health of the coastal and marine ecosystem and enabling its sustainable use. Most importantly, recovery measures need to articulate a way forward and to inform a recovery plan that integrates considerations of blue natural capital.

Post-pandemic recovery of the economy, the ambitious targets of the EGD, and new EU multiannual financial planning for 2021–27 all pose multiple challenges and opportunities for the Bulgarian authorities in their efforts to restore growth and jobs. At the same time, there are opportunities to set in motion the necessary structural reforms, optimize inter-institutional coordination, diversify supply chains, and better integrate circular economy principles in the blue economy. Taking such a course will help Bulgaria to assume an exemplary role in tackling common challenges at the Black Sea regional and sea-basin levels.

Figure 17. Transitioning to Blue Economy as an Opportunity



6.1. Blue Economy Policy Framework

Bulgaria has already taken steps at the sectoral level to strengthen the policy basis of the blue economy through the transposition of EU legislation. This includes, among other actions, policies and legislation on environmental protection and water quality, transport and connectivity, safety and security, waste management, energy, and fisheries, as well as the adoption of sectoral action plans. Although undoubtedly the transposition and enforcement of EU law and important national legislation could be more consistent and better exploit obvious synergies among sectoral activities, Bulgaria is working on its first comprehensive national maritime spatial plan[116] that will serve as the basis for a more holistic approach to blue economy development at the national level. Nonetheless, the alignment of issues relating to institutional power and responsibility, as well as effective coordination in policy and decision making among sectors and competent institutions, lags behind.

Setting a clear direction for the blue economy path will provide a platform for improved governance and coordination among all institutions and stakehold-

116 The national maritime spatial plan is currently under preparation and in due course will be subject to wider stakeholder consultation.

ers in the blue economic sectors. Such coordination ensures the consistency of sector development plans, facilitates synergies, reduces competition over marine resources, and promotes cooperation on priority investments. Although there have been multiple steps taken in this direction, both MSFD and BEDF tools could prove useful in informing future efforts to finalize a national maritime spatial plan that could reduce potential conflicts between sectors and create a sustainable blue development space.

Stakeholder engagement is a key element for evidence-based and transparent policy making. A holistic approach to the blue economy policy process relies on strong collaboration among public administrations, business operators, research and scientific communities, and the different interest groups associated with the Black Sea. Public consultation alone is no longer sufficient. For example, implementing effective MSP entails the adoption of inclusive participatory planning procedures that move beyond traditional top-down approaches.

The following highlights the good practices and tools used to identify priorities and contextualize interlinkages for the more efficient policy integration of strategic, regulatory, and institutional frameworks. These are possible takeaways that Bulgaria could use to address the various challenges and strengthen its blue economy sectors:

Policy development and planning for a blue transition

(i) Adopt a national blue economy vision and strategy, accompanied by a blue economy roadmap to accelerate the transition. The strategy would facilitate a holistic approach and the consolidation of governance structures under strong national-level leadership. The roadmap will identify common priorities and actions to be implemented in the coming years to steer up the transition to a blue economy in an integrated, consistent, and comprehensive way with a multisectoral approach and the continuous engagement of all stakeholders.

(ii) Consolidate existing governance structures that bring together relevant institutions and specialized government agencies with mandates to regulate the use of marine resources. This will enable a comprehensive approach to sustainable blue economy development, the harmonization of legislative frameworks to facilitate a "green transition," the effective programming of financial resources, and the better formulation of coherent national responses to transboundary and regional challenges.

(iii) Carry out an analysis and mapping of the institutions and legal requirements involved to identify the regulatory gaps and inconsistencies in the blue economy policy framework and pinpoint areas for regulatory improvements. Where appropriate, consider introducing administrative and regulatory incentives.

(iv) Use different tools and change-behavior formats to promote individual, corporate, and societal responsibility for sustainable development. Despite the economic and cultural importance of the Black Sea to the Bulgarian people, environmental awareness can be improved in many levels of Bulgarian society through a variety of approaches, including ocean literacy, environmental education, and awareness building in schools and among individuals and SMEs that are active in the different sectors of the blue economy, such as fisheries, coastal tourism, and short-sea shipping.

(v) Expand the policy and regulatory framework for the use of MSP in Bulgaria as a participatory spatial development tool. Several elements may find their place in spatial planning regulation. MSP is a tool used to enhance the integration of cross-sectoral planning and governance and stakeholder engagement. It uses an ecosystem approach to plan for the efficient use of marine resources and is an instrument to reduce conflicts and increase synergies between sectors. MSP encourages investments and opens an avenue to test and deploy novel marine technologies (e.g., offshore wind energy). MSP also helps to identify areas suitable for combinations of multi-uses of marine resources and to solve spatial conflicts.

Financing blue economy priorities

(i) Use the MSP process to identify a pipeline of investments to "blue" the maritime economy sectors that promote business development and innovation, generate benefits to coastal communities, and safeguard natural capital. The pipeline could be part of a National Blue Economy Roadmap investment plan to take maximum benefits from the EU funds (e.g., the EMFF). Public investments leveraging private capital could enhance the effect of EU (COVID) recovery fund resources to support the growth of SMEs in the blue economy.


Burgas gulf

(ii) Prioritize public financing for a sustainable blue economy in coastal communities under the national EMFF program (2021–27). This approach will effectively provide a long-term financial instrument for the transition to the blue economy and implementation of priorities. It will also encourage further integration among maritime sectors and increase synergies between the respective strategic objectives and planning tools under the common fisheries policy, the maritime spatial planning directive, the (marine) environment policy, and other relevant EU/regional and national policies/strategies.

(iii) Plan measures in support of key blue economy sectors (e.g., fisheries, aquaculture, maritime transport, and tourism) in the national recovery and resilience strategy to unlock funds under the €750 billion EU recovery package. Against the strong conditionalities for accessing these funds, highlighting the potential of the blue economy to contribute to Bulgaria's EU-directed green and digital transitions could be beneficial. The recovery funds could be instrumental in helping to scale up innovative activities, such as sustainable offshore food and biomass production, as well as renewable energy in a way that it is sustainable and preserves ecosystems. Consider the mobilization of public funding to support marine cluster incubation and start-ups for established sectors (e.g., blue tourism, fisheries and aquaculture, and maritime transport/ship building) and emerging sectors (e.g., blue renewable energy, offshore wind energy, biotechnology, coastal protection, etc.).

(iv) Empower local and regional authorities in the coastal areas to play a greater role in decision making and the implementation of the 2021–27 Cohesion Funds. The use of integrated territorial investment and community-led local development tools offers avenues for targeted and cohesive solutions to challenges related to the blue economy. The definition and implementation of "joined-up" growth strategies between the territorial units (municipalities, districts) in the coastal region will help improve the administrative capacity of each respective administration.

(v) Prioritize the sustainable blue economy in local development plans to foster prosperous coastal communities and to facilitate access to the national EMFF program (2021–27). This kind of bottom-up approach will ensure long-term financing for coastal communities and the sharing of the blue economy's economic benefits. The Black Sea Virtu-

al Knowledge Centre and the Black Sea Assistance Mechanism, both financed under the EMFF, could serve as virtual stakeholder consultation and co-operation platforms that could help in sensitizing stakeholders on the blue economy in the Black Sea and support them in identifying synergetic projects in the region.

Knowledge and innovation

(i) Establish a Maritime Technology Exchange Platform to strengthen the collaboration among SMEs, maritime clusters, business labs, public authorities, and research communities. Use this as a knowledge platform to promote the coordination of needs among sectors and to identify and understand the relevant markets for marine technology and data and information innovation services.

(ii) Strengthen the science-based policy-making process by enhanced collaboration with academia and the research community. This will contribute to a better investment climate, including the capacity for an assessment of natural capital inputs to key blue economy sectors, such as coastal and maritime tourism, fishery and aquaculture, shipping and ports, and protection of the environment and ecosystems.

(iii) Develop an online tool for information and knowledge exchange on best practice and networking on the sustainable blue economy. This platform will serve as a "repository of indigenous knowledge and best practice" for sharing best practices, procedures, and guidelines, in line with international, EU, regional, and national policies and conventions.

(iv) Promote innovation in emerging blue economy sectors through smart specialization and "matching neighboring regions". Smart specialization is backed by the European Regional Development Fund to strengthen the connection between science and research on the one hand and industries on the other (e.g., food industry, health, advanced manufacturing, and the circular economy), along with the development of new business models. Matching smart specialization between regions will unlock interregional innovative investments through the new cohesion policy (2021–27).

Protecting coastal and marine natural capital

(i) Prevent the accelerated degradation of the coastal and marine environment. Consider the strict enforcement of the Black Sea Coastal Development Act and ensure compliance with protected areas' acts and EU directives and with the National Prioritized Action Framework for Natura 2000 in Bulgaria regarding priorities identified for marine areas and relevant international treaties.

(ii) Address marine litter pollution and poor waste management practices in coastal and marine areas to prevent the further degradation of valuable landscapes and marine habitats. Implement measures to adhere to bathing water quality in compliance with the WFD and MSFD to achieve GES including in the water bodies directly connected to the Black Sea.

(iii) Bring in circularity in the blue economy and in sector plans as an important policy direction to protect coastal and marine ecosystems from industrial pollution.

Stakeholder inclusion and collaboration

(i) Map the blue economy stakeholders. Developing a comprehensive profile of stakeholder interests and contacts (e.g., in the form of a database) at the earliest possible stage is essential to identifying a wide pool of stakeholders before deciding which need to be considered in MSP and in economic and financial planning.

(ii) Establish or make greater use of existing inter/multisectoral stakeholder groups in support of the transition to a blue economy and consider utilizing them as discussion platforms. This should ensure an integration among policy and decision makers, sectoral structures, and administrations and also engage citizens in a transparent and open decision-making process toward a blue economy.

(iii) Ensure the appropriate representation of all relevant stakeholders from different sectors. Involve them early in the management process to advise on business opportunities and local benefits. One way to ensure early stakeholder involvement is through the MSP process.


Sozopol old town

6.2. Coastal and Marine Tourism

Coastal tourism will remain a pillar of all the Black Sea national economies. The sector highly depends on the quality and health of coastal and maritime space and ecosystems. The tourism sector could contribute and gain from maritime spatial planning and use it as a lever for growth and sustainability by applying the multi-use concept and ecosystem-based approach. A good example in this regard is the outcomes of the EC's DG MARE MARSPLAN-BS II[117] project supporting the ongoing MSP. Bulgaria may need to take actions to overcome the current challenges related to the seasonality of traditional tourism products and current business-as-usual models based on mass tourism, including to protect the natural assets on which the tourism largely depends.

Sector strategy and blue economy policy implementation

(i) Revisit tourism sector development strategies in line with blue economy principles and ensure that they are linked to the delivery mechanism for integrated coastal and marine planning, biodiversity conservation, and societal engagement. This includes product development and investment plans based on the sustainability of blue ecosystems' associated services, coastal infrastructure, and human capital. Strategies and sector plans should prevent the accelerated rate of coastal and marine environmental degradation through consistent sector measures and strict enforcement. Since the wild sand beaches and dunes are natural landscapes used to "brand" Bulgaria's beach tourism, proper mapping and preservation of natural ecosystems and adequate conservation will be important to maintaining the quality of the tourism offerings.

(ii) Foster greater cooperation among sector stakeholders, (public and private) researchers, and local institutions and authorities. Use public policies to leverage private participation in facilitating better access to the private investments of local operators and other small-scale organizations in the sector.

117 Information can be found at http://www.marsplan.ro/en.

Products and markets

(i) Develop innovative marketing concepts to ensure sustainable growth in the coastal and maritime tourism sector. Based on the limits to expansion, these concepts should aim to promote qualitative rather than quantitative growth, balance geographic and seasonal foci, and establish new niche products that have the potential to address the seasonality constraints to sector development.

(ii) Promote alternative forms of tourism that help diversify product offerings. Diversification of local tourism products in synergy with other sector activities, such as agriculture, to create local tourist offerings may help to address the limitations associated with the current seasonality of tourist goods.

(iii) Create diverse, new products and services tailored to specific markets. Focusing on specific target groups (age range, nationality, marital status, etc.) or types of service (adventure, nature-based, wellness, culture, etc.) could open more business and revenue opportunities. Sustainable and nature-based tourism products, such as sea coast hikes, nature museums, bird watching, cycling, and so on, are relevant tourist attractions for new types of local and international visitors.

(iv) Use technology and innovation to grow "niche" markets. For example, the integration of niche tourism offerings and use of mobile apps (e.g., building an ICT platform to link a culinary route, bird watching, and wellness/spa along the coast) could help to develop year-round congress tourism. Applying a multitude of promotional tools and making use of existing travel apps (e.g., TripAdvisor, Booking.com) by continuously placing information on nature tourism products for selected target groups will help overcome the effects of the slump due to pandemic restrictions.

Technology and innovation

(i) Tap into growth opportunities to create an authentic coastal and maritime heritage experience. This could include, for example, stimulating cultural heritage sites in a small area (town, region) to create a common cultural heritage narrative and developing actions to promote this narrative to the outside world. Promoting Black Sea UCH itineraries and developing the cultural dimension of tourism (in addition to adventure/scuba diving tourism, small-scale cruising/yachting, pesca-tourism, and eco-tourism) could extend the tourist season and local community benefits.

(ii) Open new market opportunities for tourism products through digitalization. Adopt ICT innovations, social media, and other high-end technology innovation to boost new services, access global market niches, and better understand market trends and future potential to tailor prospective marketing strategies. Big data and Tourism 4.0[118] approaches would allow for a combination of tourism mobility data with other available data (i.e., accommodation capabilities, resources available, population density, traffic pollution, etc.).

6.3. Fisheries and Aquaculture

The challenges in the fisheries and aquaculture sector are not limited to outdated fishing vessels and inefficient infrastructure or the lack of fisheries statistics and fish stock assessments. Monitoring activities are still fragmented and irregular at the national level. Marine aquaculture lacks diversification. As a measure to address the impacts of COVID-19 on the sector, the EC has launched a support scheme to protect fisheries and aquaculture by introducing specific measures, including amendments to the EMFF. Consequently, Bulgaria has modified its Operational Program and has reallocated €6.6 million of public funds to compensate companies for financial losses caused by the coronavirus outbreak. Additional financial support is expected to lead to positive results by mitigating job losses across the sector and preventing bankruptcies, closures, and downsizing. The possible takeaways that could help to address sector challenges and strengthen its transition to a blue economy include:

118 https://www.tourism4-0.org.

Sector competitiveness and market development

(i) Diversify fishery and aquaculture production by tapping into the economic synergies among tourism, catering, recreational fishing, and environmental services in MPAs. Scuba diving tourists can be attracted by aquaculture farms as a place to visit and observe. Small local nearshore restaurants that serve aquaculture products (for example, black mussels) or fish catches by small-scale fishery are a good vehicle for promoting traditional local cuisines, coastal tourism, and the sustainable use of marine resources.

(ii) Enhance the innovation and competitiveness of the sector through collaborative knowledge exchange among private businesses, leaders in science and education, civil society organizations, governmental institutions, and policy makers.

(iii) Modernize fish markets for direct sale by fishermen and companies. This could include electronic auctioning platforms for commercial fishing for maximum no-waste catch. Access to the direct sale of fish on farms through separate stands, online stores, mobile shops, and farm markets would open new market opportunities.

(iv) Promote good aquaculture practices and market expansion. This includes the restructuring of existing farms by increasing the production capacity and diversification of fish types according to market needs, the innovation and optimization of current production, and product value addition.

(v) Increase fish food processing opportunities by creating niche products that make Bulgarian produce from catch and aquaculture more competitive.

Aquaculture platform, Sea shells, Dalboka

Sector governance and management

(i) Enforce measures to combat IUU fishing (e.g., illegal bottom trawling) and to protect marine habitats. This will require additional inspections and penalties implemented by the Executive Agency of Fishery and Aquacultures (EAFA). Increasing the awareness of stakeholders and the public, including businesses, consumer associations, and civil society, regarding the protection of fishery resources against IUU fishing and environmental hazards will increase the impact of these measures.

(ii) Promote measures to increase domestic fish consumption. This could involve encouraging fish consumption through public programs (for example, school feeding, seafood festivals along the coast) or by advertising healthy seafood cuisine and dietary culture. These measures could also include healthy protein diet campaigns, marketing, and product development.

(iii) Deepen the cooperation among all stakeholders in the fisheries and aquaculture sector. Measures to facilitate cross-sectoral cluster collaboration between the private sector, experts, and policy makers (fisheries local initiative groups [FLAGs] could play the role of cross-sectoral clusters) could deliver multiple economic gains. This includes establishing beneficial partnerships between businesses, fisheries and aquaculture, and scientific organizations to protect and restore marine and coastal biodiversity and ecosystems, including MPAs and Natura 2000.

(iv) Promote the selectivity of fishing gears with a view to achieving sustainable and responsible fishing and to reducing the environmental impact of fisheries.

(v) Expand science and research inputs into the industry to close the knowledge gap. This could involve improving the monitoring of fish stocks and marine ecosystems to inform the development of science-based fisheries management plans for strategic capture species.

(vi) Further the engagement of the sector in ongoing MSP as an important tool for tapping into the development opportunities of capture fisheries and aquaculture through collaboration with other sectors and stakeholders that are considering cross-sectoral and environmental synergies.

(vii) Offer a holistic and effective national response to regional challenges to the sustainable exploitation of marine biological and natural resources (e.g., fisheries, oil and gas exploration) in line with overarching cooperation frameworks, such as the CMA and the Sofia Ministerial Declaration for Sustainable Fisheries.[119]

6.4. Emerging Blue Economy Sectors

The emerging sectors can act as catalysts to advance the blue economy transition. Blue biotechnology[120] has considerable prospects for development. The advancement of new marine-based industries can help Bulgaria's decarbonization. The potential from hydrogen sulfur in the Black Sea's deep water could play an important role in meeting the region's future energy demands. The emerging blue economy sectors are an area for development while decision makers work to strike a balance between conservation and the sustainable use of marine resources. The following recommendations could inform a forward-looking vision for the development of the emerging blue economy sectors:

Sector development policies

(i) Promote the use of renewable energy resources through investments in offshore wind energy. This will include adopting policy incentives to deploy innovative renewable energy installations. The Bulgarian coast has excellent wind potential, but the sector is largely untapped, making wind energy among the top prospective candidates for investments. Undertake a mapping of possible sites for marine renewable energy farms (including offshore wind) based on a thorough analysis of intersectoral synergies and potential cross-sectoral impacts. Conduct technical and economic feasibility studies of offshore technology in the country.

119 "Sofia Ministerial Declaration," High Level Conference on Black Sea Fisheries and Aquaculture, Sofia, June 7, 2018, https://ec.europa.eu/fisheries/sites/fisheries/files/docs/2018-06-07-sofia-declaration_en.pdf.

120 OECD, *Glossary of Terms* (Paris: OECD, 2013). Biotechnology is defined as "the application of science and technology to living organisms as well as parts, products and models thereof, to alter living or non-living materials for the production of knowledge, goods and services."


Kaliakra wind farm

Use the MSP process to engage stakeholders in resolving potential user conflicts.

(ii) Develop a national strategy for the implementation of blue biotechnology. Bulgaria has the potential, based on its abundant natural resources and technology, to develop the sector. Blue biotechnology has applications in many sectors, such as food processing, medicine, cosmetics, and bioremediation technologies. The first step will be to develop a specific marine biotechnology strategy and supporting policies and regulations to avoid user conflicts and potential negative impacts. In parallel, expand the scientific and laboratory capacity for research in the biodiversity resources of the Black Sea. Bulgaria has a traditionally well-developed pharmaceutical industry that could be more fully utilized. Engaging in a marketing and branding campaign for Bulgarian blue bio-economy products and services would help brand the bio-products.

(iii) Mobilize public funding to support marine cluster incubation support for blue bio-economy start-ups. Develop novel public-private partnership financing instruments with long-term commitments. Novel aquaculture cultivation techniques (e.g., closed containment systems) have been tested and adapted, for example, to Baltic Sea conditions.

Environmental monitoring and science and technology development

(i) Use environmental monitoring technologies and services to strengthen knowledge exchange. For example, establishing a technology exchange platform between industries could strengthen knowledge exchange and technological uptake.

(ii) Foster effective monitoring technologies and services. The blue economy sectors that use marine resources will benefit from common standards and protocols, based on oceanic and marine science, to protect the natural capital, including a system that complements existing monitoring and testing facilities. For example, fisheries observation programs could help the industry collect vital stock data to enhance catch, protect endangered species, and reduce IUU fishing.

(iii) Support scientific and research capacity in blue economy sectors. Support policy and decision making with adequate economic and financial analysis that factors in the value of natural capital. For instance, apply a cost-benefit analysis (CBA) of investments in beach armoring through nature-based "green" infrastructure in recreational and tourism-related sectors, other blue sectors (fishing, aquaculture, shipping), and ecosystem protection.

(iv) Build scientific capacity to support the MSP process and prioritization of investments. Encourage decision makers in Bulgaria to opt for nature-based solutions in the blue sectors where possible. Bulgaria's FRMPs do not include an estimation of the CBA of measures or references to specific sources of funding depending on the nature of the expected benefits.

6.5. Pollution-Free Marine Environment

The EU Waste Framework Directive[121] provides important mechanisms for the removal of litter and the improvement of water quality in line with the requirements of the MSFD. To achieve the objec-

tives of the Urban Wastewater Treatment Directive 91/271/EEC, Bulgaria has developed an Implementation Program with a set of measures and deadlines. Nonetheless, there are serious challenges along the coast, where 77 out of 105 industrial sites are significant sources of wastewater. The reuse and recycling of waste in the country is still significantly lower than the EU-28 average. Moreover, there is as yet no circular economy policy program in Bulgaria, a gap that needs to be filled in line with the EGD. Unabated marine pollution can affect many sectors and cost hundreds of millions of euros for industries that depend on the quality of marine resources. An important step will be inclusion of coastal communities and businesses in "zero waste" initiatives for reducing natural resource depletion and ecosystem destruction, conserving energy, reducing water usage, preventing pollution and toxins creation, and strengthening the local economy. Taking forward this exciting paradigm will offer a way for the people to have a rich quality of life that can be sustained over time. In addition to actions to help keep the blue economy sectors in check and embrace "greening," the following policies could encourage sustainable practices to reduce marine pollution.


Sinemorets south

Policy implementation

(i) In line with MSFD provisions, define GES and targets where these do not exist and determine timelines for achieving them. Define measures to achieve GES, determine those that have a direct impact on reducing existing stresses, and quantify the expected reduction of pressure as a result. Ensure regional cooperation where practical and appropriate to address the predominant pressures in the Black Sea region. Ensure that the different elements are reported under the MSFD by the set deadline.

(ii) Support the implementation of the Black Sea Marine Litter Regional Action Plan adopted by the Commission on the Protection of the Black Sea Against Pollution in 2018.[122] This includes the development of a National Action Plan for Marine Litter that will include: a) appropriate policies, legal instruments, and institutional arrangements, including adequate management plans for solid waste and waste from sewer systems, that incorporate marine litter prevention and reduction measures; (b) a monitoring program to assess the current status of the marine environment with respect to marine litter; (c) measures to prevent and reduce marine litter; (d) programs for the removal and environmentally sound disposal of existing marine litter according to national legislation for management of this kind of waste; and (e) awareness raising and education programs and campaigns.

(iii) Develop a vision and strategy for mainstreaming circular economy principles in government policies, including stimuli for up-taking material and resource efficiency by economic sectors.

(iv) Enhance the enforcement of policies and regulations to prevent illegal dumping of waste, including littering. Enforce and use economic instruments, such as pay as-you-throw programs. Introduce new instruments to raise the level of recycling from its current amount.

121 Directive (EU) 2018/851 of the European Parliament and of the Council of 30 May 2018 amending Directive 2008/98/EC on waste. See https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=celex:32018L0851.

(v) Increase drastically the share of recycled waste. The recycling rate of recyclable waste compared to the total amount of waste is approximately 10–15 percent, while the recycling rate compared to the total amount of recyclable waste (i.e., recycling potential) is between 32 and 42 percent. Still, the share of recycled waste in Bulgaria is very low: only 3 percent in 2017 compared to the EU average of 40 percent (reused, recycled, or composted and digested).

(vi) Step up efforts to address the compliance gap with the Urban Wastewater Treatment Directive and meet the targets for coverage of coastal communities with WWTPs.

(vii) Mobilize investments, including through EU funds, in waste prevention, separate collection and recycling, and efforts to address air pollution, thereby enhancing biodiversity and green infrastructure.

(viii) Promote circular economy-based business products. In the context of the programming of national operational programs (2021–27) in Bulgaria, promote funding for incentives for innovative business models and actions that promote circularity, reductions in single-use plastics, and environmental certification schemes.

Contribution to Black Sea Cooperation

(i) Encourage a coordinated response to marine litter in coastal municipalities. Bulgarian coastal regions and citizens can develop a national response to marine litter through a system of coordinated actions, adding to the ongoing initiatives under the Commission on the Protection of the Black Sea Against Pollution (Bucharest Convention).

(ii) Launch an initiative for "litter-free" coastal communities. Public authorities should incentivize the development of litter-free coastal communities and zero-waste generation. These communities will have access to funds for municipal schemes to prevent waste generation and reduce the leakage of litter into the sea by improving waste collection, management, and recycling, promoting circular business models, raising public awareness, and removing litter from the environment (e.g., promoting fishing for litter actions and beach clean-up activities).


Tyulenovo

122 The overall objective of the Plan is to consolidate, harmonize, and implement the necessary environmental policies, strategies, and measures for the sustainable and integrated management of marine litter issues in the Black Sea region. See http://blacksea-commission.org/Downloads/BS_Marine_Litter_RAP_adopted.pdf.

Conclusions

The Black Sea coast of Bulgaria has seen a lot of development over the past 30 years. Its coastal economy and maritime sectors remain vital segments of the national economy. As part of Europe's blue space, Bulgaria's coastal and marine regions attract a lot of interest beyond the national borders. The foregoing discussion has highlighted lesser-known ways in which established and emerging sectors that are part of the blue economy of Bulgaria can make the best use of the blue economy platform and tools for strategic, integrated, and participatory development and the protection of coastal and marine natural capital to advance blue industries, services, and activities.

The benefits generated through these blue economy tools could not only greatly contribute to the national economy, but also help Bulgaria to lead the currently uneven development practices in the Black Sea region and to promote technological development and innovation aligned more closely with marine conservation and effective marine spatial planning.

The perceived shortcomings in Bulgaria's blue economy sectors can be addressed by adhering to the MFSD requirements and by adopting certain elements of the BEDF that could strengthen the relationship among the economy, coastal landscapes, the environment, people's health, and community well-being. This can also provide ample opportunities for accessing financial resources in the post COVID-19 environment to redefine the relationship of established blue economy sectors with nature.

Policy makers should carefully think through the possibilities involved in augmenting the value of blue economy assets through approaches and measures that ensure policy coherence across maritime sectors to support the sustainable development of the national and regional blue space of the Black Sea. The EU pledge to financially support the decarbonization of the economies of member states is not only a critical opportunity. More than that, the EU's goal calls for strengthening the integration of economic development and spatial planning systems and designing projects that could attract private capital and bring tangible and scalable economic, environmental, and societal benefits to Bulgaria.


Krapets North beach

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