



Hariri Foundation
For Sustainable Human Development

LBE

LEBANON'S BLUE ECONOMY
الاقتصاد الأزرق في لبنان

NATIONAL DIALOGUE & ASSESSMENT REPORT

The Blue Economy &
Sustainable Maritime Transitions

LebanonBE.com



LEBANON'S BLUE ECONOMY
الاقتصاد الأزرق في لبنان

NATIONAL DIALOGUE & ASSESSMENT REPORT

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Hariri Foundation for Sustainable Human Development

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UNEP's mission is to provide leadership and encourage partnership in caring for the environment by inspiring, informing, and enabling nations and peoples to improve their quality of life without compromising that of future generations.



SwitchMed Programme

The SwitchMed programme is funded by the European Union (EU) and implemented by UNEP. It aims at achieving a Circular Economy in the southern Mediterranean by changing the way goods and services are produced and consumed.

To achieve this, the SwitchMed provides tools and services directly to the private sector, supports an enabling policy environment, and facilitates exchange of information among partners and key stakeholders.



Hariri Foundation for Sustainable Human Development

The Hariri Foundation for Sustainable Human Development (HF) is a Lebanese non-governmental organization incepted in 1979. Member of ECOSOC with special status, it aims to achieve sustainable human development at the regional, national and local levels through investing in human capital.

Through its diverse set of programs, the organization localizes, delivers and mainstreams advanced educational, participatory and developmental models aiming to transform education, promote active citizenship, and build urban resilience.

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EXECUTIVE SUMMARY



LEBANON'S BLUE ECONOMY
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The National Dialogue & Assessment Report for Lebanon's Blue Economy presents a meticulously crafted and holistic strategy and assessment aimed at harnessing the country's extensive maritime and coastal resources. This strategy is not just geared towards promoting sustainable economic growth but is equally focused on enhancing ecological conservation and ensuring social equity. The approach is integrative, recognizing the interconnectedness of the economy, environment, and society, and seeks to optimize these connections for the benefit of all stakeholders involved. This executive summary lays out the foundation of the report's strategic considerations, providing a thorough analysis of key sectors within Lebanon's maritime domain. It outlines the major economic opportunities available within these sectors, including port activities, marine living resources, coastal tourism, and emerging sectors such as marine biotechnology and renewable energy. Each sector is examined for its current contributions to the economy, potential for growth, and the sustainability challenges it faces. The report provides a nuanced perspective on how these sectors can be developed responsibly and sustainably, emphasizing innovative approaches that balance economic development with environmental stewardship.

Furthermore, the report offers comprehensive recommendations designed to guide policymaking, investment, and community engagement. These recommendations are crafted with the dual goals of economic vitality and ecological integrity in mind, ensuring that economic activities not only prosper but also contribute positively to the preservation of Lebanon's marine and coastal environments. The recommendations also address the need for social inclusiveness, ensuring that the benefits of growth in the blue economy are equitably shared among all segments of the population, particularly those who have traditionally depended on these resources for their livelihoods. Taken together, the strategies, sector analyses, and recommendations set out in this report seek to position Lebanon as a leading example of sustainable blue-economy governance, grounded in sound maritime practices and strengthened by a national blue-economy innovation system. By adopting the frameworks and actions suggested, Lebanon can demonstrate how integrated, thoughtful management of blue economy resources can lead to robust economic growth, enhanced environmental health, and greater social welfare. This summary encapsulates the report's vision for a Blue Economy that is not only prosperous and productive but also resilient and responsive to the needs of its people and the preservation of its natural heritage.

Strategic Context and Global Alignment

The National Dialogue & Assessment Report for Lebanon's Blue Economy situates Lebanon's maritime initiatives within the expansive framework of international sustainability agendas, particularly the United Nations Sustainable Development Goals (SDGs). This strategic alignment underscores Lebanon's commitment to harmonizing its economic ambitions with global standards of environmental care and social equity. The report highlights how Lebanon's Blue Economy can contribute to specific SDGs, such as SDG 14 (Life Below Water), by promoting the sustainable use of marine resources, and SDG 8 (Decent Work and Economic Growth), through the creation of new job opportunities in sustainable maritime sectors. The alignment with global goals is not merely symbolic but a strategic orientation that seeks to integrate Lebanon's economic growth with conscientious environmental stewardship and inclusive social policies. This integration is essential for fostering resilience and ensuring the long-term prosperity of Lebanon's coastal and marine resources. By adhering to these international standards, Lebanon also enhances its eligibility for global funding opportunities, attracts international partnerships, and ensures its maritime policies are robust and future-proof.

In-depth Stakeholder Engagement

The report emphasizes that the success of Lebanon's Blue Economy hinges significantly on the breadth and depth of stakeholder engagement at vertical and horizontal levels. Recognizing the multifaceted nature of maritime and coastal issues, the report outlines a comprehensive engagement strategy that includes government agencies, private sector firms, local community groups, and international organizations. This strategy is crafted to ensure that all voices are heard and integrated into the development of maritime policies and practices, fostering a sense of ownership and commitment across various sectors. The stakeholder engagement strategy is detailed and methodical, identifying key stakeholders in each sector of the Blue Economy and outlining mechanisms for their continuous involvement. For government bodies, the report suggests structured policy dialogues and regulatory reviews to align national laws with sustainable practices. For the private sector, it proposes collaborative projects that drive innovation and sustainability. Local communities are to be engaged through participatory approaches that ensure their livelihoods are supported and enhanced by Blue Economy initiatives. International partners are envisioned as allies in capacity building and technological exchange, ensuring that Lebanon's maritime practices meet global standards.

Sectoral Analysis and Developmental Focus

The National Dialogue & Assessment Report for Lebanon's Blue Economy provides a detailed examination of key sectors within Lebanon's Blue Economy, such as port activities, marine living resources, and coastal tourism, as well as emerging sectors like marine biotechnology and renewable energy. Each sector is analyzed for its current state, growth potential, and strategic importance, facilitating a nuanced understanding of their respective roles and potential contributions to Lebanon's economy. For instance, port activities are identified as critical for Lebanon's role as a regional maritime hub, contributing significantly to economic throughput via international trade and logistics. The sector's potential for growth is linked with advancements in port infrastructure and integration of digital technologies to improve efficiency and reduce environmental impacts. Marine living resources, including fisheries and aquaculture, are analyzed for sustainable practices that balance economic output with conservation needs. Coastal tourism, a major revenue generator, is evaluated for its capacity to incorporate eco-tourism principles that safeguard natural beauty while attracting tourism. Emerging sectors like marine biotechnology and renewable energy represent frontiers for Lebanon's Blue Economy. Marine biotechnology is noted for its potential to foster innovations in pharmaceuticals, food production, and environmental remediation. Renewable energy, particularly offshore wind and tidal energy is highlighted as a sector that could significantly contribute to national energy security and environmental sustainability.

Comprehensive Addressing of Challenges

Lebanon's maritime and coastal environments face a myriad of challenges, prominently environmental degradation, overexploitation of fisheries, and underdeveloped infrastructure. The report addresses these challenges with a suite of innovative and sustainable solutions designed to mitigate impacts and enhance the overall sustainability of the Blue Economy. To combat environmental degradation, the report recommends the implementation of advanced waste management practices. These include improved waste collection and recycling processes, and the introduction of stricter regulations on industrial discharges into marine environments. In tackling the overexploitation of fisheries, the report suggests adopting sustainable fishing practices, enhanced regulatory frameworks, and the promotion of aquaculture under environmentally sensitive guidelines. For underdeveloped infrastructure, particularly in port and tourism sectors, the report advocates for significant investments in modernization and sustainable development. This includes upgrading port facilities to reduce congestion and pollution, enhancing public transportation links to coastal areas, and developing eco-friendly accommodations and attractions to boost sustainable tourism. Each recommendation is tailored to address specific sectoral challenges while contributing to the broader goals of economic, environmental, and social sustainability. The strategic integration of these solutions across different sectors of the Blue Economy aims to create a resilient framework where economic growth is achieved without compromising environmental integrity or social equity.

Resilience Building and Adaptive Management

The National Dialogue & Assessment Report for Lebanon's Blue Economy emphasizes the critical importance of resilience and adaptive management within Lebanon's maritime and coastal sectors. The proposed strategies aim to bolster Lebanon's capacity to respond effectively to environmental fluctuations, economic shifts, and social dynamics that could impact the sustainability of its Blue Economy. This is achieved through advocating for flexible policy frameworks that can be adjusted as circumstances change and incorporating adaptive management practices that allow for real-time responses to emerging challenges. Resilience in this context is conceptualized not just as the ability to recover from adverse events, but as the capacity to evolve and thrive amidst changing conditions. This involves the development of infrastructure that is both robust and flexible, capable of withstanding environmental stresses such as storms or sea-level rise while also supporting sustainable economic activities. Economically, it means creating diversified revenue streams that can buffer against market volatility, and socially, it involves ensuring that communities are equipped with the skills and resources needed to adapt to various changes, whether they be new economic opportunities or environmental threats.

Dynamic Framework for Continuous Improvement

The report proposes managing Lebanon's Blue Economy as a living system — continuously studied, co-designed with stakeholders, and recalibrated through regular policy updates — to keep pace with fast-moving environmental and economic realities. It calls for ongoing research that deepens understanding of marine ecosystem dynamics and the socio-economic effects of blue-economy activities while actively scouting and testing innovative technologies and practices that improve sustainability and resilience. It also prioritizes structured, continuous

engagement with stakeholders – fisheries, coastal communities, industry, academia, and civil society – so diverse perspectives inform strategy design and implementation, building ownership, accountability, and durable commitment to results. To translate evidence and engagement into action, the report recommends a dynamic policy framework that is frequently refreshed to reflect new science, technological advances, and global market shifts, enabling agile responses to emerging risks and timely capture of opportunities. All blue-economy interventions are organized under five guiding principles – economic contribution, environmental impact, social impact, infrastructure and investment, and regulatory and policy framework – ensuring decisions are interdisciplinary, comparable across sectors, and oriented to measurable outcomes. Finally, the dialogue urges operationalizing this framework with key partners and institutions to align agendas and budgets while unlocking industrial potential through targeted capacity building, applied science and research, education and workforce development, and place-based policy design tailored to Lebanon’s coastal contexts.

Extended Dialogue and Action Plan

The National Dialogue & Assessment Report for Lebanon’s Blue Economy emphasizes the importance of ongoing dialogue among stakeholders. To sustain the momentum of the initial discussions and ensure continuous improvement, the report details a focused agenda to accelerate Lebanon’s Blue Economy through tighter governance, SME enablement, and near-term flagship projects. On policy, it calls for streamlining fisheries oversight by establishing a National Fisheries Authority; fast-tracking modern Fishing and Recreational Fishing Laws; adopting comprehensive port-management rules with environmental and emergency provisions—including an Oil Spill Rescue Law and a joint search-and-rescue mechanism; enforcing strict pollution, safety, and security standards; upgrading maritime traffic systems and incentivizing digital and green technologies; aligning national laws with international codes and enacting disaster-risk-reduction measures; and creating a National Blue Economy Council to coordinate strategy and stakeholder input. To unlock private-sector growth, it prioritizes SME support: a market-intelligence portal to identify niches (eco-tourism, marine biotech, artisanal fisheries) and valorize local resources; tailored finance via low-interest facilities and blue bonds with a one-window process; targeted training, mentoring, and networking; incentives for green technology adoption and R&D; export readiness and diversification programs; and streamlined, SME-friendly regulation with formal channels for policy feedback. Five implementable project proposals anchor delivery: a marine-debris recycling network that turns port waste into inputs for local industry; a sustainable certification for Enfeh’s salt producers; legal and educational capacity building for marine conservation with bar associations and universities; a Naqoura-to-Aarida coastal trail to drive eco-tourism and place-based learning; and a recreational-fishing initiative with the Fishermen’s Syndicate to promote responsible practices. Together, these actions provide a coherent, practical pathway to sustainable growth, resilience, and regional leadership.

Conclusion

The National Dialogue & Assessment Report for Lebanon’s Blue Economy sets a credible, phased pathway to an inclusive Blue Economy aligned with international standards and informed by broad stakeholder input. It pairs near-term improvements in ports, fisheries, and coastal tourism with prudent development of marine biotechnology and renewables, linking growth to clear ecological safeguards and social outcomes. Execution will require sequenced governance reforms, predictable “blue” finance, strengthened enforcement and data systems, and continuous feedback loops. With disciplined implementation and transparent accountability, Lebanon can protect biodiversity, diversify livelihoods, and position itself as a regional reference for sustainable maritime development and blue innovation in the Eastern Mediterranean region.

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INTRODUCTION



LEBANON'S BLUE ECONOMY
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Lebanon has a critical opportunity to harness its extensive eastern Mediterranean coastline for sustainable development. The National Dialogue & Assessment Report for Lebanon's Blue Economy emerges as a strategic blueprint aimed at galvanizing Lebanon's maritime and coastal sectors towards sustainability and resilience. This document synthesizes a multitude of perspectives and data to construct a comprehensive approach to Lebanon's Blue Economy, integrating economic growth with environmental stewardship.

As global environmental challenges intensify and Lebanon grapples with unique socio-economic issues, the need for a sustainable interaction with our marine and coastal environments has never been more apparent. This dialogue is not merely a report; it is a call to action—a detailed plan to sustainably revitalize Lebanon's marine assets which are integral not only to national identity but also to economic stability. In doing so, it draws heavily on the principles advocated by the United Nations Environment Programme's (UNEP) Sustainable Blue Economy Initiative, which seeks to balance ecological sustainability with economic growth and social inclusion.

The urgency of these efforts is underscored by the precedents set by prior significant events in Lebanon, which have collectively prepared the ground for the ambitious strategies outlined in this report. The ENSERES National Capitalisation Event in Tyre highlighted the critical role of ecosystem-based management in enhancing socio-ecological resilience, addressing marine pollution, and preserving cultural values within the Mediterranean context. This event set a foundational dialogue on integrating environmental resilience into local economic frameworks.

The First National Meeting on Maritime Spatial Planning and Sustainable Blue Economy in Beirut was instrumental in delineating the scope of Maritime Spatial Planning (MSP) within Lebanon's context. It brought to the forefront the need for integrated management tools and collaborative efforts to harness the potential of the Blue Economy, aligning with global initiatives spearheaded by IOC-UNESCO and DG-MARE. Furthermore, the initiative led by Fondation Diane under the Medwaves/SwitchMed project provided a practical demonstration of how sustainable entrepreneurship could drive the Blue Economy forward. By fostering circular business solutions, the project supported entrepreneurs in contributing to economic innovation while addressing the environmental and social challenges within the marine sectors.

As Lebanon stands at this crossroads, the National Blue Economy Dialogue builds on these insights and discussions to propose a cohesive and inclusive strategy that acknowledges the past while boldly addressing the future. It aims to catalyze a collective movement towards sustainable maritime and coastal development that is resilient, profitable, and protective of Lebanon's rich natural heritage. This report sets forth a vision to transform Lebanon's coastal policy and practices, positioning the nation as a leader in sustainable coastal management in the Mediterranean region. It underscores the critical importance of collaborative and adaptive strategies, integrating local actions with global sustainability goals to achieve a thriving, inclusive, and environmentally sound future for Lebanon's blue spaces. As we proceed with the upcoming Blue Economy Conference, we are reminded of the collective journey thus far and the extensive groundwork laid by previous initiatives. These efforts frame our current aspirations and strategies, providing both a foundation and a springboard for future actions. Together, we stand committed to transforming the promise of the Blue Economy into a reality for Lebanon, ensuring a legacy of prosperity and environmental integrity for generations to come.

BACKGROUND RESEARCH



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BACKGROUND RESEARCH

WHAT IS THE BLUE ECONOMY?

The concept of the Blue Economy encompasses the sustainable and integrated use of ocean and coastal resources to promote economic growth, improve livelihoods, and generate employment, while ensuring the health and sustainability of ocean ecosystems. It represents a holistic vision that balances economic development with the imperative of preserving the marine environment. This approach is rooted in the understanding that healthy marine ecosystems are fundamental to sustaining the economic benefits they provide, from fisheries to tourism.

The Blue Economy includes a diverse array of sectors such as sustainable fishing, maritime transportation, renewable energy (including wind and tidal energy), coastal tourism, and undersea mining. Each sector is approached with a focus on innovation and sustainability to prevent overexploitation and environmental degradation. Sustainable fishing practices ensure that fish stocks are managed to prevent overfishing and to allow regeneration, while eco-friendly maritime transportation seeks to reduce pollution and greenhouse gas emissions.

Renewable energy from marine sources plays a crucial role in transitioning to a low-carbon economy, harnessing the power of wind, wave, and tidal systems. Coastal tourism, when managed sustainably, provides economic benefits without harming natural landscapes or marine biodiversity. Emerging sectors like biotechnology explore the potential of marine organisms in pharmaceuticals and other applications, providing economic opportunities while fostering conservation.

By prioritizing sustainability, the Blue Economy aims to secure the long-term health of marine ecosystems, ensuring that they continue to provide economic, social, and environmental benefits for future generations. This integrated approach not only supports coastal and island communities but also contributes to the global efforts in combating climate change and promoting biodiversity conservation. Through its comprehensive and inclusive framework, the Blue Economy promotes equitable benefits, supporting marginalized and local communities in achieving economic independence and sustainable development.

LEBANON'S BLUE ECONOMY?

Lebanon's geographical position along the eastern Mediterranean coast grants it a unique maritime heritage and a wealth of diverse coastal and marine ecosystems. These resources are central to Lebanon's cultural identity and provide critical opportunities for economic activity and development. The country's 225-kilometer coastline is not just a hub for maritime and port activities but also supports a range of economic sectors from tourism to fisheries and beyond. These sectors are vital for the livelihoods of many communities, contributing significantly to national employment and economic output.

Despite these advantages, Lebanon faces significant environmental and economic challenges that threaten the sustainability of its marine and coastal resources. Overexploitation of fish stocks, pollution from land-based sources, unregulated development along the coastline, and the absence of comprehensive marine management practices have led to ecological degradation. This not only impacts biodiversity but also undermines the economic benefits derived from marine resources, affecting food security, tourism potential, and even increasing vulnerability to climate change impacts like coastal erosion and sea-level rise.

Adopting the Blue Economy framework is therefore of paramount importance for Lebanon. It provides a sustainable approach to managing and utilizing oceanic and coastal resources, promoting recovery and preservation of the marine environment while fostering economic diversification and enhancing social inclusiveness. The Blue Economy can drive innovation in traditional sectors like fisheries and tourism, developing them in ways that maximize economic returns while ensuring environmental sustainability. It can also encourage the exploration of emerging sectors such as marine biotechnology and ocean energy, which can contribute to national energy needs in a sustainable manner.

BACKGROUND RESEARCH

In this context, the Blue Economy is not merely an economic opportunity; it is a crucial strategy for promoting ecological resilience, economic stability, and social welfare. By integrating sustainable practices into economic planning and development, Lebanon can protect its natural assets while building a more resilient economy that is better able to withstand environmental pressures and global economic shifts. This transition to a Blue Economy framework will also align Lebanon with global sustainability goals, attracting international partnerships and funding opportunities dedicated to sustainable development and environmental conservation.

OBJECTIVES OF THE BLUE ECONOMY COMPONENT OF SWITCHMED II

The Blue Economy component of the SwitchMed II program is strategically designed to support Lebanon in its transition toward a sustainable maritime and coastal economy. This initiative recognizes the untapped potential of Lebanon's marine resources and the urgent need for integrated management to address current ecological and economic challenges.

Objectives

The objectives of this component are structured to address critical aspects of sustainability, economic resilience, and governance:

1. Enhancing Environmental Sustainability

The initiative focuses on improving the management practices of marine and coastal ecosystems to ensure their long-term ecological health. This is aligned with UNEP's approach to enhancing decision-making and capacities for developing sustainable, climate-resilient, and inclusive blue economy policies and strategies. By emphasizing the reduction of human impacts and supporting the sound use of marine and coastal ecosystems, the program seeks to safeguard these natural resources for future generations.

2. Promoting Economic Diversification and Job Creation

The Blue Economy component of SwitchMed II aims to foster economic diversification by encouraging sustainable practices in traditional sectors such as fishing and tourism, and by promoting emerging sectors like marine biotechnology and renewable energy. This goal resonates with UNEP's focus on leveraging ocean resources for economic growth and improved livelihoods while ensuring that these practices are environmentally sustainable and socially inclusive.

3. Strengthening Governance and Institutional Capacities

Building the capacity of Lebanese institutions is a critical objective, aimed at enhancing their ability to effectively manage and protect marine resources. This includes improving policy frameworks, enforcement mechanisms, and stakeholder engagement, which are crucial for achieving a sustainable blue economy. The initiative reflects UNEP's efforts to enable conditions and strengthen capacities for sustainable, resilient, and inclusive blue economy policies and solutions.

4. Lebanon's Coastal and Marine Environment

Lebanon's coastal zone, marked by its stunning natural landscapes and significant biodiversity, plays a pivotal role in the nation's economy. It supports key economic sectors such as tourism, fishing, and maritime transport, and is vital for the socio-economic well-being of a large portion of Lebanon's population. The coastal and marine environments are home to a range of habitats and species, many of which are endemic to the region. These areas, however, are under constant threat from urban expansion, industrial pollution, and unsustainable practices, making their protection and sustainable management crucial for Lebanon's overall ecological and economic health.

BACKGROUND RESEARCH

Analysis of Sectors

Established Sectors

- **Port Activities/Transport and Trade:** Ports in Lebanon are critical infrastructures, facilitating the bulk of the country's international trade. Despite the global slowdown during the COVID-19 pandemic, Lebanon's port activities demonstrated resilience, maintaining operations and handling essential goods. The sector includes sub-sectors such as cargo handling and construction related to water transportation projects.
- **Marine Living Resources / Seafood:** This sector is vital for Lebanon's food security and economic diversification. It encompasses the harvesting of marine resources, processing, and distribution along the supply chain, including aquaculture and the fishing industry.
- **Coastal Tourism:** Coastal tourism in Lebanon includes beach-based recreational activities and nautical sports, contributing significantly to the national economy. It leverages the country's scenic landscapes and rich cultural heritage, attracting tourists to its shores.

Emerging Sectors

- **Sea Salt Production:** An emerging sector with potential for growth through enhanced sustainability practices.
- **Marine Research and Education:** Focusing on improving marine biodiversity conservation and sustainable practices through research and educational initiatives.
- **Coastal and Environmental Protection:** Increasingly recognized for its importance in safeguarding natural resources and mitigating the effects of climate change.

Non-Existing Sectors

- **Oil and Gas Extraction:** Currently undeveloped due to regulatory and geopolitical challenges.
- **Renewable Energy:** Opportunities for offshore wind and marine hydrokinetic energy remain largely untapped.
- **Biotechnology and Deep-sea Mining:** These sectors are not yet established but represent future areas for economic expansion and innovation.

Challenges and Opportunities

Challenges

- **Environmental Degradation:** Pollution, habitat loss, and overfishing threaten marine biodiversity and the sustainability of resources.
- **Economic Instability:** Political and economic fluctuations have hindered consistent investment and development in maritime and coastal projects.
- **Infrastructure Deficiencies:** Aging and inadequate infrastructure, particularly in ports and coastal management systems, limit operational efficiency and growth potential.

Opportunities

- **Sustainable Tourism:** Leveraging Lebanon's rich cultural heritage and natural beauty to develop eco-friendly tourism.
- **Innovative Marine Industries:** Investing in emerging sectors like marine biotechnology and renewable energy to diversify the economy.
- **Circular Economy and SCP (Sustainable Consumption and Production):** Adopting practices that reduce waste and promote the sustainable use of resources.

This background research sets the stage for a thorough and informed development of Lebanon's Blue Economy strategy, aligning with global sustainability goals and addressing local needs and capacities.



METHODOLOGY



LEBANON'S BLUE ECONOMY
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I. METHODOLOGY

1. OVERVIEW

1. OVERVIEW

Approach and Rationale

1. Holistic Approach

The evaluation of the Blue Economy demands a comprehensive examination, taking into account its environmental, economic, and social aspects. It is crucial to recognize the interconnected nature of these dimensions and the far-reaching consequences of decision-making in each domain. Therefore, adopting an interdisciplinary perspective that integrates expertise and methodologies from diverse fields, such as ecology, economics, sociology, and political science, is vital to fully comprehend the dynamics at play. Additionally, utilizing systems thinking as a central approach allows for a holistic understanding of the Blue Economy as a complex system, where different elements, including fisheries, tourism, and marine conservation, interact within the larger framework of external factors, such as global markets and climate change.

2. Participatory Method

By involving a wide range of stakeholders, including government agencies, industry leaders, local communities, and environmental groups, the participatory method for evaluating the Blue Economy places a strong emphasis on encompassing diverse perspectives and promoting active engagement in the assessment process. This not only encourages cooperative decision-making but also recognizes the important role of these stakeholders as key contributors in shaping the assessment's methods and conclusions. Ultimately, this approach aims to build consensus among all involved parties, recognizing the critical role of unity in effectively implementing Blue Economy strategies and policies. Overall, this inclusive and collaborative approach will ensure a comprehensive and well-informed assessment.

3. Integration of SCP and CE Principles

The incorporation of Sustainable Consumption and Production (SCP) and Circular Economy (CE) principles in the Blue Economy framework has a key focus on resource efficiency, striving to optimize the use of resources in various industries to minimize waste and reduce environmental impact. This approach is accompanied by a joint endeavor to decrease waste at all levels - whether it be in terms of material, energy, or human potential - through the implementation of innovative techniques and technologies. Furthermore, there is a notable emphasis on promoting sustainable actions that contribute to long-term sustainability, such as the implementation of ecologically sound fishing practices, the advancement of eco-friendly tourism, and the adoption of environmentally friendly shipping methods. Collectively, these principles embody a commitment to fostering a greener and more sustainable approach towards the Blue Economy.

4. Adaptive Framework: Sustainability Model

The Sustainability Model will serve as the versatile framework for the assessment, adapting seamlessly to emerging information and shifting conditions. With its foundation in the Triple Bottom Line principle, the model provides a holistic approach, considering economic, environmental, and social factors, and encapsulating the true essence of sustainability. It looks beyond immediate concerns, focusing on a long-term vision for sustainable development, resilience, and equitable growth. This approach guarantees that short-term objectives are met without sacrificing the long-term sustainability and health of the Blue Economy, fostering a forward-thinking perspective that is both adaptive and inclusive.

5. System and Sector Boundaries

The Blue Economy's system boundaries encompass a diverse range of dimensions, highlighting the intricate connections between economic, environmental, and social factors. This encompasses Environmental boundaries, which encompass the oceans, seas, coastal areas, and marine ecosystems. These boundaries require an understanding of the limitations of ocean resources, biodiversity, and the capacity of marine ecosystems. Economic boundaries, which pertain to the industries and sectors that operate within or have

I. METHODOLOGY

1. OVERVIEW

ties to the marine environment. This includes fisheries, aquaculture, maritime transport, tourism, renewable energy, and seabed mining, as well as the associated value chains. Social boundaries, encompass the communities and populations reliant on or impacted by the Blue Economy. The evaluation of the Blue Economy requires careful consideration of system and sector boundaries to properly define the scope of the study. This involves identifying the relevant geographical areas, industries, and key aspects of the Blue Economy that will be investigated. By establishing clear boundaries, the evaluation maintains a targeted and manageable approach, preventing potential errors from trying to cover too much ground.

The Blue Economy component of the SwitchMed program will extend the principles of circular economy to the activities impacting the world's aquatic and coastal ecosystems, including not only seas, oceans, and coastlines but rivers and lakes to ensure better stewardship of 'blue' resources. For the case of Lebanon, we suggest excluding the lakes, as no natural lakes are found in Lebanon, but rather artificial reservoirs, and limiting the areas of the rivers to their estuaries and not on the whole watershed. As for the sectors, the boundaries will be tailored to the specific context of Lebanon, considering its unique ecological, economic, and societal characteristics.

The EU has grouped 13 sectors under the Blue Economy (EU Blue Economy Observatory):

- Blue Biotechnology
- Coastal Tourism
- Desalination
- Infrastructure and Robotics
- Marine Living Resources
- Marine non-Living Resources
- Marine Renewable Energy
- Maritime Defence
- Maritime transport
- Ocean Energy
- Port Activities
- Research and Innovation
- Shipbuilding and Repair

The World Bank has developed a similar list of components of the Blue Economy:

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Table 1: Components of the Blue Economy (World Bank, 2016)

Components of the Blue Economy		
Type of Activity	Ocean Service	Industry
Harvest of living resources	Seafood	Fisheries
		Aquaculture
	Marine Biotechnology	Pharmaceuticals, chemicals
Extraction of non-living resources, generation of new resources	Minerals	Seabed mining
	Energy	Oil and Gas
		Renewables
Fresh Water	Desalination	
Commerce and trade in and around the oceans	Transport and trade	Shipping
		Port Infrastructure and services
	Tourism and recreation	Costal Devalopment
Response to ocean health challenges	Ocean monitoring and surveillance	Technology and R&D
	Carbon Sequestration	Blue Carbon
	Coastal Protection	Habitat protection and restoration
	Waste Disposal	Assimilation of nutrients and wastes

Lebanon is relatively a small country, and the sectors of the Blue Economy can be segregated between key, secondary, and non-existing sectors. After a rapid literature review and based on national expertise, the key sectors of the Blue Economy of Lebanon are Port Activities/Transport and Trade, Marine Living Resources/Seafood, and Coastal Tourism/Tourism and Recreation. Several satellite sectors revolving around those three sectors will be tackled together. The secondary sectors will be dealt with separately, in addition to the non-existing ones.

Alignment with Sustainable Development Goals

1. Promoting Economic Growth

The assessment places a strong emphasis on comprehending the role of the Blue Economy in driving economic development at both national and local levels. It entails examining the economic possibilities presented by different sectors within the Blue Economy, including fisheries, tourism, and maritime transport, and their potential contribution to overall economic prosperity. By exploring options for sustainable economic growth, such as the generation of employment opportunities, attracting investments, and improving competitiveness on the global stage, the assessment aims to pinpoint strategies that not only enhance economic performance but also ensure long-term sustainability and resilience.

2. Ensuring Social Welfare

One crucial element of the evaluation is to assess the societal effects of the Blue Economy. This involves a comprehensive investigation into how the initiative impacts job opportunities and enhances the quality of life for communities. The assessment will thoroughly explore issues of fairness, examining whether the advantages of the Blue Economy are attainable for all members of society, including those who are marginalized and in vulnerable situations. It will also consider the role of the Blue Economy in safeguarding cultural heritage and preserving traditional livelihoods, to prevent economic progress from causing social displacement or cultural damage. Our goal is to ensure that the Blue Economy operates as an all-embracing economic model that facilitates inclusive and equitable social progress.

3. Environmental Conservation

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The core of our assessment lies in evaluating the environmental sustainability of Blue Economy activities. This includes analyzing the effects of these activities on marine and coastal ecosystems and finding ways to reduce their negative impacts. Our focus will be on implementing conservation strategies, promoting responsible resource utilization, and safeguarding biodiversity. Additionally, we will carefully consider the influence of climate change on marine environments and explore adaptive and mitigative measures to fortify the resilience of these ecosystems. Our ultimate goal is to ensure that the growth of the Blue Economy aligns with environmental conservation efforts, preserving the well-being and vitality of marine and coastal ecosystems for generations to come.

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Stakeholder Engagement

1. Mapping

During the Mapping phase, stakeholders will be grouped according to their respective industries and the level of their involvement and impact. The primary sector comprises the Ministries, relevant directorates, and influential Port Authorities, including the Beirut, Tripoli, and Saida Port Authorities. Also falling under this sector are Local Fishermen, represented by the Lebanese Fishermen's Union and Coastal Fishing Cooperatives, who possess considerable interest but less influence. In addition, highly interested yet moderately influential Tour Operators, such as the Lebanon Travel and Tour Operators Association and various Eco-tourism and Cultural Heritage Tour Companies, are identified. In the secondary and tertiary sectors, key players include Oil and Gas Companies such as TotalEnergies and Eni, both wielding high interest and influence. Environmental NGOs, including the Lebanese Environment Forum, are characterized by medium interest but high influence. Government Research Departments, notably the National Council for Scientific Research - Lebanon (CNRS-L) and the Lebanese Agricultural Research Institute (LARI), are also integral, having low interest but high influence. The framework extends to additional stakeholders like Local Municipalities and Coastal Communities, International Organizations and Donors (e.g., UNDP), and Universities and Academic Institutions. The full map aims to include everyone working under the umbrella of the Blue Economy in Lebanon and to act as the first cornerstone of the Lebanon National Blue Economy Assessment.

2. Stakeholder Identification and Engagement Strategy

The Engagement Strategy will be tailored to effectively address the varying levels of interest and influence among stakeholders. For those with High Interest and High Influence, the strategy involves close engagement, active involvement in decision-making processes, and providing regular updates to ensure their continued support and input. Stakeholders with High Interest but Low Influence are kept well-informed and their feedback is actively solicited, with community meetings being a key platform for engagement, recognizing their importance despite their lower level of influence. For those with Low Interest yet High Influence, the strategy is to provide periodic updates and to specifically highlight the benefits of the project, ensuring their support is maintained and their potential impact is positively harnessed. Lastly, stakeholders categorized as having Low Interest and Low Influence are not heavily focused upon but are provided with basic information and monitored for any changes in their interest or influence levels, ensuring that no potential shifts in their stance go unnoticed. This strategic approach ensures a balanced and effective engagement with all stakeholders, aligning their varying degrees of interest and influence with the goals of Lebanon's blue economy assessment.

2.1. Criteria for Selection

The process begins by prioritizing stakeholders based on their position in the Interest-Influence Matrix. The Interest-Influence Matrix further categorizes these stakeholders into four quadrants: High Interest/High Influence, High Interest/Low Influence, Low Interest/High Influence, and Low Interest/Low Influence, enabling a nuanced understanding of each group's potential impact and engagement needs in Lebanon's blue economy. This prioritization is crucial for engaging key decision-makers and opinion leaders whose input can substantially shape the project's trajectory. We shall ensure that professionals and experts from various related fields, ranging from marine ecology to coastal management and maritime economics, who can provide in-depth insights and specialized knowledge are selected for the interview process. We shall also ensure representation from the three key sectors: Port Authorities, Fishermen, and Tourism for the group discussions.

2.2. Process

The stakeholder map that categorized individuals based on their influence, interest, and relevance to the blue economy, will serve as the foundation for identifying potential interviewees and invitees for the group discussions. Once the potential interviewees/invitees are identified, the next step involves reaching out to them, scheduling the KIs, and inviting them to the Workshops during January. The

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interview format is designed to be semi-structured, striking a balance between guided discourse and open-ended exploration. This shall allow for the natural flow of conversation, enabling interviewers to delve deeper into specific areas. The interviews can be conducted via phone, video, or in person.

Three Focus Group Discussions will be planned for the third week of January with representatives from the three key sectors selected: Port, Fisheries, and Tourism. The meetings shall be structured around facilitated discussions, guided by a clear and well-defined agenda and set of questions. To enhance engagement and stimulate more dynamic discussions, visual aids, and presentations shall be integrated into the meetings. These could include charts, graphs, maps, or slideshows that provide a visual representation of key concepts, data, and ideas relevant to the blue economy.

Finally, specifying potential observations is a critical component of the National Blue Economy Assessment. The areas of observation encompass a broad range of elements. The methodology for these observations involves conducting site visits to ports, coastal areas, and other relevant locations to observe firsthand the dynamics and operations. These tools are designed to capture quantitative data that can supplement observational findings. For documentation, detailed notes and photos shall be taken during observations and meetings, capturing key points, observations, and nuances of the discussions. Where permissible, audio or video recordings are made to ensure that no critical information is lost and to provide a more comprehensive record of the proceedings.

3. Continuous Involvement

The Continuous Involvement component of the stakeholder engagement process for the National Blue Economy Assessment of Lebanon highlights the necessity of maintaining a fluid and dynamic relationship with all stakeholders. This includes implementing consistent updates and feedback loops, ensuring open communication channels, and allowing stakeholders to provide input and receive information continuously. This approach is marked by its flexibility and receptiveness, as strategies and actions are adjusted based on feedback and the changing dynamics of the project and its surroundings. A crucial element of this process entails regularly monitoring and re-evaluating the stakeholder map and engagement strategies, which allows for timely adaptability. Additionally, a strong emphasis is placed on documentation and transparency, where clear and detailed records of all engagements, decisions, and changes are meticulously maintained. This fosters trust and accountability and provides a valuable reference for future decision-making and strategy development in the ongoing assessment of Lebanon's blue economy.

Data Collection and Analysis

1. Data Gathering

The Blue Economy assessment will involve a thorough and diverse approach to collecting and analyzing data. We will gather various data types, including economic figures like marine sector contributions to GDP, employment rates, and investments. Social statistics are also crucial, such as how dependent coastal communities are on marine resources, demographic effects, and social mobility. Additionally, environmental indicators play a key role in the assessment, encompassing aspects like biodiversity, water quality, and ecosystem health. This comprehensive process will allow for a comprehensive understanding of the Blue Economy. Our data-gathering process is comprehensive, incorporating a range of different techniques. We will use primary methods like interviews, group discussions, and field observations to gather first-hand information, while also consulting secondary sources such as existing reports, academic studies, and government publications to gain a broader understanding. Furthermore, the interdisciplinary nature of the Blue Economy means we must integrate data from various sectors - including fisheries, tourism, maritime transport, and renewable energy - to fully grasp their interconnected impacts and collective contributions to the overall Blue Economy.

2. Data Analysis

After collecting the data for the Blue Economy assessment, the information will be analyzed. This involves utilizing both quantitative techniques, such as statistical analysis, to identify emerging patterns and trends, and qualitative methods, such as analyzing interview transcripts, to gain a deeper understanding. An essential aspect of this analysis is the thorough evaluation of the performance of different sectors within the Blue

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Economy, considering factors like their economic potential, environmental sustainability, and social impact. Moreover, the analysis is elevated by incorporating perspectives from a diverse range of stakeholders, ensuring a comprehensive and well-rounded understanding of the Blue Economy and its complexities.

3. Synthesis of Findings

During the synthesis phase of the Blue Economy assessment, data analysis becomes a critical process that consolidates key trends related to emerging economic opportunities, environmental shifts, and social dynamics. It is an essential step in identifying the primary challenges facing the Blue Economy, including resource depletion, pollution, and inequitable growth, while also pinpointing opportunities for sustainable development, innovation, and effective policy interventions. This phase culminates in deriving strategic insights that inform the development of actionable recommendations, providing a comprehensive understanding of the current state of the Blue Economy, its strengths, and the significant gaps that require attention.

Gap Analysis

1. Identification of Current vs. Desired State

The Gap Analysis phase in the Blue Economy assessment is a critical component that involves a detailed examination and comparison of the current state of the Blue Economy against the desired or targeted outcomes. This process is essential for pinpointing specific areas that require improvement or intervention. This critical stage entails a comprehensive evaluation of the state of the Blue Economy, taking into consideration its diverse sectors such as fisheries, tourism, and maritime transportation. Afterward, a thorough comparison will be made between the current condition and established objectives or desired results, which may draw from national development strategies, conservation goals, or global standards. We can take the example of a similar country in the Mediterranean such as Cyprus, Tunisia, or Croatia. This assessment will serve to pinpoint any discrepancies between the present state and the envisioned ideal, bringing attention to areas that require improvement or advancement.

2. Analysis of Performance Gaps

After identifying the areas in need of improvement, the next crucial step is to thoroughly examine the performance gaps. This evaluation spans various sectors of the Blue Economy, honing in on critical factors like sustainability - specifically the effects on the environment and responsible resource management - as well as economic viability, including profitability, job creation, and market development. Additionally, social impacts, such as community engagement, equity, and social benefits, are assessed. The ultimate goal is to gain a comprehensive understanding of the scope and consequences of these gaps, with a focus on identifying the sectors or areas with the most pressing needs.

3. Barrier Analysis

To make progress toward the desired state, it is essential to first understand what is holding us back. This involves carefully identifying and examining the barriers that are impeding the attainment of our goals. These barriers may take the form of policy issues, such as inadequate regulatory measures or a lack of enforcement. They may also stem from limited resources, such as financial constraints or technological limitations. Additionally, the dynamics between stakeholders can play a significant role, with factors such as insufficient engagement or conflicting interests often presenting obstacles to progress. By identifying these barriers, we are better equipped to develop effective strategies to overcome them and drive toward closing the performance gaps that have been identified. Through the Gap Analysis, we can systematically assess the current state of the Blue Economy and its desired goals, identify areas of deficiency, and pinpoint the specific challenges that must be addressed to achieve success.

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Validation

1. Key Informant Interviews (KIIs)

The Blue Economy assessment's validation phase plays a critical role in ensuring the validity, dependability, and importance of the results. This stage incorporates various qualitative techniques to strengthen and substantiate the gathered data and analysis. One such method is the use of KIIs (Key Informant Interviews) with key stakeholders who possess extensive knowledge about the Blue Economy. These stakeholders may include industry specialists, government officials, community leaders, environmental scientists, and entrepreneurs. These interviews aim to confirm the conclusions drawn from the data analysis and provide the opportunity for the findings to be challenged or corroborated. Moreover, these interviews can provide valuable insights, incorporating expert perspectives and personal experiences. They also serve to understand the nuances and context-specific details that are crucial for a comprehensive understanding of the Blue Economy.

2. Focus Group Discussions (FGDs)

In addition to the validation process, organizing Focus Group Discussions (FGDs) is crucial for gathering valuable insights, especially from actors in the three key sectors identified: Port, Fisheries, and Tourism. This interactive method involves bringing together a diverse group of stakeholders to discuss and validate assessment findings. By incorporating both in-person and virtual participation, a hybrid format can broaden accessibility and encourage a wider range of input from participants, especially with the geographical distribution of the 210 km-long Lebanese Coast. FGDs are highly effective for exploring diverse perspectives, gauging community sentiments, and examining complex issues within a group setting. Furthermore, they create a platform for stakeholders to voice their opinions, address discrepancies, and reach a consensus on critical aspects of the Blue Economy.

3. Observation

To obtain more information and confirm the accuracy of our findings, we will visit many sites to conduct direct observation. This may include visiting coastal areas, harbors, fisheries, and tourist destinations, among other relevant locations. These observations play a crucial role in comprehending real-world circumstances, verifying the practical implications of the Blue Economy, and evaluating the environmental and social impacts firsthand. This approach is especially valuable in validating information regarding ecological well-being, resource management practices, and the socio-economic status of local communities. Together, these methods of validation serve as a strong means of ensuring the reliability of our assessment. They allow us to compare data from various sources, validate the accuracy of our findings, and enhance our assessment with qualitative insights.

4. Conference

The Lebanon Blue Economy Dialogue 2024 was conceived as a foundational conference aimed at initiating and fostering discussions on sustainable practices within Lebanon's maritime and coastal sectors. The methodology employed for the conference was centered on inclusivity and multidisciplinary collaboration, bringing together stakeholders from government, academia, industry, and civil society to engage in a comprehensive dialogue. The conference utilized a combination of keynote speeches, panel discussions, interactive workshops, and networking sessions to facilitate a rich exchange of knowledge and perspectives. This format was designed to maximize participant engagement and ensure a diverse range of viewpoints were heard and integrated into the collective outcomes. The conference also served as a launching pad for ongoing activities and initiatives, establishing a continuous dialogue framework that would carry forward the insights and strategies developed during the event. This methodological approach was pivotal in ensuring that the conference not only addressed current issues but also laid the groundwork for sustainable long-term solutions in the blue economy sectors.

5. Extended Dialogue

The extended dialogue following the Lebanon Blue Economy Dialogue 2024 was strategically designed to maintain and build upon the momentum generated during the conference. This ongoing conversation involved a series of structured follow-up activities, events, and initiatives that engaged various stakeholders from multiple sectors of the blue economy. The methodology behind this extended dialogue was rooted in the principles of

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inclusive participation and continuous improvement. Through a combination of workshops, forums, webinars, and collaborative projects, we facilitated a dynamic exchange of ideas and best practices. These activities were aimed at not only assessing the progress made since LBED 2024 but also at identifying emerging challenges and opportunities. This approach ensured that the dialogue remained relevant and impactful, shaping the strategic direction of the blue economy in Lebanon and setting the stage for LBED 2025. The extended dialogue served as a critical component of our methodology, enabling sustained engagement and fostering an environment of collaborative learning and innovation.



BLUE ECONOMY ASSESSMENT



LEBANON'S BLUE ECONOMY
الاقتصاد الأزرق في لبنان

**NATIONAL
DIALOGUE &
ASSESSMENT**
REPORT

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Stakeholders Mapping

a. Initial List of Stakeholders

Government Bodies

- Industrial Ports (*Selaata, Zouk, Jieh, Ghazieh, Beddaoui*)
- Commercial Port Authorities (*Beirut, Tripoli, Saida*)
- Fishing Ports (*Naqoura, Tyre, Adloun, Sarafand, Saida, Jiyeh, Ouzai, Manara, Jal el Bahr, Dora, Dbaye, Jounieh, Kfaryassine, Bouar, Okaibe, Jbeil, Amchit, Berbara, Batroun, Chekka, Enfeh, Qalamoun, Mina, Abdeh*)
- Yachting Harbors (*Movempick, Zaytuna, Marina, ATCL, Holiday Beach, Halat-sur-Mer, Jiyeh Marina, Coral Beach, Aquamarina, Miramar, Palma, etc.*)
- Sea/Land Solid Waste Fills (*Costa Brava, Saida, Tripoli, Dora*)
- Ministry of Environment
- Ministry of Public Works and Transport
 - Directorate General of Land and Maritime Transport
 - MARSATI
- Ministry of Energy and Water
 - Directorate General of Oil
 - Lebanese Oil Installations: *Beddaoui, Zahrani*
 - Power Plants: *Jiyeh, Zouk*
 - Water Establishments: *BMLWE, NLWE, SLWE, LRA*
 - WWTPs: *Tripoli, Chekka, Batroun, Jbeil, Ghadir, Jiyyeh, Saida, Tyre*
- Ministry of Economy and Trade
- Ministry of Agriculture
 - Department of Fisheries and Wildlife
 - Department of Cooperatives
- Ministry of Tourism
- Ministry of Youth and Sports
 - National Federations of Water Sports
- Ministry of Interior
 - Governorates (*Mohafazat*)
 - Cazas (*Caimacams*)
 - Unions of Municipalities
 - Municipalities
- Ministry of Industry
- Ministry of Defense
 - Lebanese Navy
 - Coast Guards
 - Army Harbours (*Beirut, Jounieh*)
- Ministry of Culture
 - Directorate General of Antiquities
- Ministry of Finance
 - Lebanon Customs Administration
- CDR – Council for Development and Reconstruction
 - Land Reclamation (*Saida, Naameh, Costa Brava, Normandy/Beirut Waterfront, Dora/Linord, Dbaye, Tripoli*)
- DRM – Disaster Risk Management Unit
- IDAL – Investment Development Authority in Lebanon
- LPA – Lebanese Petroleum Administration

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Private Companies

- Port Operators (*Beirut Container Terminal Consortium, CMA CGM*)
- Maritime Academies (*Captains, Seamen, Stewards, Crew, Master*)
- Yachting (*Traders, Resellers, Charter, Marine Engineering, FnB, Logistics, Services, Mechanics, Repair*)
- Sailing (*Associations, Schools*)
- Shipbuilders
 - Traditional Boat Builders: (*Saida-Accad, Tyre-Barbour*)
 - Yacht: *LencoMarine-Chamoun*
 - Jounieh Floating Island Resort
- Ship Repair (*Tripoli-Badaoui*)
- Industries (*Saline Water and Saline Sprays*)
- Fish Farming
 - Offshore aquaculture: *Chekka*
 - Onshore aquaculture (*Saltwater aquaculture: Shrimp, Freshwater aquaculture: Trout*)
- Tourism Operators
 - Hotels
 - Beach Resorts
 - Tour companies
 - Water sports operators,
 - Restaurants
- Events (*Lebanon Water Festival, Boat Show, etc.*)
- Scuba Diving Centers
- Boat Rentals
- Oil and Gas Companies (*TotalEnergies / Eni, Medco, Coral, Natgaz, Unigaz*)
- Maritime Transport Companies (*CMA CGM, Maersk, Mediterranean Shipping Company, Fast Bollore, Sealine, etc.*)
- Seafood Industries and Fishmongers

NGOs and Community Groups

- Hariri Foundation for Sustainable Human Development
- Environmental NGOs (*Lebanese Environment Forum, Lebanese Eco Movement, TERRE Liban, etc.*)
- Marine Conservation (*Sea Turtle protection, SPNL, Greenpeace, Operation Big Blue, Bahr Loubnan, Purple Reef, Surf and Turf, Blue Lebanon, Diaries of the Ocean, etc.*)
- Campaigns (*Save Kfarabida, Coast for All, The Orange House Project, Save our face, Fishing in Lebanon*)

Associations, Organizations, Orders, and Syndicates

- Beirut Trade Association
- Association of Lebanese Industrialists
- Local Fishermen's Associations and Syndicates (*Auctions, Souks, Fresh Water [Rivers] Fishermen*)
- Order of Engineers and Architects
- CCAs and Federation
- Lebanese Forwarders Syndicate
- Association of Lebanese Ship Owners
- International Chamber of Navigation -Beirut

Cultural Heritage Groups

- Maritime Museum: *Les merveilles de la mer*
- Lebanese marine and wildlife museum

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International Organizations and Donors

- UNEP – United Nations Environment Programme
- UNDP – United Nations Development Programme
- WB – World Bank
- IMF – International Monetary Fund
- UNESCO-IOC
- European Union Delegations
- International Environmental Organizations (*World Wildlife Fund - WWF, Greenpeace, IUCN, Plan Bleu, CEPP*)
- Projects (*CAMP, ICZM, Deep-Sea, COMMON, ENSERES, MEDASSET, ReMaL, Water DROP, MIO-ECSDE: project “Lebanese civil society combating for a plastic-free Mediterranean Sea”*)

Research Institutions

- CNRS Lebanon – National Council for Scientific Research
- NCMS – National Center for Marine Sciences
- CAS: Central Administration for Statistics
- International Research Collaborations (*Partnerships with global universities and research institutes*)

Lebanese Universities

- University of Balamand: Institute of the Environment
- Beirut Arab University: SDG14
- American University of Beirut: Biology Department

Protected Areas & Reserves

- Jounieh Nature Marine Reserve
- Tyre Coast Nature Reserve Law no. 708 of 1998
- Palm, Sanany and Ramkeen Islands: Law no. 121 of 1992

Natural Sites

- Coastal Front Rocks of Wata Silm (Tabarja) Decision no. 200/1997
- 8 Rivers (MoEW)

Himas

- Byblos, Enfeh, Qleile, Mansouri
- National Marine Hima at the Marine Sciences Center (Batroun) Decision no. 129 of 1991

Proposed MPAs

- 9 coastal and marine, 5 estuaries, 4 deep sea

b. Sectors

b1. Key Sectors and Satellites

In the National Blue Economy Assessment of Lebanon, three key sectors have been identified as pivotal in driving the country's blue economy, each accompanied by a range of satellite sectors that are intricately linked and contribute significantly to their respective key sectors. Firstly, the sector of Port Activities/Transportation and Trade stands as a base stone in Lebanon's blue economy. This sector encompasses a wide array of activities and facilities, including shipping, which is central to international trade and transportation. The sector is further bolstered by boat repair services, logistics, and ground handling services, all of which ensure the smooth operation and maintenance of maritime activities. The infrastructure plays a critical role, encompassing industrial ports, army ports, and coast guards, which are essential for maintaining the security and efficiency of maritime operations. Additionally, oil installations are a crucial component, given their role in the energy supply chain. The shipbuilding industry, along with the Marine Academy, contributes to the sector's growth by providing skilled labor and technological advancements.

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The second key sector, Marine Living Resources/Seafood, is vital for both the local economy and food security. This sector is supported by a network of fisherman ports, which are the hubs of fishing activities. Aquaculture has emerged as a significant area, contributing to the diversification and sustainability of marine resources. The sector is further strengthened by fish mongers and fish markets, which are critical for the distribution and sale of seafood. Boat and net repair services ensure the operational efficiency of fishing activities. The import/export businesses play a pivotal role in integrating Lebanon's seafood market with the global economy. Processing facilities and smoking houses add value to raw marine products, enhancing their market appeal and shelf life.

Lastly, Coastal Tourism/Tourism and Recreation is a sector that significantly contributes to Lebanon's economy and cultural richness. This sector includes a variety of sub-sectors such as hotels, beaches, and restaurants, which are directly linked to the tourism industry. Activities like scuba diving, water sports, and yachting not only attract tourists but also stimulate local employment and business opportunities. Yachting ports and yacht maintenance services are essential for supporting maritime leisure activities. Sailing and protected areas offer unique experiences for tourists and help in conserving the natural marine environment. Additionally, festivals and museums play a crucial role in showcasing Lebanon's rich cultural heritage and attracting international visitors.

b2. Other Sectors

Several other sectors play a crucial role, contributing to the overall economic and environmental sustainability. The Oil and Gas sector is a significant contributor to Lebanon's economy. It involves the current exploration, potential extraction, and future processing of offshore gas reserves. This sector will be gradually supported by a range of activities including maritime logistics, environmental monitoring, and safety services, ensuring responsible and efficient resource utilization. Academia and Research in marine sciences and maritime studies form an essential pillar in understanding and sustainably managing Lebanon's marine resources. This sector includes universities and research institutions that focus on marine biology, oceanography, and environmental science. Collaborations with governmental and non-governmental organizations enhance the application of research findings in policymaking and conservation efforts. Salt Works, an age-old industry in Lebanon, involves the extraction of salt from seawater. This sector is closely linked with local communities and contributes to the culinary and industrial needs of the country. The sector also plays a role in local tourism, attracting visitors to traditional salt pans.

The Pharmaceuticals sector, particularly focusing on products like saline water and saline sprays, is another important area. This sector relies on the extraction and processing of marine resources, contributing to the health and wellness industry. It is supported by research and development activities, ensuring the production of high-quality and effective medicinal products.

Desalination is increasingly important in addressing Lebanon's water scarcity issues. This sector involves the conversion of seawater into potable water, supported by technological advancements and engineering services. It plays a critical role in ensuring water security for both domestic and industrial use. Habitat Protection and Restoration are vital for maintaining the ecological balance and biodiversity of Lebanon's marine environments. This sector includes activities like mangrove restoration, coral reef protection, and seagrass conservation, often involving community participation and international collaborations.

Solid Waste Disposal, particularly in the context of marine and coastal environments, is crucial for preventing pollution and preserving marine life. This sector involves waste collection, treatment, and disposal services, along with public awareness campaigns about the importance of reducing marine litter. Wastewater Treatment Plants (WWTPs) are essential in preventing the pollution of marine environments. These facilities are mainly located in coastal areas and treat domestic and industrial wastewater before it is discharged, playing a crucial role in maintaining water quality and public health. Land Reclamation involves the creation of new land from the sea, often for urban development or industrial use. While it contributes to economic development, this sector also requires careful management to mitigate environmental impacts.

Other sectors such as marine renewable energy, maritime law and policy, and coastal defense also contribute to the blue economy, each with their respective satellite sectors. These sectors collectively enhance Lebanon's economic growth while ensuring the sustainable use and conservation of its marine and coastal resources. Together, they represent a diverse and interconnected framework essential for the holistic development of Lebanon's blue economy.

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c. Identification & Categorization

Categorizing stakeholders is a foundational step in stakeholder engagement, ensuring that each group's specific interests and impacts on the blue economy are accurately represented and addressed. The first step involves categorizing stakeholders into primary, secondary, and tertiary groups based on their level of involvement and impact.

c1. Primary Stakeholders

They are individuals or groups directly involved in or impacted by the blue economy sectors. Their livelihoods, businesses, or day-to-day activities are closely intertwined with maritime resources:

- Port Authorities: They play a crucial role in managing and regulating maritime activities, including shipping, trade, and port infrastructure.
- Local Fishermen: Their livelihoods depend directly on marine resources, making them crucial stakeholders in fisheries management and conservation efforts.
- Tourism Operators: Businesses directly involved in coastal tourism, such as hotel owners, tour guides, and dive operators, whose operations are directly affected by the health of the marine environment.

c2. Secondary Stakeholders

These stakeholders have a less direct but still significant connection to the blue economy. They might influence or be influenced by the blue economy through policy, research, advocacy, or economic activities:

- Non-Governmental Organizations (NGOs): They often play a role in advocacy, conservation efforts, and community engagement, influencing policy and public opinion. They also drive campaigns.
- Supply Chain Businesses: Companies that provide goods and services to primary stakeholders, such as boat manufacturers, seafood processors, and logistics providers.

c3. Tertiary Stakeholders

These are groups or individuals who have an indirect yet noteworthy impact on or interest in the blue economy. They might influence broader policies or provide essential funding and support:

- International Donors and Organizations: Entities like the World Bank or UN agencies that might fund blue economy initiatives or influence international policy.
- Academic Institutions: Universities and research institutes conducting foundational research that indirectly influences policy and practice in blue economy sectors.

c4. Sector-Specific Grouping

Beyond the primary, secondary, and tertiary categorization, stakeholders are also grouped based on their relevance to specific sectors within the blue economy. This ensures that stakeholders' unique perspectives and expertise are effectively aligned with the relevant sectors.

- Fisheries: Includes fishermen, fisheries management bodies, seafood processing companies, and marine conservation NGOs.
- Tourism: Encompasses hoteliers, tour operators, cultural heritage managers, and tourism promotion boards.
- Oil and Gas: Involves oil companies, regulatory agencies, environmental watchdogs, and local communities affected by drilling activities.
- Environmental Conservation: Includes environmental NGOs, research institutions focusing on marine ecosystems, and government departments responsible for environmental protection.
- Cross-sectoral coordination: Includes governmental organizations that coordinate with several ministries in different sectors such as the LPA and DRM

This categorization approach allows for a comprehensive understanding of the stakeholder landscape. It ensures that all relevant voices, from those directly involved in the blue economy to those influencing it from a distance, are considered in the assessment and decision-making processes. This multi-tiered and sector-specific approach is crucial for developing inclusive and effective strategies for Lebanon's blue economy.

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Interest and Influence Matrix

The Interest and Influence Matrix strategic tool is used to map out stakeholders based on two key dimensions: their level of interest in the blue economy assessment and their level of influence over it. This matrix is instrumental in prioritizing stakeholder engagement and tailoring communication strategies.

a. Understanding the Matrix

1. Interest Level

This dimension assesses how much stakeholders care about the blue economy assessment (High interest, moderate interest, low interest). It considers their goals, concerns, needs, and the extent to which the blue economy impacts them.

2. Influence Level

This dimension evaluates the power or capacity of stakeholders to affect the assessment or its outcomes. Influence can be political, economic, social, or based on knowledge and expertise (High influence, moderate influence, low influence)

b. Applying the Matrix

Applying the Interest and Influence Matrix to the selected stakeholders for the National Blue Economy Assessment of Lebanon involves placing each stakeholder group within the matrix based on their assessed levels of interest and influence.

Table 2: Blue Economy Stakeholders Matrix

Stakeholder Group	Interest Level	Influence Level	Matrix Position
Government and Policy Makers	High	High	High Interest/High Influence
Private Sector and Industry Players	High	Moderate to High	High Interest/Moderate to high Influence
Local Communities and Civil Society	High	Low to Moderate	High Interest/Low to Moderate Influence
International Organizations and Donors	Moderate	High	Moderate Interest/high Influence
Academic and Research Institutions	Moderate to High	Moderate	Moderate to High Interest/Moderate influence

c. Interpreting the Matrix for Engagement Strategies

High Interest/High Influence

(e.g., Government and Policy Makers)

Engage closely with these stakeholders, prioritizing their input in decision-making processes. Regular, in-depth consultations are key.

High Interest/Moderate to High Influence

(e.g., Private Sector and Industry Players)

Collaborate and communicate regularly, ensuring their business perspectives are integrated into the blue economy strategies.

High Interest/Low to Moderate Influence

(e.g., Local Communities and Civil Society)

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Focus on empowering these groups, providing platforms for their voices to be heard, and ensuring their concerns are addressed in blue economy initiatives.

Moderate Interest/High Influence

(e.g., *International Organizations and Donors*)

Engage these stakeholders for support, expertise, and resources, aligning their interests with sustainable blue economy goals.

Moderate to High Interest/Moderate Influence

(e.g., *Academic and Research Institutions*)

Utilize their expertise for data-driven decision-making, involving them in research and assessment activities.

Selection for Validation

The selection of stakeholders for FGDs and KIIs is a critical step, ensuring that a diverse range of perspectives and expertise is captured. This process is guided by the categorization and assessment done in the previous steps.

a. Government and Policy Makers

This group includes high-level officials, regulatory bodies, and local authorities. They play a pivotal role in shaping policies and regulations that govern the blue economy sectors. Engaging with ministers, department heads, and local government officials provides insights into the legal and regulatory frameworks. It also helps in understanding the challenges and opportunities from a policy perspective. Their influence is crucial in implementing sustainable practices and fostering economic growth within the blue economy.

b. Private Sector and Industry Players

Representatives from key industries such as shipping, fishing, tourism, oil and gas, and renewable energy are vital. These stakeholders provide a practical perspective on the operational challenges and market dynamics. Engaging with CEOs, managers, and industry experts helps in understanding the economic viability, technological advancements, and investment opportunities within the blue economy. Their input is essential for aligning economic goals with sustainable practices.

c. Local Communities and Civil Society

This group includes local residents, community leaders, NGOs, and grassroots organizations. They are directly impacted by the blue economy and often have unique, on-the-ground perspectives. Engaging with them helps in understanding the socio-economic impact of blue economy activities, community needs, and local knowledge. Their participation ensures that the blue economy development is inclusive and beneficial at the community level.

d. International Organizations and Donors

These stakeholders provide a global perspective and are often sources of funding and technical expertise. Engaging with representatives from international bodies like the United Nations, World Bank, and various NGOs helps in understanding the international standards, best practices, and potential funding opportunities for blue economy initiatives. Their involvement can also bring in global expertise and facilitate international partnerships.

e. Academic and Research Institutions

Universities, research centers, and think tanks are crucial for providing data-driven insights and scientific expertise. Engaging with academics, researchers, and scientists help in accessing the latest research, technological innovations, and environmental impact assessments. Their input is vital for evidence-based decision-making and for ensuring that the blue economy strategies are grounded in scientific knowledge.

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In each of these categories, stakeholders are selected based on their interest and influence levels, as determined by the Interest/Influence Matrix. The aim is to include a balanced mix of high-interest, high-influence stakeholders along with those who, while perhaps having lesser influence, offer critical insights or represent important constituencies. This approach ensures a comprehensive understanding of the various facets of the blue economy and facilitates the development of strategies that are both effective and inclusive.

Continuous Involvement

The Continuous Involvement strategy is a cornerstone in the stakeholder engagement process for the National Blue Economy Assessment of Lebanon. This approach recognizes the dynamic nature of stakeholder relationships and the evolving context of the blue economy. It emphasizes the importance of maintaining ongoing, active engagement with all stakeholders throughout the lifecycle of the project.

1. Consistent Updates and Feedback Loops

Regular communication is essential to keep stakeholders informed and involved. This involves periodic updates on project progress, decisions made, and upcoming activities. Feedback loops are established to gather stakeholder input, ensuring their perspectives and concerns are continuously integrated into the project.

2. Open Communication Channels

Establishing and maintaining open lines of communication is critical. This could include regular meetings, newsletters, social media updates, and dedicated communication platforms where stakeholders can easily access information and express their views.

3. Responsive and Adaptive Engagement

The engagement strategy is designed to be flexible, allowing for adjustments based on stakeholder feedback and changing circumstances. This adaptability ensures that the project remains relevant and effective in addressing the evolving needs and dynamics of the blue economy.

4. Regular Monitoring and Re-evaluation of Stakeholders

The stakeholder landscape is not static. Regular monitoring and re-evaluation of the stakeholder map are crucial to identify new stakeholders, reassess the roles and influence of existing stakeholders, and adapt engagement strategies accordingly.

5. Documentation and Transparency

Keeping detailed records of all stakeholder interactions, decisions made, and changes in the project is vital. This documentation ensures transparency, builds trust among stakeholders, and provides a valuable historical record. It also aids in accountability, ensuring that commitments made to stakeholders are followed through.

6. Inclusive Participation

Efforts are made to ensure that all stakeholder groups, especially those who are often underrepresented, have opportunities to participate. This inclusivity strengthens the relevance and acceptance of the project outcomes.

7. Capacity Building and Empowerment

Providing stakeholders with the knowledge and tools they need to engage effectively is part of this continuous involvement. Workshops, training sessions, and informational materials help empower stakeholders, enabling them to contribute more effectively to the blue economy assessment.

8. Long-term Relationship Building

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Recognizing that stakeholder engagement is not just for the duration of a specific project, but part of a long-term relationship that extends beyond the immediate scope of the assessment. This long-term view fosters deeper trust and collaboration.

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Lebanon Blue Economy Framework

Lebanon's Blue Economy framework is intentionally interdisciplinary, treating ports, fisheries, and coastal tourism as linked systems evaluated across five pillars: a) economic contribution, b) environmental impact, c) social impact, d) infrastructure and investment, and the e) regulatory/policy framework. Those should be viewed quantitatively and qualitatively, for example, economic metrics (revenue, GDP, jobs) are read alongside ecological limits (stock status, water quality, habitat integrity) and social outcomes (equity of benefits, cultural vitality), while infrastructure and technology choices are screened for climate resilience, efficiency, and community access. Governance and enforcement close the loop by aligning national rules with international standards and translating evidence from science, industry, and communities into adaptive policy that fits the Lebanese landscape. In practice, this means shared Blue Economy related indicators should blend bio-ecological, economic, and social KPIs; and in concrete terms, project appraisal that couples cost–benefit with environmental and distributional analysis; and coordinated institutions that sequence reforms and investments based on cross-pillar trade-offs and co-benefits—so growth, conservation, and inclusion advance together.

1. Economic Contribution

In assessing the economic contribution of Lebanon's blue economy, particularly in port activities, fisheries, and coastal tourism, the focus is on revenue generation, GDP contribution, and employment. Revenue analysis includes income from port operations, fisheries sales, and tourism services, highlighting each sector's economic scale and growth potential. The GDP contribution assessment looks at how these sectors add value to the national economy, emphasizing their economic significance. Employment evaluation considers both direct and indirect job creation across these sectors, shedding light on their socio-economic impact. This approach offers a concise yet comprehensive view of the economic roles of these sectors, underlining their importance in Lebanon's blue economy and identifying potential areas for growth.

2. Environmental Impact

This involves assessing the use of natural resources and the impact of each sector on marine and coastal environments. For port activities, this includes evaluating the effects of port operations on water quality and marine life. In fisheries, it's crucial to assess the sustainability of fish stocks and the impact of fishing practices on the marine ecosystem. Coastal tourism's environmental impact largely revolves around its effect on coastal ecosystems, including pollution and habitat destruction. Additionally, the effectiveness of sustainable practices adopted by each sector, such as waste management and pollution control measures, is a key area of focus.

3. Social Impact

This criterion examines how each sector engages with local communities and their cultural significance. For instance, the role of fisheries in traditional coastal communities, the impact of port activities on nearby populations, and how coastal tourism affects local cultures and lifestyles. It also involves assessing the accessibility of the benefits of each sector to different population segments, ensuring equitable distribution of economic gains and opportunities.

4. Infrastructure and Investment

This aspect includes analyzing the level of investment in infrastructure and technology in each sector. For port activities, this might involve evaluating the state of port facilities and future development plans. In fisheries, it could include assessing fishing fleet conditions and fishery management systems. For coastal tourism, this involves looking at the quality and sustainability of tourism infrastructure. The adoption of new technologies and their impact on efficiency and sustainability in each sector is also a crucial factor.

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5. Regulatory and Policy Framework

This involves evaluating the effectiveness of governance structures, policies, and regulations affecting each sector. It includes assessing how these regulations are enforced and their impact on the operations and sustainability of port activities, fisheries, and coastal tourism. Compliance with international standards and agreements, especially those related to environmental protection and sustainable development, is also a key area of focus.

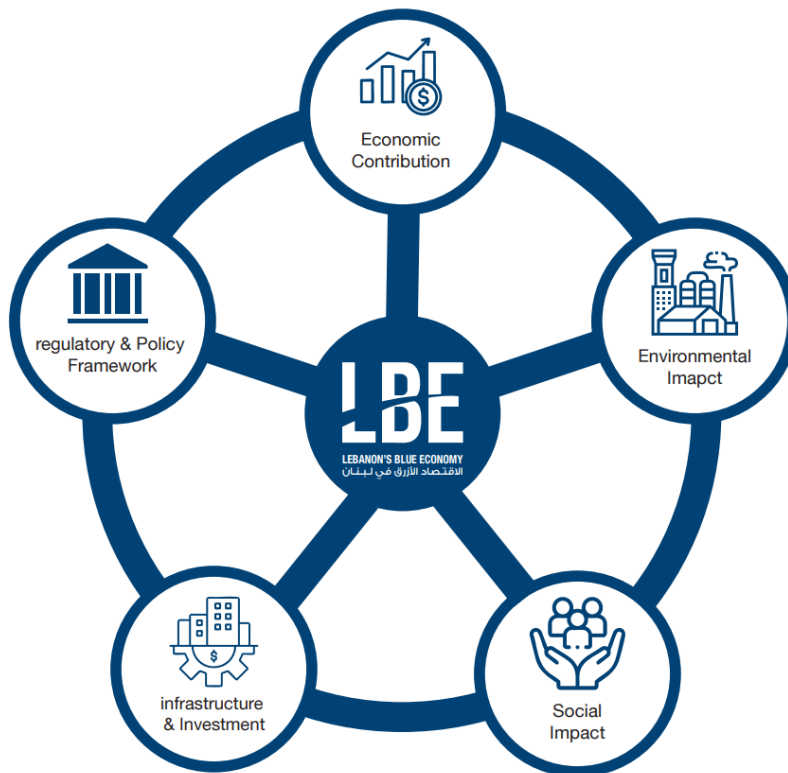


Figure 1: Lebanon Blue Economy Framework

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Sector 1

Ports Activities/ Transport and Trade

Performance Assessment

LBE

LEBANON'S BLUE ECONOMY
الاقتصاد الأزرق في لبنان

**NATIONAL
DIALOGUE &
ASSESSMENT
REPORT**

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Ports and harbors are important commercial and strategic infrastructures that play a central role in trade, economic development, and job creation. They are the lifeblood of the maritime shipping industry, essential for the free movement of people, goods, and services across the continents. Acting as departure, entry, and transfer points, ports are facilitators of traditional services like cargo handling and logistics. They also support a diverse array of blue economy sectors. These sectors include marine living and non-living resources, renewable energy, coastal tourism, maritime defense, security, and transportation. This clustering effect extends to a wide range of industries, including shipbuilding, chemical, food, fish processing, construction, petroleum, electrical power, steel, and automotive industries. This nature of port activities underscores their vital role in the world economy, transcending beyond mere transportation hubs to become centers of economic and industrial synergy. As such, the port activities sector is not only integral to maritime logistics and trade but also to the broader economic landscapes, influencing various sectors and contributing to regional development and prosperity.

Historical Context and Current Status

Lebanon's maritime history stretches back millennia to the Bronze Age. It is rich and storied, with its seaports renowned across the Mediterranean and beyond. Historical remnants such as moles, forts, and shipwrecks are the maritime heritage of its people (Semaan, 2014). Traditionally a maritime nation since the Phoenician times, Lebanon's economy has been dominated by services and trade, reflecting its longstanding connection with the sea. Currently, Lebanon serves the Eastern Mediterranean through two major and modern commercial ports: Beirut and Tripoli. These ports are expected to continue playing a major role in the maritime sector in the Eastern Mediterranean and the Middle East, with prospects of offshore oil and gas exploration adding to their strategic importance.

The Port of Beirut, one of the few landmarks that have stood throughout Lebanese history, has been a prominent international trade and transit hub since the establishment of the country. Lebanon's road and rail network was built through and into this port, and Beirut's selection as the capital was largely thanks to the port's strategic geographical position. Its location on the Eastern Mediterranean made it one of the most important and busiest ports in the region. However, the port has faced challenges in fulfilling its key role as a driver of economic development due to mismanagement and lack of good governance, reflecting the complex political-economic realities of Lebanon. In recent years, the status of Lebanese port authorities has been shaped by both advancements and challenges. The Port of Beirut, before the devastating explosion in August 2020, was among the busiest in the Eastern Mediterranean. However, the explosion marked a turning point, causing extensive damage and significantly disrupting its operations. The reconstruction and rehabilitation of the port have since become a priority.

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Figure 2: Ports of Lebanon

The Port of Tripoli, the second-largest in Lebanon, has gained prominence in the wake of the Beirut explosion. Efforts to expand and modernize its facilities are underway, aiming to enhance its capacity to handle increased cargo volumes and to support the northern region's economic growth. Lebanon's ports, with their rich historical legacy and strategic importance, continue to play a crucial role in the regional maritime landscape. Despite recent challenges, the resilience and ongoing efforts towards recovery and modernization reflect the enduring importance of Lebanese ports in maritime trade and economic development. The future of these ports, backed by strategic investments and development plans, holds the potential for revitalizing Lebanon's maritime sector and contributing to its broader economic recovery.

Economic Contribution

The Port Authorities Sector in Lebanon plays an indispensable role in the nation's economy. This sector significantly contributes to Lebanon's Gross Domestic Product (GDP) and serves as a major employment generator, particularly influencing associated industries like logistics and trade. The insights from Imad Hajj Chehadeh, the General Director of the Port of Saida, highlight the economic contributions of the port through revenues channeled to the Central Bank, despite facing financial constraints that hinder investment in essential infrastructure such as roads and storage facilities. Chehadeh also pointed out the positive economic prospects

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for the new port location and the unique position of Saida port in handling bulk imports, with exports primarily consisting of steel scrap at competitive pricing, underscoring the nuanced dynamics of Lebanon's trade activities.

LEBANON TRADE 2017 General, Dry & Liquid Bulk

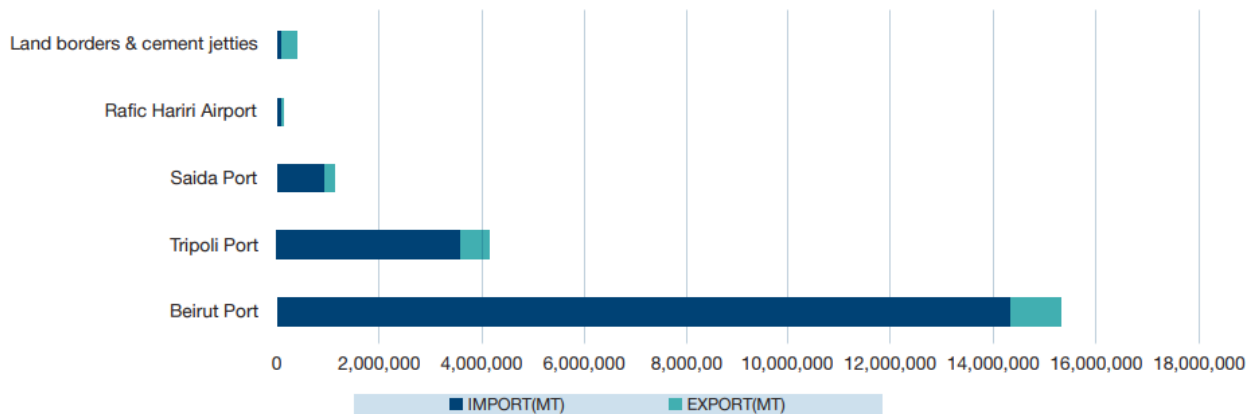


Figure 3: Lebanon Trade 2017

A critical aspect of Lebanon's maritime commerce involves its trade relations with Greece. In 2017, imports from Greece amounted to a substantial \$1.37 billion, constituting "7% in value of total import to Lebanon" and "14% cargo tonnage of total import to Lebanon," predominantly in oil and gas (Lebanese Customs, 2017). Despite the significant import figures, Lebanese exports to Greece were relatively modest, totaling "23 Million US Dollars," representing just "0.8% in value of total exports from Lebanon" (Lebanese Customs, 2017). This trade dynamic is reflective of the broader challenges and opportunities within Lebanon's maritime sector, as discussed in the Focus Group Discussion (FGD) on "Port Activities in the Lebanese Blue Economy Context" held at the Outreach and Leadership Academy (OLA) in Beirut. Participants in the FGD emphasized the need for a national strategy for ports and maritime transportation, highlighting the challenges of safety and security deficiencies, and the barriers posed by ministerial regulations, legal frameworks, and bureaucratic hurdles to sectoral growth. The discussion also pointed to the importance of addressing gaps in the legal framework and reducing regulatory duplication as essential steps towards enhancing the efficiency and effectiveness of Lebanon's maritime commerce.

The broader Middle Eastern region, including Lebanon, has witnessed a downturn in trade activities in recent years. This decline includes a "0.6% decrease in value of total imports and 9.4% decrease in value of total exports from 2019 to 2020," largely attributed to global trade tensions and fluctuations in the oil and gas sector (World Bank, 2020). The Port of Beirut, as detailed by Ayman Karkar, the Harbor Master, plays a crucial role in transshipping, significantly impacting the Lebanese economy. Karkar highlighted how geopolitical events, such as those in the Suez Canal, and the operations of major shipping companies like CMA CGM, which contributes a portion of its profits to the government, influence economic activities at the port. The economic crisis has led to significant salary reductions for port officers, exacerbating the challenges faced by the sector. Karkar also noted the inequality in salaries between the Harbor Master and Port Directorate, and how enhanced port security could lead to economic growth, despite cost concerns hindering upgrades to the breakwater.

The Port of Tripoli, under the direction of DG Ahmad Tamer, has seen a notable increase in activity, partly as a response to the 2020 explosion at the Port of Beirut. Tamer pointed out the growth in imports and exports of merchandise, indicating a diversification and resilience in Lebanon's maritime trade activities. This resilience is further supported by the development of new infrastructure like Ship-to-Shore (STS) Container Cranes for container handling, and the presence of two duty-free zones, enhancing the port's capacity for handling increased trade volumes. The role of CMA CGM in operating the container terminals and the significant exports of steel scrap and Potassium Sulphate from Lebanon underscore the strategic importance of the Port of Tripoli in the national and regional trade landscape.

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Jad Rassi, Chief Operating Officer at CMA Beirut Terminal, provided insights into the current state of transshipment activities in Lebanon, noting that they have been subdued due to the prevailing economic conditions, with import and export activities accounting for over 50% of operations. He highlighted that export activities are becoming increasingly competitive, while imports are on a decline, influenced by the ongoing war and economic crises. In response, CMA is actively working to enhance the volume of transshipment, aiming to boost Lebanon's economic value. Rassi emphasized the significant influence of end-users in shaping import activities at the port. Furthermore, he mentioned that recommendations have been made to prioritize the steel and automotive sectors at the Port of Saida. Reflecting on Lebanon's role within the broader region, he remarked that the country holds a pivotal position in the Middle East and Africa (MEA) economic landscape, competing with nations like Egypt and Turkey. He also praised the port for its strategic tariff grid, substantial human capital, infrastructure, and expertise, which collectively contribute to its renown.

Lebanon's trade regime, characterized by its liberal policies, low tariffs, and numerous trade treaties, continues to be a key driver of its maritime commerce. Despite the challenges highlighted by the economic crisis and regional instability, the sector remains a crucial element of Lebanon's economic infrastructure. The insights from the meetings underscore the need for strategic investments, regulatory reforms, and a focus on diversifying economic activities within the port authorities' sector to ensure its continued contribution to Lebanon's economic stability and growth. The potential for the old pier situated behind the fishermen's harbor next to Saida Sea Castle to evolve into an ecotourism destination, as suggested by Chehadeh, GD of Port of Saida, represents an innovative direction for leveraging Lebanon's maritime assets in support of sustainable economic development.

Environmental Impact and Sustainability

The Port Authorities Sector in Lebanon plays a critical role in the nation's economy while also presenting significant environmental challenges and sustainability concerns. The sector's activities contribute to air and water pollution, noise, and habitat disruption, with studies from the American University of Beirut (AUB) identifying emissions such as nitrogen oxides (NOx) and sulfur oxides (SOx) from ships and heavy machinery as key pollutants affecting air quality around the Port of Beirut (AUB, 2018). The Lebanese Center for Marine Research (LCMR) has also reported on the detrimental impact of untreated waste disposal and oil spills on marine ecosystems, significantly affecting water quality and marine biodiversity around these ports (LCMR, 2019).

Addressing the broader environmental impact, Wissam Zahabi, President of the Lebanese Petroleum Administration, underscored the environmental repercussions of upstream extraction and gas transportation. Zahabi highlighted the implementation of the National Oil and Spill Contingency Plan and raised concerns about the Lebanese Army's role in coastal management. The emphasis on Quality, Health, Safety, and Environment (QHSE) within the Lebanese Petroleum Administration (LPA) and the discussion on Environmental Impact Assessments (EIAs) and public hearings related to extraction activities reflect a comprehensive approach to mitigating environmental risks. Adding to the complexity of these environmental challenges, Myriam Suleiman, the Harbor Master at the Port of Saida, raised concerns about the Barghouth River's impact on biodiversity and safety, suggesting that the Ministry of Energy and Water reroute its flow due to its negative impact on tourism and the marine biodiversity. The river currently flows through the new commercial port basin bringing its load of sewage directly into the port. Ahmad Tamer, Director General of Land and Maritime Transport, identified rivers and the absence of a wastewater treatment strategy as primary pollution sources. Tamer's advocacy for quality assessment initiatives and the need to address plastic and microplastic pollution, especially from fisheries, underscores the urgency of enhancing environmental awareness and implementing sustainable practices within the sector. The Port of Saida, as discussed by General Director Imad Hajj Chehadeh, faces significant environmental challenges due to resource limitations that impede the establishment of a QHSE unit and the absence of a Waste Water Treatment (WWT) facility for the Bargouth River. Chehadeh's proposal to integrate a wetland at the mouth of the river with a WWT plant highlights the critical environmental issues and the steps being considered to address them.

The Focus Group Discussion (FGD) on "Port Activities in the Lebanese Blue Economy Context" revealed that environmental regulations for ports are currently absent, with individual shipping companies applying environmental standards and adhering to international regulations on their initiative. Efforts are underway to develop carbon footprint standards aligned with international norms for shipping companies. The discussion also highlighted the role of international conventions, particularly those of the International Maritime Organization (IMO), in governing the maritime private sector. The Ministry of Environment's inspections of arriving boats to ensure compliance with environmental standards, and strict regulation addressing sulfur emissions and acid/phosphogypsum contamination, are steps toward mitigating the impact on marine biodiversity. Additionally,

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wastewater treatment problems that affect sea turtle populations and biodiversity were identified as areas requiring urgent attention due to infrastructural shortcomings

The environmental narrative is further complicated by the tragic explosion at the Port of Beirut in 2020, which resulted in the release of hazardous materials, including ammonium nitrate, leading to significant environmental contamination. The United Nations Environment Programme (UNEP)'s assessment of the long-term ecological impacts and the Lebanese Ministry of Environment's report, in collaboration with the United Nations Development Programme (UNDP), on the vulnerability of Lebanon's coastal areas to climate change underscores the pressing need for resilient infrastructure and adaptive management strategies (UNEP, 2020; Ministry of Environment & UNDP, 2021). In response to these challenges, the Port Authorities in Lebanon are increasingly focusing on integrating sustainable and environmentally friendly practices into their operations. Efforts include exploring renewable energy sources, enhancing infrastructure for climate change resilience, and adopting the Green Port concept to prioritize environmental sustainability in port operations (International Association of Ports and Harbors, 2021; Lebanese Ministry of Public Works and Transport, 2022). These initiatives are part of a broader strategy to balance the economic significance of the ports with the imperative of reducing their environmental footprint and preparing for future ecological challenges.

Jad Rassi, Chief Operating Officer at CMA Beirut Terminal, shared that Environmental Impact Assessments (EIAs) are not typically conducted for port-related projects in Lebanon. Despite this, CMA Beirut employs a range of proactive environmental measures, including the use of spill kits, oil spill response plans, and the implementation of ISO-certified systems for environmental, safety, and quality management. Rassi highlighted the integration of sustainability into their operations, noting that the terminal has introduced twelve electric vehicles and installed solar panels on office roofs. Further enhancing their green initiatives, there are plans underway to equip cranes with solar panels to power air conditioning units for staff. On the topic of carbon emissions, Rassi stated that CMA Beirut actively reports Scope 1 and 2 emissions internally and incorporates these figures into the CMA CGM main sustainability report, although Scope 3 emissions remain unaccounted for in Lebanon. He also mentioned that the head of Quality, Health, Safety, and Environment (QHSE) manages a team of 12, ensuring thorough environmental reporting through a specialized app.

The insights from stakeholders such as Tamer and Chehadeh, along with the proactive measures taken by the Port of Tripoli and the ongoing concerns at the Port of Beirut, illustrate the complex interplay between economic development and environmental sustainability within Lebanon's maritime sector. The sector's commitment to addressing environmental challenges through collaborative efforts, regulatory compliance, and the adoption of best practices is essential for the sustainable development of Lebanon's maritime infrastructure and its alignment with global environmental standards.

Social Impact

The Port Authorities Sector in Lebanon not only serves as an economic engine but is also central in the adjacent urban and socio-economic landscape. Their urban-ecological edge acts as a stimulus for the city's economic and cultural activities (Ghamrawi, 2019; Lindgren, 2011) and, if sustainably developed, can enhance the environmental quality of the coast (Lan, 2008). Employment opportunities generated by these ports are substantial, with thousands of direct and indirect jobs in various sectors. The global demand for seafarers highlights the significance of this industry, with an estimated 1,647,500 seafarers working on trading merchant ships worldwide, including both officers and ratings (International Chamber of Shipping, 2021). However, there is a noted shortage of officers and a surplus of ratings, indicating a need for improved recruitment and training in this field.

Haytham Chaaban, the director of the Maritime Academy MARSATI, discussed a comprehensive overview of the academy's contributions and challenges within Lebanon's maritime sector. MARSATI prides itself on graduating skilled personnel equipped to work across the maritime industry, including on boats, ships, and yachts. Graduates range from engineers to assistants, captains, and chiefs, covering areas such as maritime manufacturing, finance, sponsorship, repair, maintenance, trade, and forwarding. Chaaban highlighted a common misconception in Lebanon that undervalues the significance of the maritime sector, particularly emphasizing the coastal tourism sector over ports and fisheries. The COVID-19 pandemic, however, spotlighted the shipping sector's critical role in bolstering the economy, underlining that a country's economic growth and sustainability are intrinsically linked to the sustainability of its shipping sector. A notable issue is the lack of awareness and knowledge about the maritime sector at the school level, which impacts student enrollment in maritime studies. MARSATI operates under a Public-Private Partnership (PPP) model, facing challenges such as law enforcement and the absence of self-regulation in Lebanon's Blue Economy (BE), which obstructs the

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adoption of sustainability practices. The academy's curriculum does not mandatorily include environmental courses due to the absence of legal requirements, despite the International Maritime Organization's (IMO) sustainability plans. Financial barriers also pose a significant challenge, with the cost of each credit at the academy reaching \$250, leading to a total expense of around \$20,000 over two academic years. MARSATI's licensing falls under the Ministry of Public Transport rather than the Ministry of Education, creating hurdles for graduates seeking employment on EU boats. Efforts are being made to achieve EU certification to expand employment opportunities for MARSATI graduates. Chaaban also touched upon the historical significance of the Phoenicians as maritime pioneers and addressed the current lack of regulation in yachting and private marinas. To address these challenges and promote maritime education, several initiatives were proposed, including hosting events related to the Conference at the Marsati Academy in Batroun, introducing a 10-day training program for school students in collaboration with OLA Academy to offer a Boat Master license with sustainability courses, and organizing orientation sessions in schools. Additionally, collaboration with a marine media magazine to include the Conference agenda and organizing panel discussions with ship owners and trainers were suggested.

Additional private educational institutions like the al-Manar University of Tripoli, in cooperation with AASTMT in Alexandria, used to prepare maritime officers until very recently, and the International Maritime Academy in Jounieh that is the first academy in the MENA region to be fully accredited by the International Sailing Schools Association (ISSA), and that offers high leveled seamanship courses and professional training reflecting the country's response to the global demand for maritime professionals. The Lebanese Ministry of Transportation & Public Works plays a crucial role in overseeing vocational training and certification processes for seafarers. Interestingly, due to the Syrian Civil War, over 200 Syrian seafarers are studying in Lebanon, receiving Lebanese certifications (Lebanese Ministry of Transportation & Public Works, 2021). However, Lebanese seafarers face challenges, including the absence of social safety nets and a formal syndicate. The only avenue for complaints or assistance available to them is through the International Transport Workers' Federation (ITF), a global union federation representing transport workers, which aims to promote workers' rights and provide support to transport workers in difficulty (ITF, 2021).

Ahmad Tamer, who is also the Director General of Land and Maritime Transport, highlighted the role of MARSATI in offering marine studies with internationally recognized certificates, under the supervision of the Ministry of Public Works & Transport, yet to be identified by the Ministry of Education. In Saida, the conservative ethos only allows port employment to residents and agencies, as noted by Imad Hajj Chehadeh, the General Director of the Port of Saida. This societal dynamic, coupled with challenges in officer recruitment and salary levels, underscores the complex interplay between local culture and port operations. Chehadeh also discussed the potential of repurposing the old pier of Saida for touristic events, indicating a positive perception of ongoing port enhancements despite social constraints. The Port of Tripoli engages with the local community by involving students from local universities in internships and training programs, as shared by Ahmad Tamer and his team. However, challenges such as the social impact of environmental fines within the port, with low penalties affecting seriousness, and the notable lack of time and resources for data analysis, highlight areas for improvement in fostering a more engaged and aware port community. Ayman Karkar, the Harbor Master of the Port of Beirut, pointed out the sectorial selection affecting port development and effective management. Issues such as illegal migration, human resource challenges, including limited surveillance tower, staff working long shifts without breaks, and the difficulty in communicating with fishermen compared to dealing with port officers, are significant concerns. Karkar recommends skill development workshops for port workers to enhance their capabilities.

Jad Rassi, Chief Operating Officer at CMA Beirut Terminal, emphasized the commitment of the terminal to the 'Social' component of sustainability. He noted that CMA Beirut employs between 400 and 500 local Lebanese staff, playing a crucial role in fostering job opportunities and promoting social cohesion within the community. The terminal operates an integrated management system and collaborates with ESA and CMA CGM to offer shipping and port-related educational programs. Additionally, Rassi highlighted CMA's initiatives to engage Lebanese youth, including offering internships and scholarships. This approach not only helps to build capacity but also actively recruits fresh graduates, providing them with opportunities to enhance their skills and integrate into the maritime industry.

The sector's impact on local communities extends beyond employment. Ports are integral to Lebanon's cultural identity, particularly in coastal cities, shaping social norms and lifestyle patterns. The health and quality of life of residents near these ports are a concern, with issues like air and noise pollution from port operations impacting their well-being. Efforts to mitigate these impacts are ongoing and crucial for maintaining public health. The 2020 Beirut port explosion was a stark reminder of the risks associated with port operations. It caused not only physical devastation but also profound psychological trauma, highlighting the need for robust safety measures and emergency preparedness. Looking to the future, the industry anticipates a shortage of qualified seafarers.

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Addressing this will require concerted efforts to promote maritime careers, enhance education and training, and focus on retaining seafarers (International Maritime Organization, 2021). The social impact of Lebanon's Port Authorities Sector is extensive, influencing employment, urban development, education, cultural identity, and public health. Balancing the economic benefits with these social dimensions is key to the sustainable development of Lebanon's maritime sector.

Infrastructure and Investment

The infrastructure and investment in Lebanon's Ports are crucial for enhancing their efficiency and capacity, which directly influences Lebanon's trade and economic stability. The Port of Beirut, before the devastating explosion of 2020, was a prime example of a well-equipped port with advanced cargo handling facilities and extensive warehousing. It was designed to handle various cargo types and was equipped with modern technology to facilitate efficient cargo movement. The Port of Tripoli has been receiving increased attention for development, serving as a key maritime gateway, particularly in the wake of the Beirut port explosion. This port has been expanding its capacity and capabilities, particularly in container handling and transshipment.

Several factors influence shipowners' choices of seaports. These include ship specifications like draught, beam, length, and capacity, as well as the profitability ratio which considers the strategic convenience of the port's location to the sailing schedule and cargo nature. Port location, infrastructure, political and economic stability, availability of peripheral resources like bunkering and ship repair facilities, and ISO certification are also crucial factors (Maritime Transport Review, 2020). Shipowners also consider the port's technology level, including aspects like berth planning, cargo documentation processing, and level of computerization, as well as innovative approaches like floating terminals and port automation (International Journal of Maritime Technology, 2021). Investments in Lebanese ports have been focused on modernizing infrastructure and adopting new technologies. This includes digital platforms for port operations, advanced cargo tracking systems, and automation in cargo handling processes. Such advancements are vital for increasing operational efficiency and enhancing the accuracy and reliability of port services.

However, the sector faces challenges, including political instability and financial constraints. Despite these challenges, continued investment and modernization are key to the sector's sustainability. The Lebanese maritime shipping sector includes 41 registered Ship Management Companies and 62 commercial vessels (1,000 GRT or over) under the Lebanese flag, totaling 258,383 GRT/392,087 DWT. Notably, the Port of Beirut ranks 12th in berth productivity, with an average of 52 containers per berth hour (Lebanese Ministry of Public Works and Transport, 2021).

Looking forward, the future outlook for Lebanon's ports involves rebuilding and modernizing existing infrastructure and expanding capacity to meet increasing trade demands. This includes developing new ports or expanding existing ones, investing in green port initiatives, and enhancing intermodal connectivity.

Imad Hajj Chehadeh, the General Director of the Port of Saida, outlined the port's master plan, which allocates 200 km² for a free zone and highlighted infrastructure deficiencies at the port entrance causing congestion. Chehadeh advocated for a comprehensive railway system linking all ports and noted the urgent need for improved storage facilities. The Port of Saida Harbor Master, Myriam Suleiman, emphasized inadequate boat anchor spaces and port facilities, limited winch capacity, and the absence of breakwater and sufficient safety measures. Suleiman also noted the absence of radar to monitor ship transit, underscoring the need for enhanced collaboration to address infrastructure needs. The Focus Group Discussion (FGD) on "Port Activities in the Lebanese Blue Economy Context" highlighted the importance of technology and innovation, including early warning systems and the need for government support to maintain effective monitoring and sustainable practices. Recommendations included deploying sensors for water temperature detection and fostering citizen science participation. The Port of Tripoli Technical Manager, Mr. Abdelrahman Hajar, and the QHSE unit members discussed the division of responsibility between the Directorate of Transportation and the Master Harbor, the possession of a boom for oil spill containment, and the development of emergency and contingency plans. However, challenges in accomplishing the new master plan and the lack of QHSE measures within it were noted. Ayman Karkar, the Harbor Master of the Port of Beirut, highlighted increased truck traffic straining port infrastructure and the need for expansion despite geographical constraints. Karkar recommended the installation of additional radars and emphasized the need for the unification of port management and security under a single body to enhance infrastructure and accommodate increasing truck traffic. He also recommended the implementation of the International Ship and Port Facility Security (ISPS) Code in Lebanon.

Jad Rassi, Chief Operating Officer at CMA Beirut Terminal, provided an overview of the operational scope and challenges at the Port of Beirut. He noted that the container terminal spans 51 hectares and highlighted the

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management of grain imports, which is overseen by the Ministry of Economy and Trade. Rassi also expressed interest in further developing the Port of Tripoli to enhance its capacity and capabilities. However, he identified several challenges facing the port, such as car congestion due to infrastructural limitations and a lack of cold storage facilities, which affect the efficiency of cargo handling and logistics. To address these issues, he recommended investing in port networks and establishing a national logistics program that could improve operational flow and support economic growth. Rassi also pointed out that the current focus of port operations is predominantly on crisis management rather than development, with the terminal operating at only 55 to 60% of its historical peak volumes. This shift in focus underscores the need for strategic planning and investment to regain full operational capacity and foster long-term development at the Port of Beirut.

The future outlook for Lebanon's ports involves rebuilding and modernizing existing infrastructure and expanding capacity to meet increasing trade demands such as the expansion and development of the container transit terminal at Pier number 16. This includes developing new ports or expanding existing ones, investing in green port initiatives, and enhancing intermodal connectivity. Balancing modernization efforts with the challenges posed by the regional political and economic climate is crucial. Focused development, technological advancement, and sustainability efforts will ensure that Lebanon's ports continue to be competitive and effective in the global maritime landscape.

1. Port of Beirut

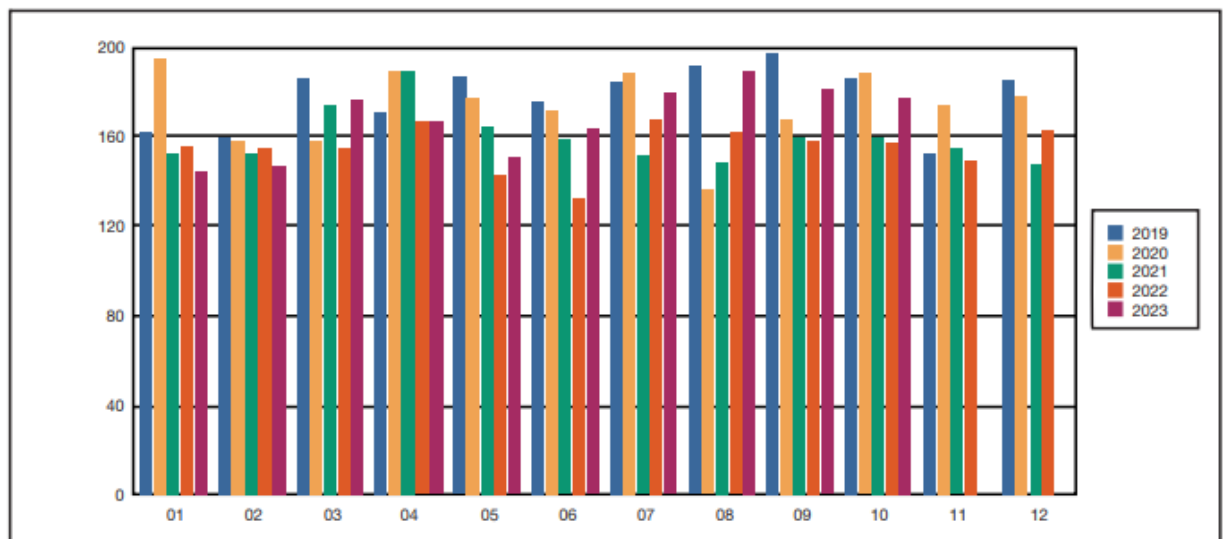
The Port of Beirut dates to the 15th century BC, the port has been a center for trade and naval activity, growing significantly through the nineteenth and twentieth centuries. The railway network of the country used to connect the harbor to Damascus in Syria directly through the Damascene Pier. However, the prolonged civil war in Lebanon from 1975 to 1990 caused deep divisions and significant damage to the country's infrastructure, including the port. Following the civil war, the government established a "Temporary Committee for Management and Investment of the Port of Beirut" to oversee the port's operations. This committee has been responsible for managing the port, including its maintenance, expansion, and financial accounts, under the General Directorate of Exploitation at the Ministry of Public Works and Transport. Today, the Port of Beirut is a major hub, covering an area of 120 hectares with four water basins over a 100-hectare water surface. It boasts 16 berths stretching 5,155 meters, and the basin at Quay 16 alone is estimated to cover 20 hectares with a 550-meter breakwater. The port includes a multi-purpose area, a silo area, a container terminal, a free zone, and a passenger terminal. In 2019, its container terminal, managed by the Beirut Container Terminal Consortium (BCTC), reported an annual throughput of approximately 1.23 million TEU (BCTC, 2019b). It generates most of the Port's revenue (before 2020, the ratio was of 90% of containers for 10% bulk. The port also serves as a transshipment hub for MSC and CMA-CGM, two of the world's largest container shipping companies.

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Table 3: Number of Vessels in Port of Beirut



However, the port's recent history has been marred by tragedy. On August 4, 2020, a massive explosion, caused by 2,750 tons of improperly stored ammonium nitrate, devastated large sections of the port and the city, causing over 200 deaths, injuring more than 6,500, and displacing over 300,000 people (UNICEF, 2020; NY Times, 2020). This disaster not only destroyed much of the port's infrastructure, including the grain silos, but also raised serious concerns about safety protocols and management practices at the port.

The governance of the Port of Beirut has been a complex affair involving various entities and committees. Since the 1990s, four committees have managed the port, with the current committee composed of the Chairman of the board, the General Manager of GEPB, GEPB's Board of Directors, and senior management personnel. This committee, however, operates without the necessary legal frameworks and lacks accountability and financial audit (Port of Beirut Authority, 2020). Despite being a major source of revenue for the state, generating more than \$250 million per year and handling 82% of Lebanon's imports and exports, the port has operated with minimal oversight from authorities like the Ministry of Finance and the Court of Audit. In 2012 and 2013, the Beirut Port Authority registered little to no proceeds to the Lebanese government (Lebanese Ministry of Finance, 2013).

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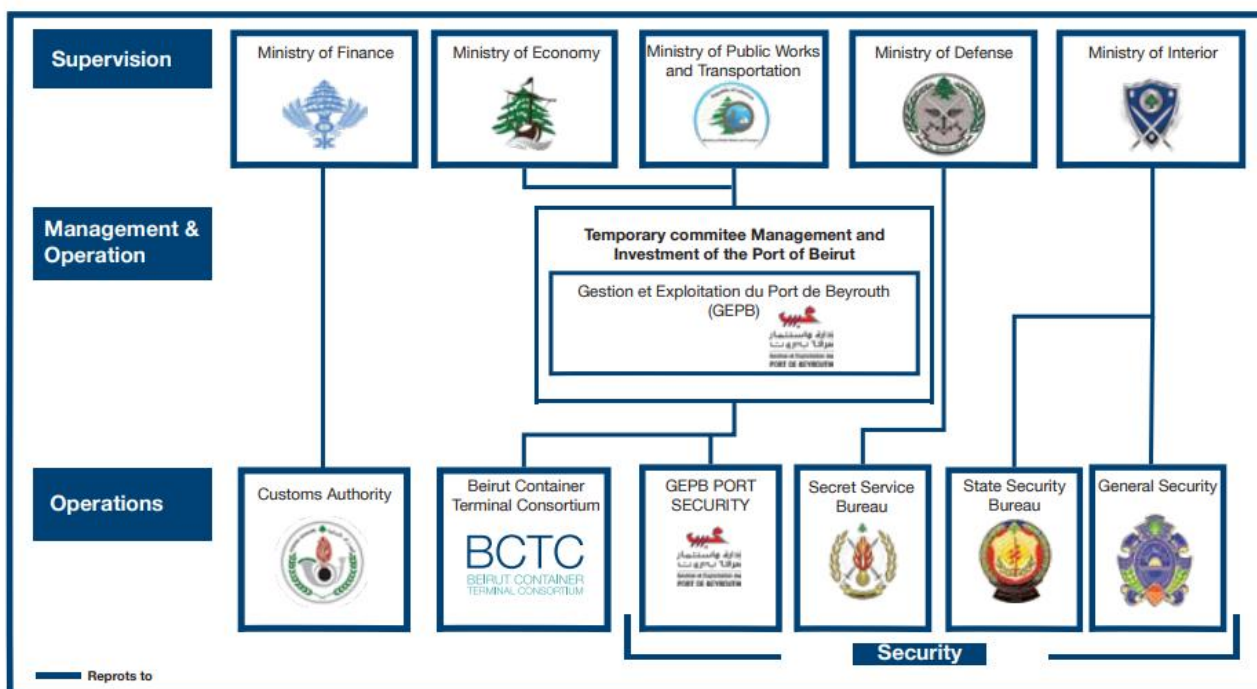


Figure 4: Port of Beirut Governance Structure

Before the explosion, the Port of Beirut's infrastructure included a container terminal capable of handling 1.5 million TEU per year and accommodating some of the world's largest container vessels. The multi-purpose area, before the disaster, comprised general cargo terminals and storage areas with over 12 warehouses. The port's free zone spanned over 127,000 square meters, featuring a duty-free market, retail areas, and modern facilities leased by large companies. In 2023, 5.41 million tons of goods passed through the port of Beirut, between imports, exports, and transit. This total is up 5% compared to 2022 and brings the infrastructure closer to its pre-2020 average (more than 6.5 million in 2019). Imports accounted for 81.2% of the total volume of goods. The number of registered vessels increased by 15% compared to 2022 with a total of 1,371 vessels. Factors influencing shipowner choice of seaports such as ship specifications, profitability ratio, port location, infrastructure, political and economic stability, availability of resources, ISO certification, technology level, innovation, operation costs, and safety level have been critical in shaping the Port of Beirut's operations and attractiveness to maritime commerce (Maritime Transport Review, 2020; International Journal of Maritime Technology, 2021).

Within the assessment framework and throughout our field visit to the Port of Beirut provided a detailed and nuanced view of its operational dynamics, infrastructural state, and the aftermath of the tragic explosion in August 2020. This direct observation revealed both the strengths and areas for improvement within the port's sprawling complex. The port's layout includes four entrances, yet the operational focus seems concentrated in one container area managed by CMA CGM, indicating a potential bottleneck for diversifying and expanding cargo handling capabilities. Karkar highlighted that the cargo is still at 30% of today's Quai 16 capacity. He recommended to work on the regulatory aspects first and to integrate an infrastructure plan for the Quai 16 expansion. The presence of a large bulk area for general cargo underscores the port's capacity to handle a variety of shipments, though the noticeable olfactory concerns within the port suggest environmental and health considerations that need addressing. Terminal 16, notable for its depth of 18 meters, making it the deepest in Lebanon and the Middle East, exemplifies the port's capability to accommodate large vessels. However, the sight of dropped grains on the ground, attracting a substantial bird population, raises concerns about waste management, safety, and environmental impact. The presence of livestock boats and individuals awaiting truck loading further illustrates the bustling, yet somewhat disorganized, nature of cargo operations. Remnants of the Beirut explosion, including debris and a derelict boat, serve as stark reminders of the port's recent history and the ongoing need for stringent safety measures and infrastructure rehabilitation. The removal of these remnants is not just a matter of clearing space but an opportunity to inject circular economy principles into the recovery process. By reprocessing the estimated 150,000 sq.m. of debris sustainably, significant funds could be raised for the treasury while

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also making room for future port developments. For instance, metal scraps from the debris could be recycled and repurposed into new construction materials for port infrastructure or public artworks that commemorate the resilience of Beirut. Additionally, non-metallic debris, like concrete, could be processed into aggregate for new building projects or coastal barriers, enhancing both functionality and environmental resilience at the harbor. This approach not only clears the area but also turns a painful relic into a resource for rebuilding and renewal.



Figure 5: Port of Beirut

The CMA CGM terminals, with their exemplary management practices, digitized tools, GPS systems, and solar panel installations, stand out as a model for modern port operations. The continuous 24/7 operations in container cargo handling and the prominence of transshipment activities underscore the port's critical role in regional and international trade networks. The presence of 16 Container Transfer Cranes (CTCs) and the provision of a free zone for marine passport holders to purchase goods reflect the port's efforts to enhance efficiency and attract business. However, multifaceted security measures overseen by various entities, traffic congestion outside the port premises, and limited technological advancement in the surveillance room indicate areas where improvements are necessary to streamline operations and enhance security protocols. The supervision of the fisherman's port and multiple other ports along the Beirut and Mount Lebanon coastline under Beirut's Harbor Master jurisdiction highlight the complex interplay of authority and responsibility within the port's governance structure. The halted Italian-led coastal area study due to governmental issues underscores the broader challenges of policy and project implementation within Lebanon's port sector. Our overall assessment points to the urgent need for comprehensive establishment and improvement measures, balancing the port's historical significance and operational capabilities with modern safety, environmental, and management standards to ensure its sustainable development and resilience in the face of future challenges. Karkar also highlighted the need for a centralized authority, characterized by civilian personnel, the need to have a centralized operation room for navigation, safety, data collection and processing including environment-related indicators, and its role in ensuring the SOPs implementation across all major ports in Lebanon

The French proposal for the rehabilitation of the Port of Beirut introduces a comprehensive plan aimed at optimizing space and movement within the port area. Artelia and Egis, supported by a detailed plan, suggest

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constructing a new quay no. 9, rehabilitating quay no. 10, and deepening the basin to improve ship maneuverability. The proposal also includes relocating the main internal circulation axis to enhance traffic fluidity and separating cargo types for more efficient operations. The relocation of the silo area and the introduction of a new customs building are among the projects aimed at modernizing the port and supporting its long-term vision. Security recommendations from Expertise France emphasize the need to update Lebanese regulations to adopt the ISPS code, strengthen navigation security, and accelerate the port's digitalization. The study suggests optimizing goods control organizations to reduce container processing times, highlighting the disparity with international standards.

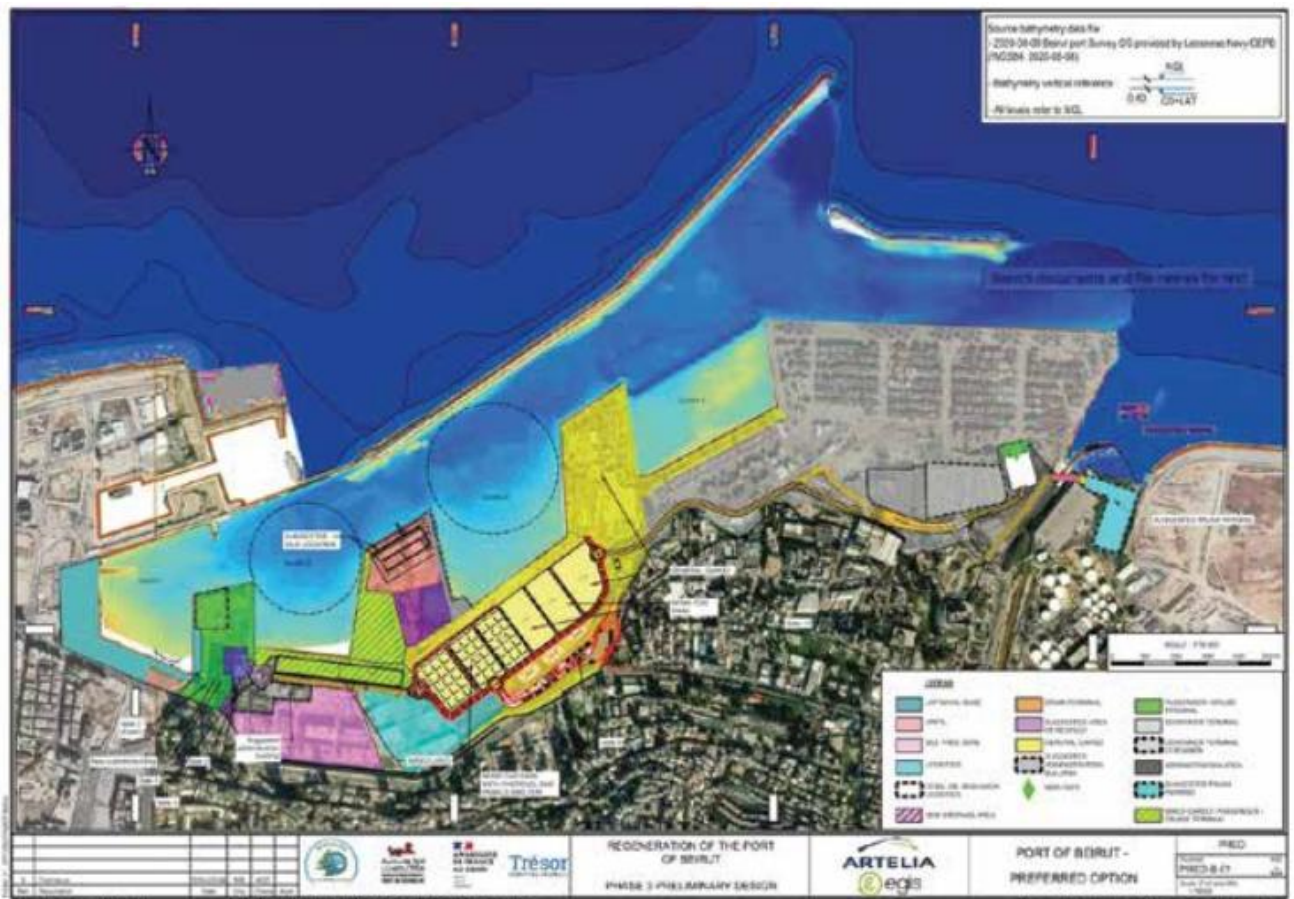


Figure 6: Preliminary Design of the Port of Beirut

The Port of Beirut's future hinges on rebuilding efforts, improved governance, and stringent safety and operational standards. The insights from our field visit, direct observations, and the French rehabilitation proposal underscore the complex challenges and strategic initiatives underway to restore the port's status as a premier maritime gateway. These efforts are crucial for enhancing the port's capacity, safety, and environmental sustainability, ensuring its continued significance in regional and international trade. Finally, it is worth noting that the DRM is working on a Joint Rescue Coordination Center (JRCC) to coordinate, control, and direct SAR operations, aiming for the timely detection and rescue of persons in distress as a result of air or naval accidents

2. Port of Tripoli

The Port of Tripoli, Lebanon's second major port, plays a crucial role in the country's maritime trade and economic landscape. This port, covering an approximate area of 3 million square meters with a water area of 2.2 million square meters, is a vital hub for both domestic and international shipping. The area is however largely underexploited (a significant part of the land is fallow). Unlike Beirut, most of the freight is bulk (a port source suggests a breakdown of 80% to 20%). It can handle five million tons per year, and despite being

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smaller than the Port of Beirut in terms of throughput, it has been gaining prominence, especially in recent times. saw only 3.62 million tons of goods transit in 2023. This total is up 1.1% in one year and 81% compared to the 2 million tons recorded in 2019 by the port management. Imports only represented 47.3% of the total and showed a drop of around 340,000 tons compared to 2023. A particularity linked to the fact that this port is favored by exporters of agricultural products. The number of ships that anchored in Tripoli in 2023 is 837, a number down 5.4% compared to 2022.

Historically, the Port of Tripoli has been an important maritime center since the Phoenician era. Its significance continued through various epochs, including the Persian, Byzantine, Ottoman, Mamluk, and Roman periods (El-Cheikh, 2018). The port and the city have been recognized for their strategic location and cultural heritage. Notably, during the Ottoman rule, the port was managed by a French company, which was later taken over by a Lebanese company following Lebanon's independence. The port's infrastructure includes a land area of 320,000 square meters and a 420,000 square meters dump area reserved for future development, such as a new Container Terminal and Free Market Zone. It currently has one dock and 8 berths, with plans for a new 600-meter-long berth and a rear zone area of 1,200,000 square meters, approved as a free economic zone by the Lebanese Parliament. The Port of Tripoli also contains a Free Zone of 150,000 square meters, larger than the one in Beirut.

The port's container terminal is operated by the French company CMA CGM. The governance of the port is overseen by a Board of Directors and managed according to the General Code for Public Institutions (Decree No. 4513). Despite its potential, the Port of Tripoli has faced challenges. It operates at a limited capacity, functioning at about 40% of its potential (Ibrahim, 2020), impacting the regional economy. Additionally, the city of Tripoli has dealt with political disputes, armed conflicts, and religious clashes, further affecting the port's operations. The influx of Syrian refugees since 2011 has also put additional strain on the city and its economic infrastructure. In recent years, the Port of Tripoli has seen significant developments. With its location only 30 km from the Syrian border, it serves as a key access point to the Gulf and Arab World. It has low taxes and tariffs, and reduced fees for hired labor, making it an attractive option for international shipping and logistics companies. After the devastating explosion at the Port of Beirut in August 2020, the Port of Tripoli has been poised to absorb much of the excess capacity. Dr. Ahmed Tamer, the director of the Port of Tripoli, highlighted plans to raise the absorptive capacity to accommodate the nation's needs for imports, especially in light of the disaster in Beirut (The Business Year, 2019).

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Figure 7: Port of Tripoli

From our field visit and direct observations, several operational aspects and challenges came to light, adding depth to our understanding of the port's daily functioning and its adherence to regulatory and safety standards. Notably, the presence of three entities for the government security unit (Internal Security Forces, General Security, and Army Intelligence) at the port's entrance, despite not being enforced by law, raises questions about the implementation of security measures. Guidance stations available for ships navigating within the port area reflect the port's commitment to safety and efficiency in maritime operations. However, the absence of a gas station within the port facilities could pose logistical challenges for vehicles and equipment operating within the port. The existence of two landfills and two duty-free areas within the premises suggests a blend of commercial activity and environmental management challenges that need addressing. The operational small clinic within the port area, catering to the health needs of employees, including vaccinations and other health-related issues, demonstrates a commitment to employee well-being. The quarantine department, under the Ministry of Agriculture's jurisdiction, and the QHSE unit's role in ensuring compliance with Quality, Health, Safety, and Environmental standards highlight the port's efforts towards sustainable and efficient operations. The QHSE unit, with its laboratory and meteorology station atop its building, plays a crucial role in monitoring temperature, humidity, wind speed, and direction—key factors in preventing oil spills and ensuring safe port operations. The QHSE unit at the port of Tripoli follows a unique public-private partnership where a privately-owned firm conducts the works of QHSE on behalf of the authorities of the port without national mandate or requirement. The use of a PM detector to monitor air quality and ADCP to measure water currents further exemplifies the port's dedication to environmental stewardship and operational safety. The observation of several old boats within the port vicinity underscores the potential for circularity initiatives, suggesting an opportunity to integrate these vessels into productive use rather than leaving them idle.

The Port of Tripoli, with its rich history, strategic location, and ongoing development efforts, remains an essential component of Lebanon's maritime trade infrastructure. The insights from our field visit and direct observations reveal both the challenges and the diligent efforts underway to enhance the port's capacity, safety, and environmental sustainability. These efforts are crucial for the port's and, by extension, the

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country's economic resilience, especially in light of the challenges faced by the Port of Beirut. The port's ability to attract international partnerships and investments, coupled with its strategic initiatives and commitment to compliance and sustainability, underscores its significance in Lebanon's broader economic narrative and its potential as a hub for regional and international trade.

3. Port of Saida

The Port of Saida (ancient Sidon), traditionally a fishing port in Lebanon, is undergoing significant development to enhance its maritime capabilities. Traditionally used for accommodating small freighters and fishing activities, the port's expansion is a strategic move to stimulate economic growth and offer an alternative to the congested Port of Beirut for general cargo ships. The old port, not sheltered and limited in capacity, is constrained from expansion due to nearby historical and archaeological sites, and due to the partial weathering of the old commercial pier. This limitation has necessitated the development of a new, larger port to attract bigger ships and support a variety of maritime activities.



Figure 8: New Saida Port Layout

The development of the new port in Saida is being driven by a public-private partnership, financed by the state authority, Ministry of Public Works and Transport. The first phase of the new port's construction, completed in 2017, included the building of a 150-meter-long dock, a one-kilometer-long jetty, and a quay, for USD 19 million. The second phase, estimated to cost USD 56 million, aims to enlarge the berth to 450 meters in length and 310 meters in depth. However, this phase is currently delayed due to a lack of funding that resulted from the ongoing economic crisis. However, the municipality of Saida has exclusive rights to manage the port, and with the current economic crisis in the public sector, investing in and completing these phases is almost impossible. The new port's design includes three berths spanning 590 meters, with the longest berth being 275 meters with a draft of 10 meters, suitable for Handy size vessels. The port expansion offers a land area of 200,000 square meters for project development, which can be utilized for various purposes including offshore oil and gas operations, multipurpose facilities, Roll-On/Roll-Off (RO/RO) services, and storage facilities.

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Our field visit to the Port of Saida revealed several operational realities and challenges. Notably, the presence of steel scrap trucks in significant numbers highlighted the port's role in the scrap trade, with these trucks undergoing customs, weight balance, and scanning processes. However, infrastructural deficiencies were apparent, affecting port buildings, roads, and equipment, which could impede the port's operational efficiency. Fishermen engaging in their activities at the mouth of the polluted Barghout River and the sighting of a large bird population underscore the port's vibrant ecosystem, albeit facing environmental pressures. The absence of Roll-On/Roll-Off (RO/RO) facilities and notable infrastructural challenges, including concerns with port buildings and entrance structures, point to areas needing urgent attention and development. The need for enhanced quality control, security measures, and improved wastewater treatment was evident, highlighting environmental and operational concerns that must be addressed to realize the port's full potential. Additionally, the necessity for a dedicated company to provide essential services and support for port workers was observed, indicating a gap in the current operational framework that could affect worker welfare and port efficiency.



Figure 9: Port of Saida

Following the 2020 Beirut port explosion, the Port of Saida gained more attention for its potential to handle increased cargo volumes. It managed to receive two-grain ships carrying 11,500 tons of wheat, demonstrating its capability to support larger cargo shipments. Despite this potential, the port's operations are currently limited to daytime, with customs services available only upon request, indicating a need for further operational development. The Port of Sidon's expansion brings new opportunities for the region, particularly in serving as a base for offshore oil and gas blocks. The availability of coastal land adjacent to the port opens up possibilities for various project developments, such as RO/RO, silo, and storage facilities.

However, Saida's port also faces challenges. Its location and historical significance have implications for its development. The city of Sidon, with its rich and diverse cultural heritage, has seen various artifacts revealed within its harbor. Unfortunately, the port's expansion has impacted these historical remains. Challenges also include fragmented consortiums for bulk terminals, exclusivity in operating at the port, lack of visible safety and logistics measures, and the issue of sewage disposal inside the port basin. The city's proximity to the Lebanese-Syrian border and its social ties to Syria have also influenced its development, especially in the context of the Syrian war and the influx of refugees. The Port of Saida's ongoing expansion and development are crucial for enhancing Lebanon's maritime infrastructure. This development is expected to reduce congestion around Beirut, diversify Lebanon's economic activities, and increase the port's capacity to handle a wider range of maritime operations. Including a container terminal and storage facilities. The insights from our field visit and direct observations shed light on both the progress and the challenges faced by the Port of Saida, emphasizing the critical need for strategic development, infrastructural enhancements, and comprehensive environmental and operational management to secure its future as a key maritime hub.

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4. Port of Jounieh

The Port of Jounieh, currently undergoing extensive development, is poised to become a significant hub for cruise tourism in Lebanon. This ambitious project aims to attract large tourist vessels and create a substantial economic boom for the region. The port's design caters specifically to large tourist vessels, taking advantage of the site's depth, which allows it to accommodate cruise ships carrying more than 6,000 tourists. The first phase of the project is focused on setting the port's boundaries, which extend from the Automobile et Touring Club du Liban (ATCL) complex along the road from Jounieh to Dbayeh. This phase includes dredging the site to deepen it and backfilling a 50,000-square-meter lot facing the water. Future developments at the port will see the construction of a two-kilometer pier, including a temporary berth for a second ship. The plan is for the port to include berths for 500 yachts and small to medium-sized boats. When completed, it will be capable of accommodating vessels up to 360 meters in length, allowing tourists to disembark and spend time in Lebanon.

The new port is expected to spur significant economic growth in the area. Taxis, shops, restaurants, and cafes are all set to benefit. This development is not just a boost for Jounieh but for the entire Keserwan district, stimulating tourism throughout Lebanon. The port will become a major stop on the tourism map in the Middle East and a destination for some of the world's largest cruise ships. An additional advantage of the new port is that it will provide Lebanese citizens the opportunity to embark on cruises directly from their country, without the need to travel to Turkey or further afield. The port's management will include a board of directors, and the construction plan encompasses facilities for customs, inspection, and security.

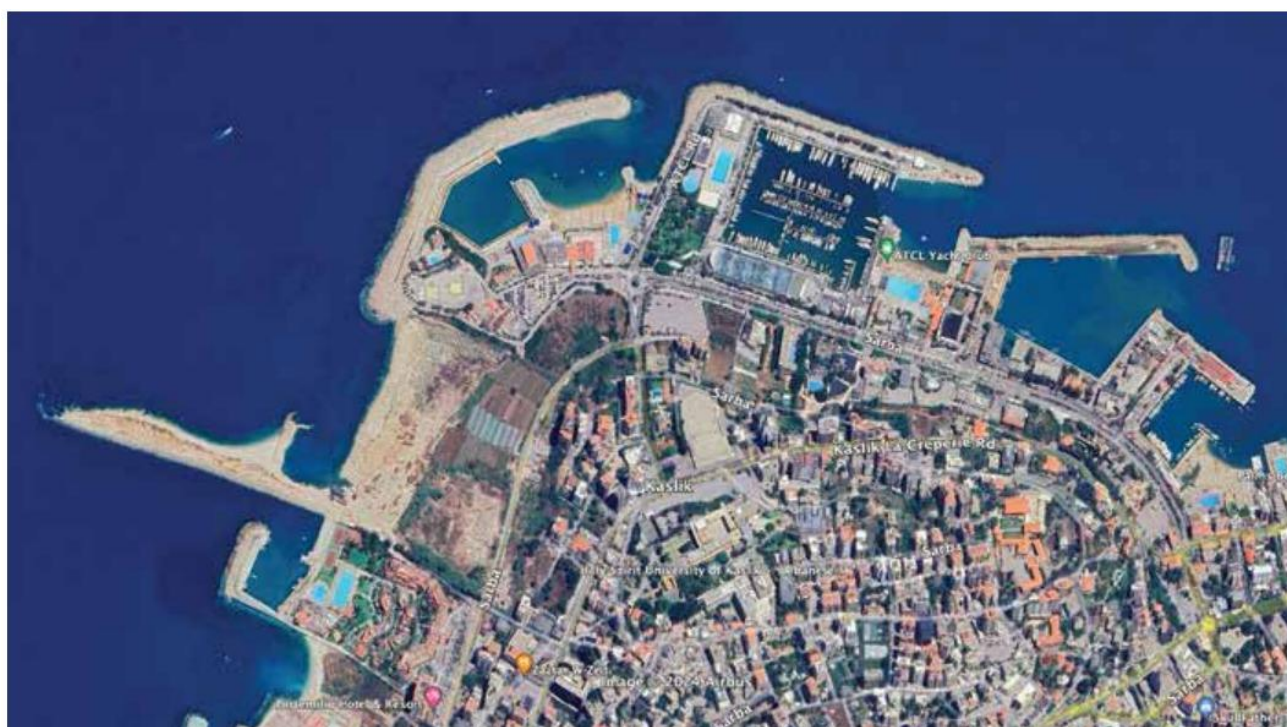


Figure 10: Port of Jounieh

The Ministry of Tourism has emphasized the importance of pairing the building of the port with a plan to promote the port and activate the tourism sector in the region. This development is seen as essential for Lebanon, which currently manages cruise ship arrivals and departures through Beirut's commercial port. The new port in Jounieh aims to provide a more fitting welcome and farewell to tourists. Jean Beiruti, chairman of the Maritime Tourism Establishment Associations, highlighted the port's potential to put Lebanon back on the map of world tourism. The economic benefits are expected to be significant, creating more than 1,500 jobs and stimulating investments in related restaurants and shops. The port is seen as a boon for all of Lebanon, as tourists arriving on these ships will have the opportunity to visit various parts of the country. The Port of Jounieh represents a strategic development in Lebanon's efforts to enhance its position in the global tourism market. By accommodating jumbo cruise ships and providing top-notch

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facilities, the port is set to become a key player in the Mediterranean cruise circuit, offering economic benefits and new opportunities for the whole country.

Regulatory and Policy Framework

The Port Authorities Sector in Lebanon, under the guidance of the Ministry of Public Works and Transport Directorate General of Land and Maritime Transport, plays a pivotal role in the country's maritime affairs. This regulatory body is not only responsible for the implementation of maritime conventions ratified by Lebanon but also oversees the maintenance and improvement of marine navigational aids in ports and along the coast. Despite its broad responsibilities, it's notable that the Directorate General lacks hydrographic capabilities. Lebanon's trade regime is characterized by its openness and a focused effort towards liberalization, particularly with influential global and regional entities. Wissam Zahabi, head of the Lebanese Petroleum Administration, emphasized the importance of an integrated energy policy that covers all sectors, including electricity, renewable, upstream, and downstream, highlighting the need for a holistic approach to energy within the Blue Economy framework. The Petroleum Activities Regulation (PAR) established by the LPA marks a significant step towards regulatory clarity in the energy sector. Ahmad Tamer, Director General of Land and Maritime Transport, outlined the specific roles for boats entering and leaving ports, emphasizing the ports' responsibility for environmental protection and the distinction between the roles of the Harbor Master and the Director General of the port, underscoring the regulatory clarity within the maritime domain. Sawsan Bou Fakhreddine from the DRM unit recommended that the Disaster Risk Reduction law be incorporated at sectoral levels including ports.

In Saida, both the General Director Imad Hajj Chehadeh and the Harbor Master Myriam Suleiman noted that while regulatory frameworks are in place, enforcement mechanisms require enhancement. Suleiman highlighted the decline in Boat Master training programs, indicating gaps in regulatory oversight and training. The Port of Tripoli's Technical Manager and QHSE unit, led by Ahmad Tamer, discussed the absence of connection with the Disaster Risk Management (DRM) unit in parliament and highlighted responsibility gaps during emergencies between civil defense and the Lebanese army. Ayman Karkar, the Harbor Master of the Port of Beirut, stressed the need for centralized port management to streamline operations and enforce regulations effectively. Karkar also pointed out the critical gap in legal expertise due to the absence of qualified maritime judges in Lebanon and the insufficient academic programs teaching maritime law, underscoring the importance of training lawyers and judges in maritime law to bridge the legal understanding gap.

The nation's commitment to trade liberalization is evident in its agreements with major entities like the European Union (EU) and the World Trade Organization (WTO), as well as within the Arab world. Lebanon signed the Euro-Mediterranean Partnership agreement with the EU, which took effect through an interim agreement in 2003 and the final agreement in 2006. This partnership is aimed at creating a free trade area between the EU and southern Mediterranean countries, liberalizing trade across a broad range of goods. Additionally, Lebanon entered into a free trade agreement with the European Free Trade Association (EFTA) in 2004, further enhancing its trade connections. The country has also established bilateral cooperation agreements, notably with Syria, focusing on sectors such as economics, transport, agriculture, and health. Lebanon's active participation in the Greater Arab Free Trade Area (GAFTA), encompassing 17 Arab countries with eliminated import duties, and bilateral Free Trade Agreements with countries like Egypt, Iraq, Kuwait, Syria, and the United Arab Emirates, significantly contributes to its regional trade integration.

On the global stage, Lebanon signed the Trade and Investment Framework Agreement (TIFA) with the United States in 2006. This agreement aims to foster an attractive investment climate, expand trade relations, and eliminate barriers between the two countries. Actively pursuing accession to the WTO, Lebanon secured observer status in 1999 and has been engaged in working party meetings, with the latest held in February 2009. The regulatory framework and policy environment of Lebanon's maritime sector, combined with its strategic engagement in international trade agreements, underscore its importance in the Mediterranean trade arena. The country's active participation in trade liberalization and strategic partnerships enhances the operational and strategic capabilities of its ports, positioning them to capitalize on future opportunities and navigate challenges in the global maritime industry.

Jad Rassi, Chief Operating Officer at CMA Beirut Terminal, discussed the regulatory framework governing port activities in Lebanon, noting that the International Maritime Organization (IMO) sets the standards and regulations. He highlighted Lebanon's progress toward obtaining International Ship and Port Facility Security (ISPS) certification, which aims to enhance maritime security cooperation between ships and port facilities, thus improving overall security measures.

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Rassi elaborated on CMA's role within this framework, which includes assessing import risks in compliance with IMO regulations. He explained that import testing is a collaborative effort involving multiple agencies, including Customs, the Ministry of Health, the Ministry of Agriculture, and the IRI Lab, ensuring that all imported goods meet the required standards and regulations. Additionally, Rassi emphasized that the CMA Beirut Terminal operates under a well-defined contractual management agreement with the government. This arrangement establishes clear responsibilities and guidelines, facilitating efficient and compliant operations at the terminal. This structured approach not only ensures adherence to international and local regulations but also enhances the terminal's operational efficiency and security protocols.

The regulatory framework and policy environment of Lebanon's maritime sector, combined with its strategic engagement in international trade agreements, underscore its importance in the Mediterranean trade arena. The insights from stakeholders like Zahabi, Tamer, Chehadeh, Suleiman, and Karkar, along with the challenges and strategic directions outlined, enhance the operational and strategic capabilities of its ports, positioning them to capitalize on future opportunities and navigate challenges in the global maritime industry.

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Maritime and Environmental Commitments

Lebanon has ratified several key maritime conventions, which highlight its commitment to international norms and practices:

- **International Convention for the Safety of Life at Sea (SOLAS):** This convention ensures that ships flagged by signatory states comply with minimum safety standards in construction, equipment, and operation. Lebanon's adoption in 1983 of SOLAS has been crucial in enhancing the safety of its considerable commercial fleet.
- **International Convention for the Prevention of Pollution from Ships (MARPOL):** Given Lebanon's beautiful coastal landscapes and the significant role of tourism in its economy, adhering in 1983 to MARPOL has helped minimize pollution from ships, including oil and air pollution.
- **United Nations Convention on the Law of the Sea (UNCLOS):** As a signatory, Lebanon has agreed to regulations that define territorial waters, set maritime boundaries, and manage natural resources, significantly impacting its maritime disputes and rights.
- **Barcelona Convention (1977):** Lebanon ratified this key environmental protection treaty aimed at reducing pollution in the Mediterranean Sea.
- **Anti-Fouling Systems Convention (AFS 2001):** Ratified in 2010, it controls the use of harmful anti-fouling systems on ships.
- **Oil Pollution Preparedness, Response and Co-operation Convention (OPRC, 1990):** Ratified in 1995, this convention enhances Lebanon's ability to prepare for and respond to oil pollution incidents.
- **International Convention on Civil Liability for Oil Pollution Damage (CLC 1992):** Ratified in 1999, it outlines the liability for damage caused by oil spills.
- **International Convention on Bunker Oil Pollution Damage (2001):** Lebanon joined this convention in 2017, addressing pollution damage from bunker oil.
- **Intervention Convention (1969):** Ratified in 1979, this convention allows states to take measures on the high seas to prevent, mitigate, or eliminate danger to their coastline or related interests from pollution.

The ratification of these conventions has facilitated improvements in Lebanon's maritime policies and compliance with global standards, fostering safer and cleaner seas.

Despite progress, several important maritime conventions remain unratified by Lebanon:

- **Hong Kong International Convention for the Safe and Environmentally Sound Recycling of Ships:** This convention, which Lebanon has yet to ratify, aims to ensure that ships, when being recycled after reaching the end of their operational lives, do not pose any unnecessary risks to human health, safety, or the environment.
- **Ballast Water Management Convention:** This aims to control and manage ships' ballast water and sediments to prevent the introduction of invasive aquatic species. Non-ratification leaves Lebanon vulnerable to bio-invasions that could disrupt local ecosystems and industries.
- **OPRC-HNS Protocol (2000), Fund Convention 1992, and others:** These conventions, which include comprehensive measures for hazardous and noxious substances (HNS), liability and compensation, are crucial for enhancing Lebanon's legal framework regarding maritime accidents and pollution.
- **Wreck Removal Convention (2007):** This unratified convention is vital for the removal of hazardous wrecks and ensuring navigational safety.

The delay in ratification is often due to political deadlock, economic challenges, or the absence of sufficient infrastructure to implement these conventions. Understanding these factors is essential for addressing the gaps in Lebanon's maritime law compliance.

Analyzing incidents such as the oil spills of 2006 and 2021 provides insight into the practical implications of maritime conventions, underscoring the importance of stringent environmental regulations as stipulated in international agreements like MARPOL, while also highlighting the gaps caused by the non-ratification of other critical conventions. Moreover, comparing Lebanon with neighboring countries like Cyprus and Turkey reveals strengths and areas for improvement, offering a roadmap for enhancing Lebanon's maritime legal framework. Looking ahead, embracing additional international maritime conventions will benefit Lebanon, with recommendations including enhancing legal infrastructure, investing in maritime technologies, and fostering regional cooperation for comprehensive maritime governance. Lebanon's active engagement with international maritime conventions reflects its commitment to a sustainable and secure maritime sector, demonstrating the potential for improved protection of maritime interests and fulfillment of international obligations for safer seas in the future.

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Role of the Ministry of Agriculture

The Ministry of Agriculture plays a pivotal role in the ports of Lebanon, encompassing a broad spectrum of responsibilities that span environmental, economic, social, and infrastructural aspects. Mohammad Abou Zeid, the Director of Importing and Exporting Animal Resources, highlighted the ministry's comprehensive approach to managing the influx of plant and animal products through the ports. To safeguard the ecosystem, every plant and animal product undergoes rigorous testing, ensuring that they do not have adverse effects on the local environment. Economically, the Blue Economy constitutes a significant portion, approximately 80%, of the Lebanese economy, with the cost of lab tests for goods being borne by the goods' holder, despite the recognized lack of financial resources.

Socially, the department is deeply committed to societal health, focusing on preventing the spread of toxins or diseases from incoming goods via ports, thereby ensuring public safety. From an infrastructural perspective, the construction of a new building at the port aims to streamline the import and export processes. However, due to the size requirements of the laboratories, they are located in Fanar and Kfarchima, necessitating multi-floor buildings to accommodate specific sampling protocols. Regulatory measures are firmly in place, establishing stringent quality and safety standards for products entering Lebanon, with a call for heightened standards to address quality concerns. This complex approach underscores the Ministry of Agriculture's integral role in maintaining the balance between economic development, environmental sustainability, and public health within the context of Lebanon's ports.

Challenges and Opportunities

The Port Authorities Sector in Lebanon navigates through a unique set of challenges and opportunities that significantly impact its efficiency, competitiveness, and adaptability to the evolving demands of global maritime trade. Among the foremost challenges are the infrastructure and capacity limitations faced by key facilities like the Port of Beirut and the Port of Tripoli. The devastating explosion in Beirut in 2020 underscored the urgent need for reconstruction and modernization to bolster the sector's foundational strengths (UNICEF, 2020). Compounded by Lebanon's political instability and complex sectarian dynamics, the governance of its ports encounters obstacles that can stymie decision-making processes and delay critical infrastructure projects, further exacerbated by the nation's severe financial crisis and currency devaluation. These economic constraints strain the resources earmarked for port development and modernization, posing a significant hurdle to progress (World Bank, 2021; International Monetary Fund, 2021). Moreover, the Beirut port explosion highlighted serious safety and security concerns, underscoring the imperative of ensuring the safe storage of goods and adherence to international safety standards. Environmental impact remains a pressing challenge, with ports contributing to pollution and ecosystem disruption, necessitating stringent enforcement of environmental regulations to balance economic growth with sustainability (International Maritime Organization, 2021; Lebanese Ministry of Environment, 2021).

Wissam Zahabi, President of the Lebanese Petroleum Administration, emphasized the Blue Economy's pivotal role, constituting 80% of Lebanon's economy, and spotlighted the environmental repercussions of electricity plants and turbine discharge into the sea. Ali Hamie, Minister of Public Works & Transport, echoed these concerns, pointing out the sector's lack of structured data and environmental issues, the challenges in digitalizing ports, and the potential for water taxi development, highlighting the necessity of stakeholder collaboration and specialized regulations to navigate these challenges. On the flip side, Lebanon's strategic geographical location on the Mediterranean Sea offers a significant opportunity for its ports to become hubs for regional and international trade. The potential for modernization and digitalization in port operations, coupled with opportunities in tourism and recreational development, presents avenues for diversifying revenue sources and boosting the local economy. Engaging in international partnerships and attracting foreign investment can provide the expertise and funding needed for infrastructure development and modernization projects. Additionally, embracing sustainability initiatives positions Lebanese ports as leaders in eco-friendly maritime operations (United Nations Conference on Trade and Development, 2021; Lebanese Ministry of Tourism, 2021).

The overall assessment highlights the ill-establishment of Lebanon's port sector, signaling the need for comprehensive establishment and improvement measures. To harness these opportunities and overcome the challenges, strategic recommendations include fostering effective cooperation among stakeholders, enhancing law enforcement, facilitating knowledge exchange, enhancing the mobility of seafarers, implementing manpower exchange programs during training, and investing in comprehensive training and development programs for maritime professionals. These concerted efforts can significantly enhance the sector's efficiency and competitiveness, ensuring Lebanon's Port Authorities Sector remains a vital player in the global maritime industry.



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Sector 2

Marine Living Resources/ Sea Food

Performance Assessment

LBE

LEBANON'S BLUE ECONOMY
الاقتصاد الأزرق في لبنان

**NATIONAL
DIALOGUE &
ASSESSMENT
REPORT**

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With its rich maritime heritage and a 210 km-long coastline, Lebanon has a fisheries sector that is integral and key to its national blue economy. This chapter discovers the world of marine living resources and seafood in Lebanon, exploring its significance, challenges, and potential within the broader context of sustainable economic development. The fisheries sector contributes significantly to the nation's economy through revenue generation and employment and holds a special place in the cultural and social fabric of Lebanese coastal communities. Satellite sectors directly linked to the fisheries, including onshore aquaculture, will also be tackled in this chapter. Historically, the twenty-four Lebanese fishermen's harbors have been a cornerstone of coastal life, shaping these regions' economies and cultures. In recent times, the sector has faced numerous challenges, including overfishing, environmental degradation, and evolving market dynamics. This chapter aims to provide a comprehensive overview of the current state of marine living resources in Lebanon, examining the economic, environmental, social, and regulatory aspects of the sector. By analyzing the historical context, current status, and prospects, we seek to offer insights and recommendations that can guide the sustainable development of Lebanon's fisheries, ensuring that they continue to thrive as a vital component of the country's blue economy.

Historical Context and Current Status

The fisheries sector in Lebanon has evolved significantly over the centuries from a subsistence activity to a more structured industry. The Lebanese coastal area, stretching over 210 km, has been a fertile ground for this evolution. However, the sector faces modern challenges such as overfishing, habitat destruction, and changing climatic conditions. Lebanese coastal waters are rich in marine life, with "more than 80 fish species of commercial importance" (Nader, Indary, and Stamatopoulos, 2012). The fisheries are predominantly artisanal or traditional, with most boats being motorized and smaller than 12 m in length. Fishing typically occurs in shallow waters, at an average depth of 50 m, and rarely beyond three nautical miles from the coastline. The number of licensed fishing vessels in 2015 was 2,005, operating from 44 fishing harbors and landing sites along the Lebanese coastline (DFW-MOA personal communication). Most of the fleet maintain simple safety gear, with few vessels equipped with advanced technology like net winches and echo sounders.

Fishing in Lebanon, like in other Mediterranean countries, has a long tradition with various methods of exploitation developing since ancient times. However, the sector is nearly weakened, with about 4,000 fishermen based in ports like Tripoli, Byblos, Jounieh, Beirut, Saida, Sarafand, Tyre, and a few in Naqoura. These fishermen, among the poorest communities in Lebanon, earn a monthly income "rarely exceeding US\$100, which further decreases in winter" (CAMP, 2002). The boats used are fairly equipped but face challenges like over-exploitation of marine resources, monopolization of the fish market, lack of harbor management, and poor hygiene in handling catches. The Lebanese society requires about US\$ 75 million worth of fish annually, but domestic production is only around US\$ 7 million. The 4,500 tons of fish produced locally falls short of the internal consumption needs, leading to the import of over 10,000 tons of fish, primarily from the Gulf countries, Morocco, and Turkey (CAMP, 2002). The main fishing equipment includes beach seines, trammels, nets, long lines, round-haul nets, and shore-based poles. However, some fishing techniques have been banned due to their environmental impacts. The state of the fishery stock in Lebanon is concerning. Lebanese citizens need approximately 25,000 tons of fish per year, but only 4,485 tons are produced annually, despite the extensive coastline (Boulos, 1994). Off-shore fishing of pelagic fish like tuna and bluefish using draglines has become popular in the past decade, especially among sports amateurs with motor speedboats (State of the Environment, MoE, 2001). The per capita seafood consumption in 2011 was 6.03 kg, about one-third of the average for the Mediterranean in 2005 (Pinello & Dimech, 2013).

Local cooperatives of fishermen are partly responsible for the marketing of the fish, with most landing sites having at least one local cooperative. At major landing sites, fish are marketed by auctions. The government supports the infrastructure of the harbors but does not interfere in the auction process. Fish production is marketed through various channels, including port stalls, and licensed and unlicensed shops, directly by fishermen, and street vendors. Smoking and filleting of imported salmon and trout, and freezing of shrimps are practiced, but the only canning plant in Lebanon was decommissioned due to a lack of supply of sardines and tuna (Majdalani, 2005). In Lebanon, there are 34 fishers' cooperatives under the General Cooperatives Union, but they often do not function collectively according to a defined plan. There are also five active fishers' syndicates in the country, whose role is to lobby for the improvement and development of the sector within the government. However, their effectiveness is questionable given the socio-economic status of the fisher communities (CNRS, 2011). In addition to these stakeholders, several others play roles in the fisheries sector.

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Table 4: Stakeholders involved in the fisheries sector

Stakeholders involved in the fisheries sector		
Stakeholders	Effect on the level of	Can affect the sector by
Fishers' syndicates	Lobby capacity	Improvement of lobby capacity
Fishers' cooperatives	Economic/quality of life	Improvement of lobby capacity
Local institutions	Policy approach	Local interests
Ministry of Environment	Environmental protection	Protection policy
Ministry of Agriculture	Sector consolidation	Sector governance
CNRS	Scientific research	Improvement of knowledge and staff professional capacity
Research institutes	Know-how and scientific research	Experiences exchange
Restaurants	Fresh products availability	High income
Mediators	Fresh products availability	High income
Consumers	Products quality and price	Human health
Banking system	Credit lines	Credit volume
International donors	Foreign policy	Bilateral relationship

The fisheries sector in Lebanon faces significant challenges including economic hardships for fishermen, environmental concerns, and a mismatch between domestic production and consumption needs. Addressing these issues is crucial for the sustainable development of this sector.

Economic Contribution

The economic contribution of the fisheries sector in Lebanon encompasses aspects of revenue, GDP contribution, employment, livelihoods, market dynamics, and trade. According to CAMP 2002, fishing in Lebanon is primarily the work of individual fishermen, with catches amounting to 6,000 tons per year. The sector, however, remains a fringe activity due to intensive overfishing, particularly of young fish. The contribution of the fishery sector to the national economy is limited, with a reported US\$30.3 million in 2011 (Pinello & Dimech, 2013). Lebanon's fishing industry is reliant on the exploitation of small pelagic species and is a significant net importer of fish and fishery products. The demand for fish is high, with imports of fresh, chilled, and frozen fish reaching 21,100 tons in 2011 (Lebanese Customs data, 2013).

In terms of GDP, the contribution of fisheries was US\$30.3 million in 2011, with the agricultural GDP at US\$2.63 billion and the overall GDP per head at US\$ 9,904 (Pinello & Dimech, 2013). The fishing industry generated a net profit of US\$6.4 million in 2011, providing an annual salary of about US\$3,000/fisher to approximately 3,229 fishers and a gross income of US\$7,400/fisher-owner. However, these incomes were significantly lower than the national GDP per capita, and the fishers' income is 45% less than the country's minimum wage (Majdalani, 2005; Pinello & Dimech, 2013). Employment in the fisheries sector is substantial but precarious. Data from 2012 indicated that the marine fisheries sector employed 3,200 people (Pinello & Dimech, 2013). The majority of fishers are found in the northern region of Lebanon, with no employment contract or social security cover. The average annual income of fishermen in 1998 was equivalent to US\$800, and they faced difficulties with access to loans and credits

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(PescaMed, 2011). The fishing community is organized into 29 cooperatives and 5 syndicates, but cooperative membership covers only about 43% of those involved in the industry (Majdalani, 2005).

Table 5: Value (Thousand USD) of various imported seafood items (Source: Lebanese Customs <http://www.customs.gov.lb/customs/index.html>)

HS	Description	2013	2014	2015	2016	2017
3.01	Live Fish	293	206	205	185	227
3.02	Fish, fresh or chilled, excluding fish fillets	46,389	49,561	44,064	53,737	57,633
3.03	Fish, frozen, excluding fish fillets and other fish	7,041	7,382	5,373	5,314	5,856
3.04	Fish fillets and other fish, fresh, chilled or frozen	14,462	15,079	14,670	14,155	11,895
3.05	Fish, dried, salted or in brine; smoked fish	267	226	167	159	214
3.06	Crustaceans, live, fresh, chilled, frozen, etc.	12,242	19,786	16,989	16,151	18,098
3.07	Molluscs, live, fresh, chilled, frozen, etc.	2,563	2,663	2,732	3,729	4,524
3.08	Aquatic invertebrates other than crustaceans	188	196	235	180	144
16.04	Prepared or preserved fish; caviar & caviar substitutes	49,106	50,563	44,287	46,397	47,536
16.05	Crustaceans, molluscs & other; prepared or preserved	6,635	8,992	8,408	8,698	8,516
	Total	139,186	154,654	137,130	148,705	154,643

Market dynamics reveal that Lebanon imports 78% of the consumed seafood products, making the country highly dependent on imports. The per capita seafood consumption in 2011 was 6.03 kg, well below the world average (Pinello & Dimech, 2013). Fish utilization in Lebanon is primarily for local consumption, with some private initiatives for filleting and smoking part of local aquaculture rainbow trout production. The shrimp farm in Aabdeh, Akkar, is the only business that freezes its products (DFW, 2013). Regarding exports, Lebanon exported certain amounts of fish in recent years, but the volume follows a downward trend with less than 100 tons exported yearly. The exported products are of limited quantities and include re-exports of non-local origin seafood items (DFW, 2013). The market for trout in Saudi Arabia, Jordan, and the United Arab Emirates has been a notable success, but challenges remain in maintaining these markets.

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Table 6: Lebanese Marine Fish Catch Profile 2014-2015 (Source: DFW-MOA: Catch Data-Flouca.web)

Species			Catch (ton)/year		
Scientific name	English name	Arabic name	2014	2015	2016
Clupeidae	Herrings, Sardines	سردين	326	517	1263
Pagellus acarne	Axillary seabream	ذخر جريدي، نقط	83	304	271
Euthynnus alleteratus	Little tunny	بلميدا	274	344	255
Diplodus sargus	White seabream	صرغوص، فليشات	153	257	239
Liza aurata	Golden grey mullet	بورى دهبان، سيلونى	44	128	169
Boops boops	Bogue	غبص	226	65	157
Siganus rivulatus	Marbled spinefoot	ابو شوكة ابيض، مواسطة	535	232	155
Sardinella aurita	Round sardinella	سردين، رنغا مرقطة، عقيص	15	105	141
Oblada melanura	Saddled seabream	ملورى	113	101	128
Pagellus erythrinus	Common pandora	جريدي	173	151	117
Pagrus caeruleostictus	Blue spotted seabream	مرفور، احمر، فزدي	45	121	95
Seriola dumerili	Greater amberjack	جره التياص، زرزور		96	95
Caranx crysos	Blue runner	تراخول	29	60	85
Siganus luridus	Dusky spinefoot	ابو شوكة اسود، مواسطة، بلشفيك	25	70	78
Scomberomorus commerson	Narrow-barred spanish mackerel	ابو سن، غزال	9	49	67
Sphyaena	Yellowstripe barracuda	مليفه، زعرا	73	74	62
Chrysotaenia	Blue swimming crab	سلطعين	11	53	38
Other Species			712	887	859
Total			2931	3611	4273

Discussions with fishermen in Saida revealed the economic hardships faced by those in the industry. Fishermen reported earning around \$10 per day, but after fuel and labor expenses, their net income dropped to only US\$2. The high cost of fishing nets, which have a short lifespan, coupled with the burden of debt, underscores the precarious financial situation of many fishermen. Proposals for economic improvement include the need for workshops on sustainable fishing practices and boat repairs, as well as exploring the economic potential of touristic fishing, such as establishing supervised restaurants near ports to increase income. The dominance of small-scale or artisanal fishery in Lebanon, where approximately 90% of the boats used are constructed from wood, highlights the traditional nature of the industry. However, challenges such as dynamite fishing, environmental concerns, and increased fishing pressure on coastal areas pose significant threats to sustainability. The reliance on importing 70% of fish stocks further emphasizes the sector's vulnerability. Despite these challenges, opportunities exist in accurate species identification, the introduction of new species, and the potential for economic benefits if properly developed. Meetings with Chady Mhanna, Director of Rural Development & Natural Resources Department, and Myriam Suleiman, Port of Saida Harbor Master, shed light on additional economic aspects and challenges. Partnerships with organizations like FAO for data collection and vessel census are crucial, yet funding constraints hamper research efforts. Local fishing caters to only 20% of the local market demand, with the remainder met through imports. Limited resources hinder projects aimed at supporting fishermen, with high costs of boats and equipment, non-payment of registration fees to the Syndicate, and a lack of resources for essential services like sand removal to keep port entrances clear.

The fisheries sector in Lebanon, despite its challenges, plays a significant role in the economy, providing livelihoods and contributing to GDP. Addressing issues such as overfishing, reliance on imports, and precarious employment conditions is crucial for the sector's future sustainability and growth. Opportunities in aquaculture, export markets, and the development of tourism-related initiatives could help diversify the economy and enhance the sector's contribution to Lebanon's economic resilience.

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Environmental Impact and Sustainability

The environmental impact and sustainability of the fisheries sector in Lebanon are complex issues, deeply intertwined with the health of marine ecosystems, sustainable fishing practices, and the impacts of climate change and pollution. Lebanon's coastal zone is under intense pressure from various activities, including urbanization, fishing, shipping, and marine-based industries. This situation necessitates a stronger focus on coastal zone management and the protection of the marine environment. Industrial activities in coastal areas are significant sources of contamination to the main fishing areas. Despite the introduction of legislation to mitigate this, "the lack of related enforcement capabilities remains an important issue" (Regional Environment Assessment Report on the Coastal Zone of Lebanon, CDR, 1997).

Commercial fishing in Lebanon currently occurs within a 6-mile limit, but there is an expectation that this will extend into deeper waters in the future. Given the "data deficiency and lack of knowledge about this offshore habitat; there is a real danger that unregulated fishing could cause significant ecological damage" (Sacchi & Dimech, 2011). The most pressing environmental issue in the Lebanese seas is the loss of biodiversity. The marine waters receive contaminants from various sources, including river outlets, domestic and industrial wastewater, agricultural runoff, and accidental spills. In 2000, the Council for Development and Reconstruction (CDR) reported approximately 53 wastewater outlets along the coast, significantly impacting coastal waters.

Pollution from untreated sewage, oil spills, industrial and thermal power plants, and open dumps is a major threat. The most common pollution affecting the Lebanese coast results from untreated sewage, oil spills, and the outputs of industrial and thermal power plants. Sewage effluent is the greatest source of organic material discharged into the sea, leading to oxygen depletion in the water, which can result in fish kills and dramatic alterations in the aquatic environment (Regional Environment Assessment Report on the Coastal Zone of Lebanon, 1997). The environmental impacts of industries and thermal power plants are significant. High-risk facilities, such as those involved in tanning, paper manufacturing, and fertilizer production, contribute heavily to pollution. The intake systems of power stations can be particularly damaging, as they can suck in and kill large numbers of organisms, including fish. The alteration of water temperature by these plants also poses a threat to marine life, as "the respiration and heart rate of a fish will increase to obtain oxygen for an increased metabolic rate, but at the same time the oxygen concentration of water is decreased" (Biology of Freshwater Pollution, 1996).

The continued disposal of solid waste in uncontrolled landfills and waterfront dumps exacerbates water, soil, and sea bottom contamination. Without proper containment measures, such as clay or plastic liners, leachate seeps into groundwater and seawater, causing both organic and inorganic contamination (Regional Environment Assessment Report on the Coastal Zone of Lebanon, CDR, 1997). Overexploitation of coastal species due to outdated legislation and lack of enforcement has led to harmful practices, such as the use of small mesh and explosives. This concentration of efforts on a narrow coastal strip has led to a reduction in yield and the recurrence of these practices (Sacchi & Dimech, 2011). The Levantine Sea, part of the eastern Mediterranean, is characterized by low production and oligotrophic conditions. The biodiversity in this region is lower compared to the western and central Mediterranean. The introduction of Indo-Pacific species, known as Lessepsian migrants, has altered the native species composition in the Levantine basin. The FAO 2018 report notes that "the Levantine Sea is a sub-basin located in the south-eastern corner of the Mediterranean covering the area bordered by Crete, south of Turkey, Syria, Lebanon, Palestine, Egypt and part of Libya, including Cyprus" (Carpentieri & Colloca, 2005). This area is characterized by very low production and oligotrophic conditions, with a tropical character in terms of planktonic biota.

Our field visits and Focus Group Discussions (FGDs) with stakeholders, including fishermen from Saida and experts from various sectors, have provided a deeper insight into these challenges and potential solutions. Lebanon's coastal zone faces intense pressure from urbanization, fishing, shipping, and industrial activities, leading to significant environmental degradation. Despite legislative efforts, the enforcement of environmental protections remains weak. The fisheries sector, primarily artisanal, is under threat from overfishing, pollution, and habitat destruction, with biodiversity loss being a particularly pressing issue. The introduction of invasive species and the lack of sustainable fishing practices further exacerbate these challenges. Direct observations from our field visits highlighted several environmental concerns:

- Illegal fishing practices and inadequate waste management are rampant, with fishermen reporting the use of expensive nets that contribute to debt and environmental harm.
- The degradation of marine biodiversity is evident, with species ingesting nets and plastic debris.
- Water pollution from various sources impacts nets and marine life, while climate change contributes to invasive species and reduced fishing stocks.

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- The lack of environmental awareness among fishermen and the absence of a formal waste management system within ports like Saida underscore the need for comprehensive environmental education and infrastructure improvements.

Discussions during the FGDs emphasized the dominance of small-scale fishing and the challenges posed by Lebanon's narrow continental shelf and individualistic approaches to fishing. Proposals for sustainable fishing practices include implementing a fishing moratorium to support fish reproduction, establishing artificial reefs, and no-take zones, and transitioning from illegal to legal fishing nets. However, sustainable initiatives face hurdles due to funding constraints and the lack of a clear methodology for monitoring fisheries.

The environmental impact and sustainability of Lebanon's fisheries sector require urgent attention and action. Sustainable management practices, informed by comprehensive data and an ecosystem-based approach, are essential for the sector's long-term viability and the health of marine ecosystems. Addressing illegal fishing practices, pollution, and the lack of environmental awareness through education, infrastructure improvements, and policy reforms are critical steps toward achieving sustainability in Lebanon's fisheries sector.

Marine Research and Education

Marine Research and Education in Lebanon features a mix of private and public institutions dedicated to various studies, including aquaculture:

- **Anjar Center for Aquaculture Hatchery:** Engages in aquaculture research projects focusing on trout cultivation and technology transfer.
- **National Center for Marine Research (NCRM):** Operates under the National Council for Scientific Research (NCRS) and specializes in marine aquaculture research.
- **American University of Beirut:** Conducts research on marine species like rabbitfish (*Siganus* spp.) and white seabream (*Diplodus sargus*), alongside projects on grouper (*Epinephelus* spp.), the health benefits of fish consumption, and dual water usage technology in semi-arid regions.
- **Lebanese University:** Collaborates with NCRM and Anjar Center, contributing to national research efforts in marine sciences.
- **Balamand University:** Plans to establish a research facility to advance marine aquaculture studies.
- **Oceanographic and Fisheries Institute of Batroun:** A government research entity in North Lebanon focusing on marine studies.

Cooperation among these institutions has historically been limited. However, efforts are underway to foster collaboration and develop a unified aquaculture initiative for Lebanon. The Anjar Center is making strides in sharing new research and technologies with industry practitioners, but there is a pressing need for enhanced information dissemination, training, and technology transfer.

The National Council for Scientific Research (NCRS), established in 1962, is a cornerstone of Lebanon's scientific landscape, responsible for shaping the national science and technology policy and leading scientific research efforts. NCRS oversees the Centre for Marine Sciences and operates the CANA research vessel, a converted fishing boat now dedicated to marine and environmental research, underscoring the commitment to preserving Lebanon's marine

The NCRS Conference that occurred in Saida on February 27, 2024, on the "Impact of Oil Spills and Climate Change" highlighted the importance of sustainable fishing practices and the need for coastal monitoring to address environmental concerns. Key points included the impact of human activities on biodiversity, the importance of identifying commercially valuable fish species for supply chain sustainability, and the promotion of specific nets for sustainable shrimp fishing. The SEALACOM project addresses awareness of fishing practices, oil spill issues, and biodiversity impact, focusing on monitoring physical, chemical, and biological aspects of seawater to inform policymakers. The impact of climate change on the marine sector includes coastal ecosystem degradation, socio-economic implications, health risks, and an increase in invasive species, with monthly seawater monitoring indicating acidification and a warming trend.

Marine Protected Areas

Marine protected areas (MPAs) are globally recognized as effective tools for safeguarding the marine environment, particularly in the Mediterranean, where approximately a hundred have been established in recent decades. These

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MPAs are designated to protect the most valuable marine habitats and species. Faced with the challenge of preserving the sea as a whole, Mediterranean countries have endeavored to protect their most precious marine environments through MPA designations. In Lebanon, the Palm Islands Nature Reserve in the north and the Tyre Coast Nature Reserve in the south are two legally established MPAs. The Ministry of Environment (MoE) and the International Union for Conservation of Nature (IUCN), supported by OAPN, AECID, and MAVA funding, are executing the project “Supporting Management of Important Marine Habitats and Species in Lebanon” (2010-2012). This initiative aims to develop a network of MPAs and a monitoring program to assess their management effectiveness. The project has evaluated the feasibility of establishing three new MPAs (Ras El Chekaa cliff, Batroun site, and the Madfoun site), conducted comprehensive biodiversity assessments, and produced GIS maps for these locations.

The MoE and IUCN, with assistance from RAC/SPA, UNDP, and other partners, are committed to promoting a healthy, productive, and biodiverse marine environment in Lebanon. This involves aligning marine and land-based policies and establishing a well-managed, ecologically coherent network of MPAs. The strategy outlines how marine environmental policies integrate with the government’s broader policy framework, detailing the creation of the MPA network, the utilization of available tools, and the necessity of collaboration to achieve this goal. A network of MPAs offers myriad benefits, including ecological, social, economic, and cultural advantages. The National Marine Protected Areas Strategy underscores the need for cooperative efforts to build a national network of MPAs to counteract the deteriorating marine environment. This strategy prioritizes national actions for establishing new MPAs and effectively managing both existing and new areas, addressing technical, research, regulatory, policy, institutional, financial, educational, capacity-building, communication, and promotional needs.

The strategy’s goal is to create an integrated marine management framework of MPAs that enhances the health of Lebanon’s marine ecosystem. To achieve this, the strategy sets forth objectives to systematize the planning and establishment of MPAs, improve management and monitoring collaboration, raise community awareness and involvement in the MPA network, and connect Lebanese MPAs with Mediterranean networks. Lebanon’s commitment to MPAs is reinforced by various international conventions and agreements, including the Barcelona Convention, the Convention on Biological Diversity (CBD), the United Nations Convention on the Law of the Sea, the Ramsar Convention, the African-Eurasian Migratory Water Birds Agreement (AEWA), the Agreement on Conservation of Cetaceans of the Black Sea, Mediterranean Sea and Contiguous Atlantic area (ACCOBAMS), and the UNESCO Convention on the Protection of Cultural and Natural Heritage.

Lebanon’s environmental legislation, which encompasses laws dating back to the 1920s as well as recent statutes, includes specific provisions for marine and coastal conservation. Notably, the 1928 fisheries law, updated in 1929, and the 2002 Environment Law (Law 444), which introduces the polluter-pays principle and mandates Environmental Impact Assessments (EIAs) and Strategic Environmental Assessments (SEAs). The upcoming Master Plan for coastal wastewater treatment aims to significantly mitigate seawater pollution, benefiting approximately 2.5 million people. Lebanon has established various legal frameworks for conserving marine and coastal habitats and biodiversity, including the establishment of the Tyre Coast and Palm Islands Nature Reserves, regulation of hunting and fishing practices, and environmental impact assessment requirements. These laws and decrees form the foundation for Lebanon’s ongoing efforts to protect and manage its marine environment effectively.

A Focus Group Discussion (FGD) with activists in marine protected areas (MPAs) and stakeholders in the Lebanese Blue Economy context was held at OLA Beirut. It brought to light the multifaceted challenges and initiatives aimed at enhancing environmental sustainability and management practices within Lebanon’s coastal and marine ecosystems. Attendees, including Manal Nader, Wael Hmaydan, and representatives from various organizations, underscored the importance of science-based decision-making, the implementation of Integrated Coastal Zone Management (ICZM) protocols, and the development of sustainable mechanisms for coastal zone development. Key projects highlighted during the discussion, such as those by IoE Balamand, emphasize the goal of establishing ICZM in Northern Lebanon, the creation of artificial reefs to increase biodiversity, and ongoing studies on coastal zone degradation. The discussion also pointed out the need for a clear methodology and legislative framework for managing MPAs and suggested the declaration of laws for estuaries to protect these vital ecosystems.

IndyAct’s contribution to the Blue Economy, focusing on a green economy vision with low-emission strategies and full circularity by 2050, was discussed alongside the importance of addressing plastic pollution and implementing low-emission strategies aligned with national determinants of contributions (NDCs). The session highlighted the need for certification for coastal resorts and restaurants that reduce plastic usage and assessed plastic pollution in coastal areas in collaboration with the World Bank. The discussion also covered the challenges faced by the fisheries sector, including the lack of monitoring techniques for small-scale fishing (SSF), the absence of seasonal regulations impacting fish stock, and the increased migration of species due to climate change. The impact of wind turbines and coastal development on tourism areas in South Lebanon’s sea were also discussed.

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Key recommendations from the FGD include improving monitoring for fishing protection to increase biodiversity, strategic partnerships with academic institutions, addressing the lack of bathymetry plans in Lebanon, and focusing on inventory for yachts and vessels. The importance of public participation, negotiation for effective Blue Economy implementation, and the need for diving laws and regulations in the aquaculture sector were emphasized. This FGD highlighted the critical need for collaborative efforts, regulatory reforms, and institutional support to effectively manage Lebanon's coastal and marine resources sustainably.

Social Impact

The fisheries sector in Lebanon is embedded in the country's cultural and economic fabric and plays a significant role in shaping the social dynamics of coastal communities. This sector supports thousands of fishermen and their families, particularly in coastal regions, but faces economic challenges that have led to a decline in fishermen's income and standards of living. The attractiveness of the sector is low, with workers often earning around or below the national minimum wage despite long hours. Street vendors, known as "Hungare," operate informally, typically with poor seafood handling expertise and facilities.

Fishing communities in Lebanon are characterized by their close-knit structure, with around 32 fishermen cooperatives and 6 fishermen syndicates across various regions. These cooperatives and syndicates provide a platform for collective action but face challenges in effective functioning and coordination. The lack of a national collective labor agreement further complicates the social dynamics within these communities. Fishing in Lebanon is not just an economic activity but a rich cultural heritage. Traditional fishing methods and the use of artisanal crafts reflect a deep connection with the sea and nature. However, the decline in fish stocks and the shift in fishing practices threaten this cultural legacy.

The majority of the fishing workforce comprises men, with limited participation of women in fishing activities. Addressing gender equity in the fisheries sector could open up new opportunities for economic and social empowerment. The environmental challenges facing Lebanon's fisheries, including pollution and habitat destruction, have significant social implications. Initiatives to promote sustainable fishing practices and conservation are crucial for the well-being of coastal communities. To improve the social impact of the fisheries sector, several measures are recommended. Training, particularly in product handling and hygiene, is needed across all scales of the sector. This training can also enhance consumer awareness and acceptance of a wider selection of species. Formalizing the "Hungare" would allow for better product handling and quality control and offer opportunities for skill development and improved work conditions. Additionally, upgrading women's education and providing on-the-job training are necessary to benefit from new opportunities in trade. Understanding women's linkages in the value chain is crucial for their empowerment.

Focus group discussions (FGDs) with fishermen from Saida and other stakeholders have shed light on the unique social fabric of fishing communities in Lebanon. These communities are marked by their tight-knit nature, with approximately 32 fishermen cooperatives and 6 syndicates across various regions providing a collective voice. However, challenges in effective operation and coordination persist, compounded by the absence of a national collective labor agreement, which complicates the social dynamics within these communities. The traditional fishing methods and the utilization of artisanal crafts underscore a profound connection with the sea and nature, reflecting a rich cultural heritage. Yet, the diminishing fish stocks and shifts in fishing practices pose threats to this cultural legacy. The fishing workforce predominantly consists of men, with women's participation in fishing activities being notably limited, highlighting an area for potential gender equity and economic empowerment. Environmental challenges, such as pollution and habitat destruction, carry significant social implications. Initiatives aimed at promoting sustainable fishing practices and conservation are vital for the well-being of coastal communities. To enhance the social impact of the fisheries sector, comprehensive measures are recommended. Training in product handling and hygiene is essential across the sector's spectrum, potentially improving consumer awareness and acceptance of a broader selection of species. Formalizing informal vendors like the "Hungare" could lead to better product handling, quality control, opportunities for skill development, and improved working conditions. Moreover, upgrading women's education and providing on-the-job training are necessary steps to leverage new opportunities in trade and empower women within the sector.

Direct observations and discussions during the FGDs highlighted specific social dynamics within the sector:

- In Saida, exclusivity for residents in fishing areas and boat anchor spaces at the port underscores local community dynamics and the strong connection between fishermen and the citizens of Saida.
- Unethical practices by amateur fishermen, including the use of dynamite and night diving, raise concerns about safety, environment, and sustainability.

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- Conflicts over boat anchor spaces and storage spaces, and the tension between tourist yachts and fishermen due to limited facilities, point to the need for better management and coordination within the port area.
- The impact of fishing on tourism, through paid fishing tours and boat trips for tourists, illustrates the potential for synergies between these sectors, enhancing economic activities and promoting sustainable practices.

Addressing the challenges and capitalizing on opportunities within Lebanon's fisheries sector requires collaborative efforts from the government, local communities, and international organizations. By fostering sustainable practices, promoting social equity, and preserving cultural heritage, the fisheries sector can continue to play a crucial role in Lebanon's social and economic landscape, contributing to the overall well-being and resilience of coastal communities.

Infrastructure and Technological Advancements

The infrastructure and technological advancements of the fisheries sector in Lebanon are characterized by a predominantly small-scale, artisanal fleet, and fishing practices, coupled with limited technological integration and basic supply chain and logistics facilities. According to the first-ever census of fishing vessels conducted by the Department of Fisheries & Wildlife of the Ministry of Agriculture, the Lebanese fishing fleet comprises 2,680 vessels, with 92% operational and 58% holding a valid fishing license.

These vessels are primarily small, with 98% being less than 12m in length, and most (78%) made of wood. Notably, "almost all (98%) were less than 12m in length" and "most (78%) vessels were made of wood" (Majdalani, 2005). The fleet is predominantly motorized, with engines mainly supplied by Japan and the UK. However, technological equipment such as GPS and sonar is limited, with navigation equipment "practically absent from the fleet except for few with GPS" and only "about 20% of vessels were equipped with sonar" (Majdalani, 2005).

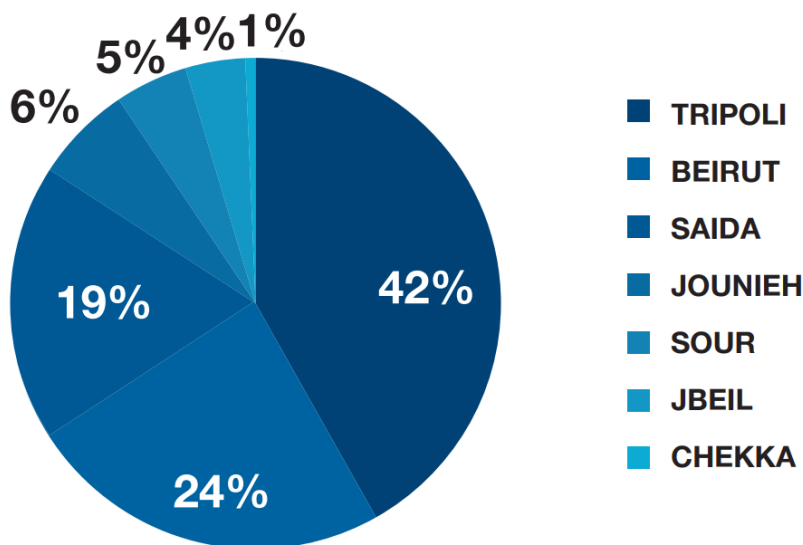


Figure 11: Distribution of fleet per port as % of number of vessels

The fishing techniques employed are mostly based on passive gears like gillnets, trammel nets, longlines, and purse seiners, with operations primarily conducted at depths of up to 50 meters. The gillnets and trammel nets typically have small mesh sizes, and "gillnets represent more than 50% of the fishing gears used in Lebanon" (Majdalani, 2005). The fishing vessels, known locally as Flouka, are multipurpose artisanal crafts, generally undecked and equipped with either inboard or outboard engines. The average length of licensed fishing vessels was 7.2 m in 2015, indicating a fleet built for small-scale and inshore activity. However, these vessels are "not built to face rough seas, fish in offshore waters and are not equipped to keep the catch in good conditions" (Sacchi & Dimech, 2011). The fishing ports and landing sites, totaling 44 along the coastline, are characterized by their small size and the need for rehabilitation, extension, or construction. Most of these ports lack advanced navigation tools, lifting equipment, and refrigeration facilities. Only three ports have a maintenance basin, and waste management at these

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sites is rudimentary, with wastes and waste oils often thrown directly into the sea. Despite this, some ports have facilities for collecting waste for eventual disposal.

Focus group discussions (FGDs) with fishermen from Saida and other stakeholders have highlighted specific infrastructural needs and recommendations for technological innovation. The need for winches, additional boat anchors spaces, and the establishment of facilities such as an ice stock manufacturing plant and boat repair facilities were emphasized. The lack of meteorological units and advanced gadgets on boats points to a significant gap in leveraging technology to improve safety and operational efficiency.

The discussions also revealed a consensus on the need for infrastructure improvements, including the implementation of digital IDs for fishermen, the development of a Fish ID system, the digitization of indigenous knowledge, and the creation of sustainable gear. These recommendations aim to address the limitations in fisheries technology and innovation, suggesting a path towards a more sustainable and technologically advanced fisheries sector.

Moreover, the role of cooperatives and syndicates in providing financial, legal, and technical support to fishermen was discussed, highlighting the importance of strengthening these entities at the local level to better support the sector's development. The Port of Saida Harbor Master's insights into the infrastructural challenges, such as inadequate boat anchors and storage space, limited winch capacity, and the absence of essential safety measures like breakwaters and radar systems, further illustrate the pressing need for comprehensive infrastructure improvements.

The General Fisheries Commission for the Mediterranean (GFCM) in its 2016 report highlighted that the Lebanese fleet is the only "totally" artisanal fleet in the Mediterranean, with an aging profile (average age of 31 years). This aging of the fleet raises concerns for safety and challenges in controlling fishing capacity. In terms of supply chain and logistics, local production is almost entirely consumed locally. The fishing ports, such as those in Tyre and Sour, are crucial for the livelihoods of the fishermen, with fish catches ranging from 3,000-6,000 tons per year. However, the sector faces challenges such as a lack of organization and support from authorities, and the invasion of non-native fish species. The fisheries sector in Lebanon is characterized by a small-scale, artisanal fleet with limited technological integration. The fishing ports require significant infrastructure improvements, and the fleet faces challenges due to its aging nature and lack of advanced equipment. Addressing these issues is crucial for the sustainable development and modernization of the fisheries sector in Lebanon.

Visit to the Fishermen's Port of Saida

During our direct observation visit to the Fishermen's Port of Saida, several key insights were gathered regarding the operational, environmental, and infrastructural aspects of the port and its associated fish market. The fish market faces challenges such as inadequate fridge storage for preserving fish freshness and the presence of illegal markets outside the designated area, alongside waste management issues that necessitate effective solutions. Within the fishermen's port, the discovery of old nets without recycling strategies for plastic waste and traces of oil spills near boats highlighted environmental concerns. Safety measures were observed, although the lack of proximity between the Harbor Master's office and the fishermen's port affects communication and issue resolution. The port also experiences limited and contested access to rooms for storing fishermen's tools and equipment, and touristic yachts were present, indicating a mix of activities within the port area. Hassan Bidawi, a Syndicate representative, manages various aspects of the fish market, ensuring the freshness of fish sold.

The port's infrastructure challenges include the absence of a horizontal crane for boat retrieval, leading to reliance on a vertical crane that often damages boats and incurs additional costs. There's also a notable lack of an ice factory, crucial for keeping fish fresh. Boat construction facilities within the port were identified, highlighting the use of traditional wood types and manual design processes, with Nasser Akkad emerging as a key figure in boat construction. The use of fiber in boat manufacturing suggests a shift towards more durable materials, although waste management and decreased demand for boats due to the economic crisis pose significant challenges. Infrastructure needs, such as a CMC for wood cutting, and regulatory challenges for boat construction permits, were also identified, underscoring the need for comprehensive improvements to support the port's economic and environmental sustainability.

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Regulatory and Policy Framework

The regulatory and policy framework of the fisheries sector in Lebanon includes a range of national and international regulations, policy challenges and opportunities, and compliance and enforcement mechanisms. This framework is shaped by Lebanon's participation in international agreements, national laws, and the involvement of various ministries and institutions. Lebanon has been a signatory to the 1982 UN Convention on the Law of the Sea and the UN Compliance Agreement since 1995 and is an active member of the General Fisheries Commission for the Mediterranean (GFCM) (Majdalani, 2013). Nationally, fishing activity is restricted to within 6 nautical miles from the coast for safety reasons and to regulate commercial fishing activities. However, recreational fishermen are allowed to fish further afield with permission from the Ministry of Transport (MoT), which supplies travel permits. This law, "French in origin and was based on the limited technology of the time of implementation (1930's)" (Majdalani), is considered outdated by some experts.

Despite these regulations, illegal and non-sustainable fishing practices persist. For instance, in the marine zone facing Rasheedeh camp and other areas, illegal fishing, including the use of dynamite, still occurs. The enforcement of existing laws is a challenge, with limited resources and tools available for patrol forces, such as only one Zodiac boat for enforcement activities. The Ministry of Public Works & Transport, Ministry of Agriculture (marine patrol), Lebanese Army (navigation security), and local municipalities like Tyre (law enforcement regarding illegal fishing) are involved in enforcement efforts. The legal framework governing fisheries in Lebanon is comprehensive in defining categories of fishing equipment and species to be caught. The Ministry of Agriculture (MoA) is responsible for the overall management of the fishery resources, including issuing fishing licenses and regulating fishing activities. The Coast Guards, under the Ministry of Public Transport, undertake enforcement on the ground. Several ministries play a role in the fishery sector:

- **Ministry of the Environment:** Established in 1993, it formulates policies and strategies to fight pollution and establish protected areas.
- **Ministry of Agriculture:** Empowered to regulate and supervise agricultural wealth, including fishing. It hosts the department of fisheries.
- **Ministry of Public Transport:** Responsible for protecting maritime public domains and territorial sea, and fighting pollution caused by shipping operations. The boats are registered at the General Directorate of Maritime Transport.
- **Ministry of Labour:** Issued laws stating that individuals under 15 years old are not allowed to practice fishing as a career or profession.

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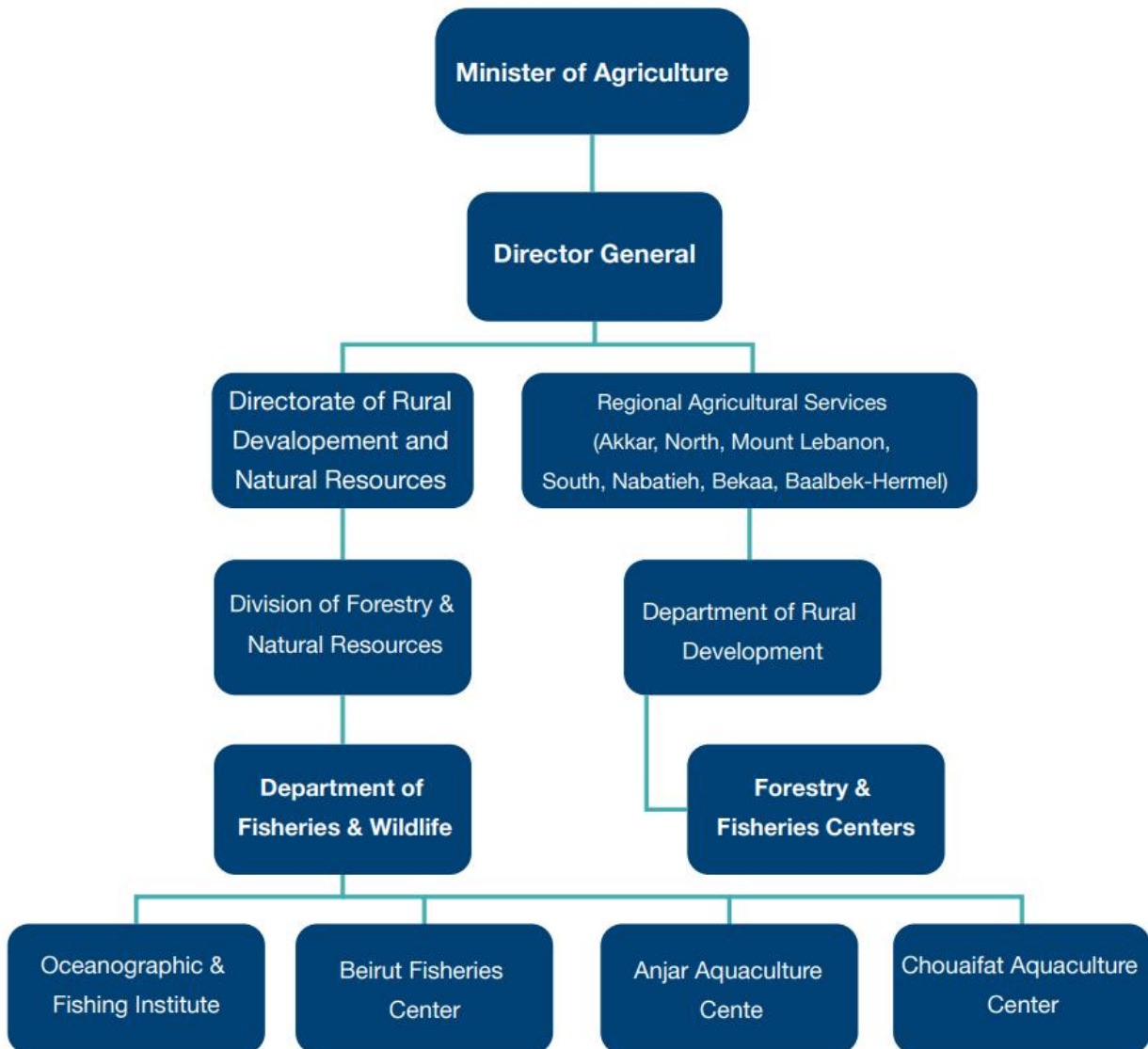


Figure 12: Ministry of Agriculture Governance Structure

The fishery-related laws in Lebanon include Decree 144 (1925), which declares the coast delineated by the highest water point during winter months, and the public maritime domain extending 12 nautical miles from the coastline. The MoA issues various decisions regulating fishing and fishing techniques, including bans on certain gear types and fishing methods, and establishing closed seasons and areas for fishing.

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Table 7: Lists of Lebanese legislation related to fishery and fishing

Legal Instrument	Date	Description
Decision 1104	14/11/21	Identification of the coastal zone. Banning fishing in ports, the use of products that anaesthetise or poison fish or pollute the water, and the use of explosives in fishing and sets sanctions for breaching the fishing law
Decision 372	25/6/1926	Rules and regulations related to fishing techniques of fishermen and fishing boats
Decision 2775	28/9/1929	Monitoring coastal maritime fishing
Decision 70	5/5/37	Organization of marine fishing along the Lebanese coast
Law	19/11/47	Licensing for fishing in rivers
Decree 11882	3/6/48	Organization of riverside fishing
Law	25/5/62	Amendments to the maritime fishing law
Decision 1/93	16/6/1971	Conditions for the use of floaters in fishing, in the recreational use and ports
Decision 1/63	16/3/93	Banning the fishing of sponges along the Lebanese coast for the period of five years
Decision 1/28	16/2/94	Requirements for the breeding and selling of small fish
Decision 1/226	14/12/94	Distribution of fishing nets and equipment to the fishermen co-operative
Decision 1/254	8/12/1995	Organization of scuba diving
Decision 1/385	26/1/97	Banning the fishing along the Rivers and their outlets along the coastal zone
Decision 1/281	19/11/98	Banning the fishing of sponges along the Lebanese coast for an additional period of five years
Decision 1/18	2/2/98	Creation of awareness centres for fishing and hunting
Decision 1/115	23/6/98	Organization of the Marine research centre in Batroun
Decision 12841	7/8/98	Organization of the use and the protection of fishing and recreational ports
Decision 1/279	19/11/98	Banning the fishing of the sea turtles
Decision 1/125	23/9/99	Banning the fishing of specific kinds of marine species
Decision 1/126	27/11/01	Re-permitting the use of specific types of fishing nets on the Lebanese coast

Source: CAMP project, Report on agriculture, environment and fishery, 2002

Focus group discussions (FGDs) and meetings with stakeholders, including fishermen from Saida and experts in the field, have underscored the gaps in enforcement and security, a general lack of awareness among fishermen about fishing laws, lack of enforcement of the Integrated Coastal Zone Management (ICZM) law principles and the absence of a unified entity for legislative support and problem resolution. Proposals have been made for the establishment of fishing police to uphold regulations and address environmental issues, alongside the development

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of regulations for touristic fishing. Challenges identified include legislative and infrastructural barriers to the fishery sector's development, with specific issues arising from the 5-mile restriction on fishing boat distances due to security and policy concerns. Work is underway on new legislation to regulate Fishing Tourism, addressing safety concerns and the lack of obligation for cities or groups of fishermen to form cooperatives under current law. The presence of customs offices, general security, and the Lebanese army at the Port of Saida, alongside the lack of study for constructing a tourist port and the decline in Boat Master training programs, further illustrate the regulatory challenges faced by the sector. The involvement of General Security and the Lebanese army in managing security and illegal activities within the port indicates a complex regulatory environment that requires comprehensive management and oversight.

However, there are challenges in implementing and updating these laws. A new fisheries law has been drafted but is yet to be passed by parliament. The draft law aims to minimize the overlapping mandates of several ministries and centralize management at the MoA. The current law, dating back to 1928, lacks sustainable development principles, and efforts are being made to implement it until the new law is stipulated. The MoA also oversees aquaculture development and issues fishing licenses. It operates facilities like the Oceanography and Fisheries Institute at Batroun and the Anjar & Chouaifat Aquaculture Centres. However, scarcity of financial resources and clear policy management has led to a decline in productivity and standards of living for fishermen and fish workers. The regulatory and policy framework of Lebanon's fisheries sector is extensive but faces challenges in enforcement, modernization, and resource allocation. The involvement of multiple ministries and the need for updated legislation highlight the complexity of managing this sector effectively.

Challenges and Opportunities

The fisheries sector in Lebanon faces a complex landscape of challenges and opportunities, significantly influenced by environmental degradation, regulatory hurdles, market dynamics, and the need for technological and infrastructural advancements. Pollution from high-risk industries and detrimental fishing practices, such as the use of small mesh nets and dynamite, pose major threats to marine biodiversity. The sector grapples with over-exploitation and illegal fishing, exacerbated by a lack of awareness among fishermen about sustainable practices and inefficient coordination among their unions. Regulatory frameworks are outdated, with enforcement capabilities lagging, thus failing to curb harmful practices effectively. Economically, the sector is hampered by limited financial resources, leading to declining productivity and standards of living for those dependent on it.

However, strengthening coastal zone management and updating laws and regulations to reflect contemporary challenges are crucial steps forward. Capacity building and providing support to the fishing industry can help preserve it as a vital economic sector and part of Lebanon's cultural heritage. Improving market dynamics through better hygiene practices, stabilizing local production levels, and developing the aquaculture sector in partnership with organizations like the GFCM and FAO could enhance food security and create employment opportunities.

Looking ahead, the sector has the potential to increase the added value of seafood products, improve supply chain governance, diversify the species targeted by national fisheries, and reduce reliance on imports. Investment in modernizing fishing ports and market administration, coupled with policy and regulatory reforms, including the implementation of the new Fisheries and Aquaculture Law, and enforcement of cooperative roles among fishermen are essential for sustainable fisheries management. Despite the significant challenges, with targeted efforts and strategic investments, Lebanon's fisheries sector can overcome these hurdles and make a more substantial contribution to the country's economy and social fabric, ensuring its growth and sustainability.

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Sector 3

Coastal Tourism/ Tourism & Recreation

Performance Assessment



NATIONAL
DIALOGUE &
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Lebanon's coastal tourism sector is integral to its predominantly service-oriented economy. It contributes significantly to the national income, accounting for approximately 20% of Lebanon's GDP. The country's 210 km coastline is a hub of economic activity and also a blend of historical, cultural, and natural attractions. The Lebanese coast is a center for diverse activities within urban structures, including beach resorts, hotels, restaurants, country clubs, and casinos. A significant portion of the country's tourism assets, including 71% of hotels and 68% of resorts, are located along this stretch. Coastal ecotourism focuses on protected areas like the Palm Islands Nature Reserve (PINR) and the Tyre Coast Nature Reserve (TCNR), along with recreational activities like scuba diving and fishing, which is increasingly popular. However, the tourism sector has yet to fully explore the potential of integrating fisheries ecotourism into its broader plans.

Despite its rich potential, the coastal zone in Lebanon faces challenges due to high demand for land, driven by tourism potential, proximity to the sea, and a booming real estate sector. This demand has led to large-scale sea-filling projects, the construction of marinas, and rampant urbanization, resulting in significant violations of the maritime public domain. Between 1975 and 2001, an estimated 1,269 unlicensed developments covered about 3.2 million square meters of the maritime public domain. In response, government agencies and NGOs are increasingly focusing on environmental protection and sustainable management of the coastal zone. A few coastal areas have preserved their natural beauty and ecological value. In addition to the aforementioned PINR and TCNR, four Ramsar sites, including three coastal sites, have been declared in Lebanon. However, several additional coastal habitats of ecological importance require conservation efforts to protect rare plants and landscapes of biological interest.

Historically, tourism has been a cornerstone of Lebanon's economy. The country's rich historical landmarks and archaeological sites, from Stone Age settlements to Ottoman hammams, reflect thousands of years of world history and attract cultural tourism. Before the Lebanese Civil War, Lebanon was known as the "Switzerland of the Middle East," with Beirut dubbed the "Paris of the Middle East." Despite the challenges posed by the civil war, significant private investment in modernizing and expanding the tourism sector is underway, including in hotels and resorts catering to international travelers. The government is optimistic that with peace and stability, and the necessary infrastructure development, tourism will once again be a major contributor to Lebanon's economy. Lebanon's coastal tourism sector, with its combination of natural beauty, rich historical heritage, and modern development, presents both opportunities and challenges. Balancing tourism growth with environmental sustainability and cultural preservation is crucial for the long-term health of this sector. As Lebanon continues to develop its coastal tourism infrastructure, it is positioned to reclaim its status as a major tourism destination in the Middle East.

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Historical Context and Current Status

Lebanon's coastal tourism industry is significantly influenced by its unique geographical location at the crossroads of three continents. The country's name, "Lubnan," meaning "white," references its snow-capped mountains, a feature symbolized by the white middle stripe of the Lebanese flag. Stretching along a 210-kilometer Mediterranean coastline, Lebanon is a custodian of ancient civilizations' remnants. Cities like Byblos, Tyre, Sidon, and Tripoli are rich in Phoenician history, inviting culturally aware visitors to explore their historical sites. Beirut, known for its vibrant nightlife, modern shopping malls, and cultural events, caters to a wide range of tourists. The city's pre-war epithets, "The Paris of the Middle East" and "The Switzerland of the Middle East," reflect its historical stature as a financial and cultural hub. Entering the 21st century, the coastal tourism sector in Lebanon is undergoing a phase of renewed investment. This includes the modernization of hotels and expansion of ski resorts, enhancing its appeal to a broader tourist demographic. The sector's diversification extends to medical tourism, with Lebanon increasingly becoming a destination for various medical procedures. Along its coast, numerous beach resorts offer both relaxation and leisure activities, showcasing the country's versatility as a tourism destination. The Ministry of Tourism highlights Lebanon's unique charm, stating that one can "ski in the morning and take a relaxing swim in the Mediterranean in the afternoon," thereby underlining the diverse offerings of the country (Lebanese Ministry of Tourism, 2022).

Historically, coastal tourism has been a base of Lebanon's economy and a significant contributor to Beirut's socio-economic development. However, the industry's development has been uneven, with rural areas often overlooked, limiting their growth potential. The industry's early foundations were laid by the French in the early 20th century, marked by the establishment of sea baths at locations like Médawar-Remeileh, now part of the port of Beirut. This initial development catered to both seasonal and permanent tourism, drawing regional and international visitors alike. From the 1950s onwards, significant state investments in infrastructure, such as roads, telecommunications, and an international airport, were complemented by private-sector growth in the advertising market. This convergence propelled Lebanon's tourism to its peak in the 1960s and 1970s, cementing its reputation as a distinguished regional and international destination (Lebanese Historical Tourism Review, 1970s).

Economic Contribution

Lebanon's tourism industry encountered significant challenges following the onset of the Syrian war in 2012 and subsequent travel advisories from Arab Gulf countries. This lengthy period led to a four-year downturn in an industry that had been a primary driver of Lebanon's GDP. However, since 2014, there has been a gradual resurgence in the tourism sector, showing promising signs of recovery, though it still lags behind the peak levels of 2010. "Stakeholders within Lebanon's tourism industry are determined to revitalize the sector," as noted by the Ministry of Tourism Lebanon in 2023.

The Middle East region has been experiencing remarkable tourism growth, with Lebanon emerging as one of the key markets, alongside Qatar and Syria. In 2010, Lebanon observed a significant 17.12% increase in tourist arrivals. However, it's important to note that these statistics included various border crossings, counting entries of Iraqi refugees and Syrian workers as "touristic arrivals." Despite this, the tourism sector has become foundational to Lebanon's economy, contributing 10.2% to the GDP and accounting for 38% of direct and indirect job creation (Ministry of Tourism Lebanon, 2023).

In the wake of disruptions caused by shutdowns, travel restrictions, and social unrest in late 2019, Lebanon's tourism sector has undergone considerable changes. In a striking turnaround, tourism activity surged by 70% year-on-year (YOY) in September 2022. Rafic Hariri International Airport also reported a significant 55.56% YOY increase in passenger numbers during the same period. "By September 2022, incoming visitors reached 1,120,927, marking a 70% annual increase compared to 659,030 in September 2021," according to data from the Central Administration of Statistics Lebanon (2022). This resurgence was also evident in the increased numbers of tourists from key source markets: Europe, Arab countries, and America. European tourists, comprising 39.47% of the total, saw a 54.3% YOY increase to 442,392 visitors. Arab tourists, making up 27% of the total, experienced a 71.96% YOY increase to 302,566 visitors. American tourists accounted for 21.64% of the total, with a 74.04% YOY increase to 242,566 visitors.

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Despite the positive trends in 2022, the tourism sector in Lebanon has yet to fully rebound to pre-pandemic levels, partly due to ongoing political instability. Nonetheless, there is optimism that the upcoming holiday season will further boost the influx of tourists, contributing significantly to Lebanon's economic recovery (Ministry of Tourism Lebanon, 2023).

Focus group discussions (FGDs) on coastal tourism and environmental NGOs within the Lebanese Blue Economy context have shed light on economic costs tied to environmental degradation and the decline of traditional practices like fishing, affecting tourism and recreational activities. The discussions highlighted the lack of sustainable initiatives, enforcement of environmental regulations, and the potential of sea archaeology as a tourist attraction. Concerns were raised about the Anfeh salt extraction industry's impact on local economies and the Mediterranean Sea's underutilized tourism potential due to environmental issues and lack of clear sustainable initiatives.

Economic aspects discussed include the importance of avoiding work duplication, focusing on transport demand management, and addressing private property issues to balance government and landowner interests. Challenges of overtourism in Marine Protected Areas (MPAs) call for demarketing strategies and equitable tourism practices. The potential for birdwatching-related ecotourism was identified as strategic for coastal tourism development, emphasizing the need for sustainable practices and regulatory enforcement to enhance the economic viability of Lebanon's Blue Economy.

In exploring the nexus between tourism development and economic growth, recent studies have employed panel data analysis from 1997 to 2019, utilizing data from the World Bank and the World Travel and Tourism Council. These analyses focus on Lebanon's tourist arrivals and their impact on economic growth. While findings indicate that tourism development positively influences economic growth, further research is delving into the productivity of the tourism sector and its effects on various economic sectors. Such studies are crucial for understanding the dynamics of tourism development and its role in economic growth, particularly in the competitive global tourism market (World Bank, World Travel and Tourism Council).

Environmental Impact

Lebanon's coastal tourism sector has long been a cornerstone of the nation's economy. However, the sector's rapid expansion has not been without environmental repercussions. According to the United Nations Environment Programme/Mediterranean Action Plan/Regional Activity Centre for Specially Protected Areas (UNEP/MAP/RAC-SPA, 2010), these expansions have heightened ecological concerns. The global impact of climate change is particularly pronounced in coastal zones, and Lebanon is no exception. Rising sea levels, increased storm intensity, higher sea surface temperatures, and the proliferation of non-indigenous species are observed worldwide (UNWTO et al., 2008). These climatic alterations present formidable challenges to Lebanon's coastal tourism infrastructure.

Specifically, Sea Level Rise (SLR), primarily resulting from the melting of ice sheets and the warming of marine waters, poses a direct threat to Lebanon's low-lying coastal areas. The coastline, home to archaeological sites, beach resorts, marinas, and public beaches, is at risk. Projections suggest a potential sea-level rise of 12 to 25 cm by 2030 in the Mediterranean Sea (UNWTO et al., 2008), which could lead to the degradation of tourist attractions, coastal erosion, and structural damage to Lebanon's national archaeological heritage unless adequate protective measures are implemented. The coastal tourism sector is also grappling with issues like habitat destruction, pollution, overexploitation of marine resources, and rampant coastal urbanization. These factors disrupt coastal ecosystems, jeopardize marine life, and degrade water quality (Integrated Management Advisory Committee (IMAC), 2007). Furthermore, uncontrolled coastal urbanization is encroaching upon natural landscapes and diminishing public access to beaches (IMAC, 2007).

In response to these challenges, Lebanon has demonstrated a commitment to mitigating the environmental impact of its coastal tourism. The establishment of coastal nature reserves, such as the Tyre Coast Nature Reserve and Palm Islands Nature Reserve, reflects efforts to conserve critical coastal habitats and biodiversity (Abboud-Abi Saab & Nader, 2002). There has been a growing emphasis on sustainable tourism practices, including ecotourism, in recent years (Ministry of Environment, Lebanon (MoE), 2001). Sustainable tourism is pivotal in ensuring local economic development while minimizing negative environmental and community impacts. It also supports the preservation of local culture and ensures profitability and viability for all stakeholders involved (UNWTO et al., 2008). However, the intricate interplay between tourism and climate change necessitates the development of flexible strategies and policies.

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Focus group discussions (FGDs) on coastal tourism and environmental NGOs within the Lebanese Blue Economy context have underscored issues like marine biodiversity loss due to illegal fishing, pollution's impact on marine ecosystems, and challenges in waste management. Sound pollution from dynamites and boat engines, changes in marine species behavior, and the disappearance of sand dunes due to illegal construction were highlighted as pressing concerns. Proposals for marine conservation initiatives and the need for increased awareness and sustainable practices were discussed. Efforts by organizations such as TERRE Liban and ABCL focus on monitoring threats to coastal areas and conducting baseline studies to protect biodiversity. Suggestions for implementing scoring systems to incentivize sustainable practices and designating 30% of the Lebanese coast as no-take zones for fishing were proposed to replenish fish populations and promote biodiversity. Concerns about the use of dynamite near Palm Island and the efforts of SPNL to protect Himas (protected area in Arabic; it is a community-based approach used for the conservation of sites, species, habitats, and people in order to achieve the sustainable use of natural resources) against illegal practices underscore the urgent need for awareness and incentives to foster sustainable coastal tourism.

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Table 8: Coastal sites affected by industrial wastewater discharges (Source: CAMP project, Report on agriculture, environment and fishery, 2002)

Coastal site	Industry pollution
Coastal dunes of Akkar Plain	Polyethylene, polyvinyl chloride and fiber glass factory.
Tripoli Port	Slaughterhouse: No treatment – Solid waste (bones & contents) are sent to Tripoli Landfill – No treatment of liquid waste.
Heri-Chekka beaches	Chekka Cement Factory: non-metallic mineral industry, sea discharge of asbestos and other suspended particulate matter.
Ras Shaqaa cape	Industrial pollution from nearby Industries
Selaata beach	Selaata fertilizers manufacturing industry: chemicals and heavy metals contamination, sea discharges of phosphates and sulphates.
Front rocks of Wata Slim (Tabarja)	Industrial effluents with concentrations of Pb and Hg; Zouk Mosbeh – Zouk Mkyel: various industrial discharges to streams and sea (bleaches, dyes, etc.); Shoueifate, Ain Anoub, and Bchamoun industrial areas: wastewater discharge to the sea via the Ghadir stream.
El Kelb estuary	High levels of Cd and signs of eutrophication of the coastal waters related to high nutrient loads from industrial effluents.
Beirut	Karantina slaughterhouse: Double cycle composting plant which handles all organs including stomach/intestines and bones. Liquid parts are not treated because of the slaughterhouse configuration.
Bourj Hammoud/Dora	Bourj Hammoud Industrial area: slaughterhouse, drainage system discharges liquid waste (including blood) into the public sewer system; Dora industrial complex: tanneries (Cr contamination), petroleum storage...
Damour River estuary	Industrial wastewater from nearby industries..
South Saida beach (GhaziyeH)	GhaziyeH industrial zone: sewage and industrial outfalls discharging directly into the beach (tanneries, soap factories...).
Zahrani estuary	Industrial and slaughterhouses effluent discharges.
Tyre	Slaughterhouse: Waste is sent to open dumps without prior treatment. Blood is filtered on site then discharged into the sewer system.

At this juncture, Lebanon's coastal tourism sector faces a critical challenge: in navigating the adverse effects of climate change while fostering sustainable growth. Lebanon's commitment to mitigating the environmental impact of coastal tourism is evident in the establishment of coastal nature reserves and the emphasis on sustainable tourism practices. However, the sector's future hinges on developing flexible strategies and policies to balance economic development with environmental conservation. Implementing sustainable practices, stringent regulations, and adaptive strategies is crucial for Lebanon's coastal tourism sector to navigate the adverse effects of climate change while fostering sustainable growth.

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Social Impact

Lebanon's coastal tourism sector exerts a considerable influence on society, characterized by both beneficial and detrimental impacts.

Positive Social Impacts: In Lebanon's coastal regions, tourism is a key driver of employment and livelihoods, providing significant opportunities for local communities (Gössling et al., 2002). It encourages cultural exchange, fostering interactions between locals and tourists from diverse backgrounds, which promotes mutual understanding and appreciation (Bianchi et al., 2015). The growth of this sector often leads to enhanced infrastructure, offering benefits not only to tourists but also to residents in terms of improved facilities and services (Hall, 2010). Additionally, tourism stimulates demand for local handicrafts, traditional cuisine, and cultural performances, thereby supporting artisans and preserving cultural heritage (Bianchi et al., 2015).

Negative Social Impacts: However, coastal tourism can also precipitate negative outcomes. The influx of tourists and foreign influences may contribute to the erosion of local traditions and values (Gössling et al., 2002). Economic benefits from tourism are often unevenly distributed, leading to wealth concentration in certain areas or among specific groups, exacerbating social disparities (Mowforth & Munt, 2015). Rapid tourism development may overburden local infrastructure and services, potentially disrupting the quality of life for residents (Hall, 2010). Additionally, the seasonal nature of many coastal tourism jobs can lead to job insecurity and income variability for local workers (Gössling et al., 2002).

In addressing these social impacts, the implementation of sustainable tourism practices is crucial. These practices should prioritize local participation, cultural preservation, and equitable benefit distribution, balancing economic growth with social well-being (UNWTO, 2019). Further complexities arise in the coastal zone. The potential construction of an onshore gas pipeline could necessitate significant resettlement, impacting coastal hotels and beach resorts. Considering that 20% of Lebanon's national income is derived from tourism, with a significant 70% coming from beach and marina holidays, the expansion of the oil and gas industry could place additional pressure on accommodation facilities. Additionally, the coastal zone's air quality is a significant concern, with visible toxicity posing severe health risks.

Focus group discussions (FGDs) on coastal tourism held at OLA Beirut have shed light on social aspects such as the degradation of traditional social norms, accessibility issues to public beaches, and the importance of dialogue between scientists, decision-makers, and stakeholders. Challenges in obtaining permits and the tragedy of the commons in the sector were also discussed. Discrepancies between environmental NGOs and citizens' narratives on sustainability, public awareness of environmental impact, and efforts to promote sustainability on social media highlight the need for collaboration to support sustainable practices. These discussions underscore the complex interplay between economic development, environmental conservation, and social equity in Lebanon's coastal tourism sector.

The socio-economic impact on communities reliant on tourism is also noteworthy. Changes in recreational opportunities in vulnerable ecosystems can profoundly affect the livelihoods of residents, including those working in hotels, restaurants, shops, and other tourism-dependent businesses. Such changes might prompt migration among affected groups. In terms of tourism receipts and the number of eco-tourists in these ecosystems, trends are expected to be stable or slightly increase under certain scenarios, primarily influenced by sector growth and stable political conditions (Bourbonnais et al., 2022). However, alternative scenarios could lead to varying degrees of decrease or stability in tourism receipts, driven by unsustainable growth in ecotourism and the influx of mass tourism (Bourbonnais et al., 2022).

Infrastructure and Investment

Lebanon's coastal tourism sector has experienced significant growth, largely fueled by investments in infrastructure and various tourism-related initiatives. Infrastructure development and investment projects have played an important role in shaping Lebanon's coastal tourism landscape. Infrastructure enhancements have been key to increasing the attractiveness and accessibility of Lebanon's coastal destinations. Major transport routes, such as the Beirut-Tripoli Highway, have seen substantial improvements, facilitating better connectivity between urban centers and coastal areas (World Bank, 2017). The modernization of Rafic Hariri International Airport has been another pivotal factor, easing international access to Lebanon's picturesque coastal regions (Zyadeh, 2014). The coastal zones of Lebanon boast a range of hotels, resorts, and marinas, catering to a spectrum of tourists seeking

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beachfront experiences. Investment in luxury resorts and boutique hotels has diversified accommodation options, enhancing the region's appeal (Zyadeh, 2014). Additionally, the vibrant nightlife of coastal cities like Beirut has spurred investments in entertainment venues, restaurants, and casinos, further enriching the tourist experience (Zyadeh, 2014).

Investing in the digitalization of the sector is also very important. Digitalization is transforming recreational harbors, enhancing their operational efficiencies and service offerings through innovative technology. A prime example of this trend is a Lebanese-based company that operated more than 20 marinas in France. Smart Waters is an advanced marina management system that leverages a comprehensive suite of digital tools to streamline marina operations. This system integrates essential ERP/CRM functionalities, providing marina teams and their clients with robust capabilities for business management, including a state-of-the-art access control system and a real-time operational visualization tool through an optimized water plan. These tools facilitate everything from contract management and boat documentation to CRM and marketing efforts directly from the platform. It ensures that recreational harbors can connect with current technology and equipment, enhancing the overall management system without the clutter of multiple disparate applications.

Both domestic and international investments have been instrumental in the growth of the coastal tourism sector. The Lebanese government has actively encouraged private sector engagement in developing tourism infrastructure, offering incentives like tax breaks and favorable regulatory conditions to attract investment (World Bank, 2017; Zyadeh, 2014). Foreign direct investment (FDI) has played a significant role in funding major tourism projects along the coast. Collaborations between international hotel chains and local developers have led to the establishment of world-class resorts, improving service quality and creating job opportunities for locals (Zyadeh, 2014). However, this growth has not been without its challenges. A considerable number of coastal hotels and resorts built before 2006, along with their private jetties and marinas, operate outside legal parameters (Bourbonnais et al., 2022). Waste management remains a pressing issue, with hazardous waste not officially categorized, posing environmental risks (Bourbonnais et al., 2022). Land use issues are further complicated by the fact that around 95% of marinas are considered illegal (Bourbonnais et al., 2022). The infrastructure strain, including on roads, waste disposal systems, electricity, and water supply, has been exacerbated by the aftermath of the 2006 war (Bourbonnais et al., 2022). Plans to repurpose the obsolete train track for pipeline construction raise additional concerns due to conflicts with urban planning, encroachments, and coastal erosion risks (Bourbonnais et al., 2022). Moreover, the under-resourced search and rescue unit tasked with oil spill clean-up may be ill-equipped to handle future spill scenarios (Bourbonnais et al., 2022).

Focus group discussions (FGDs) on coastal tourism have highlighted concerns about the coastline and beach privatization, the impact of breakwater structures on coastal erosion and biodiversity, and infrastructure problems related to waste treatment and recreational facilities. Limited access to parking for boats and yachts, bureaucratic hurdles, and insufficient infrastructure for water sports are among the issues discussed. Initiatives like the coastal forum for Marine Protected Areas (MPAs) and proposed regular discussions through NGO networks aim to facilitate continuous dialogue among stakeholders and monitor progress, underscoring the importance of an economic plan for all regions of Lebanon. This complexity between infrastructure development, investment, and environmental considerations underscores the need for sustainable growth strategies in Lebanon's coastal tourism sector. Balancing economic development with environmental conservation and equitable access to coastal resources is crucial for the sector's long-term viability and its contribution to Lebanon's economy.

Regulatory and Policy Framework

Lebanon's coastal tourism sector has seen significant evolution influenced by a complex regulatory and policy framework. This evolution reflects a shift towards structured governance, initially focusing on tourism promotion with less emphasis on sustainability or environmental concerns. The National Council for Tourism in Lebanon (CNTL) has been instrumental in this development. Established to market and promote Lebanon domestically and internationally, the CNTL unveiled a comprehensive Tourism Strategy plan in 2022. This plan aims to diversify tourism products, focusing on niche tourism sectors like adventure, eco-tourism, agri-tourism, wine tourism, religious tourism, medical tourism, and snow and ski tourism. The strategy also targets specific markets, including the Lebanese diaspora and visitors from nearby regions, offering long weekend packages. Crucially, the CNTL supports local communities in engaging in sustainable tourism, encouraging networking between travel agents, eco-tour operators, and the lodging sector to create integrated tourism packages. It also plays a role in implementing responsible tourism standards and marketing tourism products that meet these standards, while monitoring Destination Management Organizations (DMOs) in Lebanon, which develop products, implement sustainable tourism standards, and work on branding and marketing of regions (CNTL, 2022).

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Lebanese beaches, with their unique socio-cultural, ecological, economic, and recreational values, face challenges. The Order 144/s of 1925 states that the public domain, including the seashore, is inalienable and non-privatizable. However, subsequent decrees have allowed real-estate developers to build on coastal lands, gradually eroding public access and disconnecting Beirut from its seaside. This has led to a decline in Beirut's attractiveness as a seaside destination and stirred public outrage among various stakeholders, including civil society activists, environmentalists, and academicians (Lebanese Government, Order 144/s, 1925). Currently, Lebanon lacks a coherent and integrated regulatory framework for coastal management. Many regulations, based on the French legal system of the 1920s to 1950s, are outdated and contradict international conventions that Lebanon is a signatory to. The complex political and confessional government structure leads to lengthy law drafting processes, often resulting in outdated laws by the time of their acceptance (Lebanese Legal System Overview, 2022).

Focus group discussions (FGDs) on coastal tourism and environmental NGOs within the Lebanese Blue Economy context have underscored the need for stronger governmental regulations, better enforcement of environmental laws, and challenges in bureaucratic implementation. Concerns about the privatization of coastal areas, regulatory gaps in controlling illegal constructions, and the urgent need for a legal framework like ICZM to manage coastal cities effectively were discussed. Projects focusing on monitoring illegal environmental impacts and the importance of legal reviews concerning protected marine areas were highlighted.

The Mediterranean Integrated Coastal Zone Management (ICZM) Protocol, adopted in 2008, is crucial for Lebanon, especially given its high coastal urbanization rate since the 1970s. Although the Lebanese government has made efforts to restrain coastal urbanization, the situation remains largely unchanged. A draft national ICZM Strategy and ICZM law were developed but not officially adopted by the government. Lebanon ratified the ICZM Protocol on 31 August 2017, which is key to reinforcing the law's implementation to protect Lebanon's environment and coastal resources (Mediterranean Action Plan, UNEP, 2017). The draft law on ICZM, formulated in 2015, aims to address major issues like the occupation of the Maritime Public Domain (MPD) and limited public access to it. The law proposes creating a National Council for ICZM, an independent council headed by the Prime Minister and composed of relevant ministries, NGOs, private sector representatives, and the scientific community. This council's responsibilities would include developing an ICZM strategy and master plan for all coastal areas and coordinating among various authorities and stakeholders (Draft Law on ICZM, 2015). The regulatory and policy framework of Lebanon's coastal tourism sector is complex and evolving. The future outlook focuses on more integrated, sustainable, and effective policies that balance tourism development with environmental conservation and community welfare. Continued efforts are essential for the sustainable growth of this vital sector.

Encroachments on the Maritime Public Domain

In Lebanon, the maritime public domain, defined as unparcelled land along the seashore—including rocks, sand, and areas reached by winter waves—is safeguarded by the inalienable rights declared in order 144/s of 1925. Despite these protections, Beirut's shoreline has experienced a gradual erosion due to legislation that favors private development, undermining public accessibility. This issue is compounded by the historical importance of Lebanon's coastal areas, where laws originally intended to preserve public access have been weakened by regulatory changes and real estate interests, exemplified by developments like the controversial Eden Bay resort. Encroachments often manifest through unauthorized construction and the privatization of beachfront areas, facilitated by a centralized government structure and a "boosterism" approach in tourism development that prioritizes economic gains over sustainable planning, often with government complicity through corruption. These encroachments not only restrict public access but also cause ecological damage and transform the coastline into an exclusive space, alienating low and middle-income residents and tourists seeking affordable recreational opportunities. The management of coastal areas suffers from governance issues, including a lack of transparency and public engagement, as seen in Beirut where urban planning decisions are made without public consultation.

Due to a lack of political will, poor law enforcement, and incoherent development strategies driven by private economic interests, there has been a gradual and illegal privatization of this vital public space. Encroachments on the MPD are defined as any non-temporary private occupation that violates several legal provisions: Decision 144/S of 1925, Environmental Law 444/2002, and the Madrid Protocol of 2017. These violations include restricting free access to the beach, obstructing shoreline continuity, and altering the natural state of the coastline. The status of the Lebanese coastline is alarming, with 50% covered by concrete or wave breakers, 20% consisting of rocky beaches, and only 20% remaining as sandy beaches. Accessibility to the coastline shows that 34% is restricted by private establishments, and only 42% remains freely accessible to the public.

Ownership patterns adjacent to the MPD further complicate the issue. While 73% of the lots are privately owned, 17% have no available information, leading to ambiguous enforcement and regulation. Encroachments often occur

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through decrees issued by the government, which specify allowable occupation areas and durations. However, 87% of these decrees benefit private entities, primarily for resorts, oil and gas installations, and industrial facilities. Despite these regulations, violations are rampant, with encroached areas reaching at least 1.4 million square meters by unregularized occupations, predominantly by private touristic establishments. Furthermore, the environmental degradation extends to the backfilling of the sea with trash, significantly affecting coastal ecosystems. The total area of encroachments on the Lebanese coastline has reached a staggering 6.1 million square meters. This widespread privatization not only limits public access but also damages the ecological, economic, and recreational values that the coastlines offer to all sectors of Lebanese society.

Civil society groups like NAHNOO have been crucial in advocating for public involvement in planning processes, aiming to bridge the gap between city authorities and the public. The case study of Byblos reveals that historical and cultural sites are increasingly surrounded by private developments, limiting access, and underscoring the need for a coherent strategy to manage coastal tourism that respects heritage and public access. Addressing these challenges requires a multifaceted approach. Recommendations include strengthening legal protections for the MPD, decentralizing tourism planning to empower local municipalities, and promoting governance principles that prioritize sustainability and the public good over private profit. Future master plans must preserve accessible beaches, ensure public walkways through privatized properties, and consider the ecological and cultural sensitivities of the shoreline, ensuring that Lebanon's coastlines remain vibrant and accessible, thereby supporting their ecological integrity and the socio-economic benefits they provide to society.

Challenges and Opportunities

Lebanon's coastal tourism sector navigates through a landscape filled with both challenges and opportunities. This sector significantly contributes to Lebanon's income and faces environmental and infrastructural pressures, notably from the potential expansion of the onshore oil and gas industry. Such developments pose risks to coastal hotels and beach resorts, threatening the environmental integrity of these tourist destinations. The COVID-19 pandemic further exacerbated the sector's vulnerabilities, halting global travel and causing substantial financial losses. Additionally, the surge in domestic rural tourism, while economically beneficial, has strained natural and cultural resources, leading to environmental degradation and cultural dilution.

Conversely, the pandemic has also unveiled opportunities for rural tourism development, offering socially distant and health-conscious travel options in Lebanon's less crowded rural destinations. The shift towards promoting domestic tourism, encouraged by pandemic-induced travel restrictions, presents a pathway for the sector's recovery and broader economic revitalization. Moreover, the challenge of managing visitor influx in rural areas highlights the opportunity for sustainable tourism practices, advocating for balanced development that preserves natural and cultural assets while fostering economic growth.

In conclusion, Lebanon's coastal tourism sector is confronted with the dual realities of significant challenges and promising opportunities. Addressing environmental concerns, mitigating the impacts of the COVID-19 pandemic, and responsibly managing natural and cultural resources are imperative. Simultaneously, capitalizing on the potential for rural tourism development, domestic tourism promotion, and sustainable destination management is crucial for ensuring the sector's resilience and its continued contribution to Lebanon's economic landscape.



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Crosscutting Sectors

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The Blue Economy in Lebanon includes three main established sectors: ports and trade, fisheries, and coastal tourism. It is a multifaceted and dynamic component of the national economy. Integral to its success are the satellite sectors and cross-ministerial entities that provide essential support and governance. These sectors and entities not only facilitate the primary activities but also contribute significantly to economic development, environmental sustainability, and social well-being. This chapter delves into the complexities and interdependencies of these satellite sectors, highlighting their role in enhancing the resilience and sustainability of Lebanon's Blue Economy. Additionally, it explores the pivotal functions of cross-ministerial entities such as the Lebanon Petroleum Administration (LPA) and the Disaster Risk Management (DRM) unit, showcasing their contributions to integrated governance and strategic collaboration across the Blue Economy sectors.

Satellite sectors, encompassing a wide array of industries linked to the value chains of ports and trade, fisheries, and coastal tourism, are crucial for the functionality, sustainability, and growth of these primary sectors. From infrastructure development and environmental conservation to cultural preservation and gastronomy, satellite sectors add depth and value, addressing broader economic, environmental, and social objectives. Their significance lies in their ability to support and enhance the core activities, while also tackling global challenges such as climate change and biodiversity loss. Cross-ministerial entities like the LPA and DRM unit show the importance of integrated governance and strategic collaboration. These entities play critical roles in managing Lebanon's emerging oil and gas sector, mitigating disaster risks, and ensuring the sustainable development of maritime and coastal resources. Their efforts highlight the necessity of cross-sectoral coordination to enhance the sustainable development of the Blue Economy, addressing both economic opportunities and environmental challenges.

This chapter aims to provide a comprehensive overview of Lebanon's satellite sectors and cross-ministerial entities, emphasizing their interconnectedness and the need for a collaborative approach to achieve a resilient and sustainable Blue Economy. Through formal and scientific exploration, it underscores the critical role of these sectors and entities in fostering economic growth, environmental conservation, and social equity, paving the way for comprehensive national development.

Synergizing Lebanon's Main Blue Economy Sectors

The imperative for a collaborative framework among Lebanon's primary Blue Economy sectors—ports and trade, fisheries, and coastal tourism—gains prominence when considering the pivotal role of their satellite sectors. This collaboration is crucial for adopting a comprehensive approach to economic development, environmental sustainability, and social well-being. The interconnectedness of these sectors, through their satellite industries, offers Lebanon a unique opportunity to leverage synergies, confront shared challenges, and exploit mutual benefits. Such cooperative efforts can lead to more efficient resource utilization, improved competitiveness, and innovative solutions to complex issues.

For example, sustainable practices in fisheries can provide the coastal tourism sector with fresh, local seafood, enhancing the gastronomic appeal of tourist destinations while supporting local fishermen. Similarly, advancements in port infrastructure and logistics can bolster both the fisheries and tourism sectors, contributing to economic growth and stability. Moreover, collaboration is vital for addressing environmental concerns that affect all sectors. Joint initiatives can lead to more effective coastal zone management, conservation of marine biodiversity, and mitigation of climate change impacts. By working together, these sectors can advocate for policies and regulations that support sustainable development goals, ensuring the long-term viability of Lebanon's natural and cultural assets.

Meetings with key ministers and Focus Group Discussions (FGDs) have underscored the necessity of cross-sectoral collaboration. Dr. Nasser Yassine, Minister of Environment, emphasized the importance of engaging other ministries for comprehensive collaboration, highlighting priority areas such as biodiversity, urban environmental protection, and marine protected areas. Dr. Ali Hamie, Minister of Public Works & Transport, pointed out the challenges and concerns within the sector, including the need for structured data and environmental considerations, and proposed next steps for enhancing collaboration, such as site visits to key maritime locations and meetings with various port authorities. The General Director of the Ministry of Agriculture discussed the significance of contacts and collaboration within the agricultural sector, which directly impacts fisheries, underscoring the interconnectedness of these sectors. Furthermore, the FGD on port activities highlighted the necessity of resource sharing and the involvement of the Lebanese Army in search and rescue operations, illustrating the depth of cross-agency cooperation required for a successful Blue Economy.

Fostering collaboration among the ports and trade, fisheries, and coastal tourism sectors, along with their satellite sectors, is essential for creating a resilient and sustainable economic framework in Lebanon. Such cooperation can

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unlock new growth pathways, enhance Lebanon's attractiveness as a destination, and ensure the preservation of its environmental heritage for future generations. This collaborative approach underscores the need for a strategic vision that integrates economic, environmental, and social objectives, leveraging the strengths of each sector to achieve comprehensive national development.

Cross-Ministerial Entities and the Blue Economy in Lebanon

The Lebanon Petroleum Administration (LPA), established as an autonomous entity, plays a crucial role in overseeing and managing the burgeoning oil and gas sector within Lebanon's maritime zones. Under the leadership of Wissam Zahabi, it has been at the forefront of steering Lebanon's nascent oil and gas sector towards a sustainable trajectory. Emphasizing the broader energy context within the Blue Economy framework, the LPA has advocated for an integrated energy policy that encompasses electricity, renewables, and both upstream and downstream activities. This holistic approach is crucial for ensuring that the exploration and extraction of hydrocarbon resources are conducted responsibly, with a keen eye on environmental impacts and the overarching goal of energy diversification. The LPA's initiatives, such as the Petroleum Activities Regulation (PAR) and the establishment of a national oil spill contingency plan, reflect a commitment to safeguarding Lebanon's marine ecosystems while pursuing economic development.

The Disaster Risk Management (DRM) unit, under the umbrella of the Prime Minister's office, represents a comprehensive approach to managing and mitigating risks associated with natural and man-made disasters, including those affecting the maritime and coastal domains. The DRM unit's responsibilities encompass preparedness, response, and recovery strategies for a range of scenarios, from oil spills and maritime accidents to climate-induced events such as storms and sea-level rise. By fostering collaboration among ministries, local authorities, and international partners, the DRM unit underscores the importance of a unified response mechanism to safeguard both human and ecological well-being in the face of potential disasters. Collaborations with the European Maritime Safety Agency (EMSA) and the European Union to launch a Joint Rescue Coordination Center (JRCC) underscore the DRM unit's proactive stance on enhancing maritime safety and environmental protection. The unit's efforts in oil spill response, water sector assessments, and the establishment of a national search and rescue plan for the sea are a testament to its integral role in fostering resilience and sustainability within the Blue Economy.

The collaboration and engagement of the LPA and DRM unit with other stakeholders such as the Ministry of Public Works, civil defense, and the Lebanese Army's Hydrographic unit, illustrates the imperative of cross-sectoral coordination. This synergy is essential for addressing the complex challenges that face Lebanon's Blue Economy, from environmental degradation and climate change impacts to safety and security concerns. By working together, these entities can enhance mutual benefits, drive the success of Blue Economy initiatives, and ensure a balanced approach to economic development, environmental conservation, and social well-being. As Lebanon navigates the opportunities and challenges of its Blue Economy, the roles of the LPA and DRM unit serve as case studies in effective cross-ministerial collaboration. Their efforts highlight the importance of integrated governance structures that can adapt to the dynamic interplay between economic growth, environmental sustainability, and community resilience. Through continued cooperation and strategic planning, Lebanon can harness the full potential of its Blue Economy, securing a prosperous and sustainable future for its coastal and maritime sectors.

Satellite Sectors

In the context of Lebanon's economic landscape, the concept of satellite sectors is important in understanding the interconnectedness nature of the primary sectors: ports and trade, fisheries, and coastal tourism. Satellite sectors refer to the array of industries and activities that are linked to the value chains of these main sectors, contributing to their functionality, sustainability, and growth. These sectors encompass a wide range of activities, from infrastructure development and environmental conservation to cultural preservation and gastronomy, each adding value and depth to the primary sectors. The significance of satellite sectors lies in their ability to support and enhance the core activities of ports and trade, fisheries, and coastal tourism, while also addressing broader economic, environmental, and social objectives. For instance, in the realm of coastal tourism, satellite sectors such as coastal engineering and environmental conservation are crucial for maintaining the ecological balance and attractiveness of tourist destinations. Similarly, in the fisheries sector, activities like aquaculture, processing, and market dynamics play essential roles in ensuring the sector's sustainability and its contribution to the national economy.

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This chapter aims to provide a comprehensive overview of the satellite sectors associated with Lebanon's ports and trade, fisheries, and coastal tourism. By examining the contributions and challenges of these sectors, the discussion seeks to highlight their importance in the broader economic context and their potential for driving sustainable development and innovation within Lebanon's primary sectors. Through a formal and scientific exploration of these interconnected industries, the chapter will underscore the critical role of satellite sectors in enhancing the resilience and competitiveness of Lebanon's economic landscape.

Fisheries Sector

Lebanon's fisheries sector forms an integral part of the country's economy and culture. This chapter describes the nuances of the satellite sectors that revolve around this industry. These sectors, ranging from aquaculture to logistics and processing, are not just support systems but are also crucial in their own right, shaping the landscape of Lebanon's fisheries sector. They also include aquaculture, fish mongering, and various import/export activities, alongside boat and net repair services. The processing sector in Lebanon primarily focuses on handling imported chilled and frozen Atlantic and Pacific Salmon, engaging in activities like filleting, smoking, and slicing. Despite their adherence to international safety and hygiene standards—a fact that has facilitated their penetration into neighboring markets—these processors face significant challenges. Among these is the attempt to establish a smoking industry for locally produced steelhead trout, hindered largely by local skepticism about the quality and safety of aquaculture trout.

Lebanon's aquaculture and aquaponic industry, though nascent, shows promise. Aquaculture expert Joe Moubarak mentioned several obstacles to the development of this sector in Lebanon such as weather, investment, and mainly policies. He noted that the investors in aquaculture are not protected by any laws because of the absence of policies and regulatory authorities. The single onshore marine shrimp farm in Aabdeh, Akkar, is a case in point. Spanning 8 ha and comprising four 1-ha ponds equipped with paddle wheel aerators, this farm, as reported in the National Aquaculture Sector Overview (NASO, 2017), produces an estimated 20-25 tons of shrimp annually. However, the broader culture of species like catfish and tilapia remains experimental. The reports by Roberto Ugolini in 2011, Laurent Gennari in 2012, and Fabrizio Piccolotti in 2013, commissioned by the FAO and CNRS-Lebanon, underscore Lebanon's potential for aquaculture through submersible cages, despite the absence of protected bays and the need for a robust legal framework and dedicated research facilities ("Sustainable Aquaculture Development and Support to the Fishery Sector", CNRS-Lebanon, 2011; "Aquaculture in Lebanon", FAO, Rome, 2012; "Cage Culture", FAO, Rome, 2013).

Trout farming holds a significant place in Lebanese onshore freshwater aquaculture, with roots stretching back to the 1930s. It accounts for the lion's share of Lebanon's aquaculture production and is a sector deeply intertwined with local communities, tourism, and restaurant industries. The development of the Anjar Center for Aquaculture in the early 1960s, the first of its kind in the region, marked a turning point in trout production in Lebanon. Today, Lebanon boasts over 200 trout farms, primarily located in the Bekaa area, collectively producing around 1,200 tonnes annually. This production, however, is not without its challenges, such as a lack of support infrastructure like feed mills.

The market dynamics within Lebanon's fisheries sector are equally complex. Many auctioneers double as wholesalers, and numerous wholesalers engage in retail selling. The industry comprises diverse business scales, from large-scale groups including distributors and importers to medium and small-scale enterprises like seafood businesses and fishmongers. The aquaculture sector's integration with restaurants, especially in the Bekaa Valley, has created a unique niche where trout is often served fresh, directly from farm to table. This synergy between aquaculture and tourism is further evidenced by recent investments in the region aimed at bolstering tourist activities.

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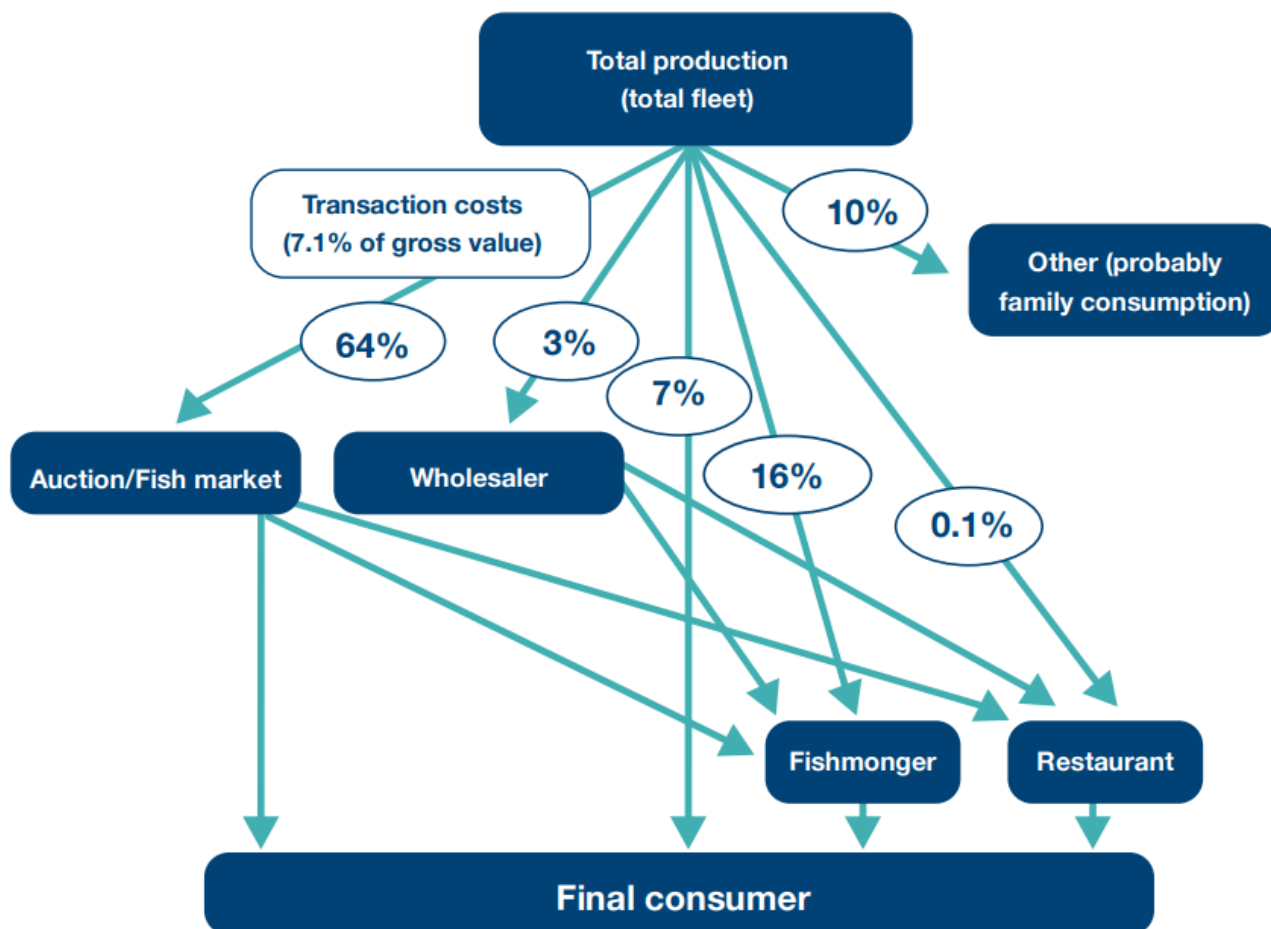


Figure 14: Fish stock consumption

Despite these advancements, the market in Lebanon is not selective for freshwater fish and fishery products, often overlooking the importance of grading and packaging. Trout, usually sold chilled, whole, or gutted, faces a market challenge due to the local perception that freshwater fish is of lower quality compared to marine fish. This perception has implications for prices and demand, necessitating strategic marketing and awareness efforts to shift consumer attitudes.

The legal framework governing fisheries and aquaculture in Lebanon is a complex web of regulations that seeks to balance economic interests with environmental conservation. Key concerns include maintaining water quality and preserving biodiversity, especially in aquaculture practices. The environmental impact of these practices is a crucial consideration, requiring constant monitoring and adaptive management strategies to ensure sustainable development.

In conclusion, Lebanon's fisheries sector contributes to less than a third of local fish consumption and thus presents a landscape rife with opportunities and challenges. The satellite sectors surrounding Lebanon's fisheries industry are auxiliary components that are integral to the sector's overall health and growth. These sectors collectively shape the fisheries landscape in Lebanon. As the country looks to the future, there lies a significant potential for growth and development in these sectors, provided that sustainability and innovation are at the forefront of strategic planning. The future success of this industry hinges on overcoming existing hurdles, broadening market acceptance, and implementing sustainable practices and innovations. With a concerted effort towards these goals, Lebanon's fisheries sector can achieve growth and resilience, securing its place as a key component of the national economy.

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Port Activities

Lebanon's port activities sector encompasses a wide array of satellite sectors that extend beyond the handling and transportation of goods and commodities. This network includes passenger transportation, various specialized ports and terminals, and critical support services, all of which play a vital role in the smooth operation and security of the nation's maritime activities.

The Lebanese Armed Forces, particularly the Navy, are central to this network. With a fleet that includes 46 navy ships and small barges, and a staff of around 1,200 navy officers, the Navy is instrumental in safeguarding Lebanon's maritime boundaries. Its responsibilities extend beyond defense to encompass the coordination of national hydrographic efforts, crucial for maritime navigation and safety. The National Hydrographic Service, established under the Lebanese Navy on February 1, 2014, though not fully activated, signifies Lebanon's commitment to improving its hydrographic capabilities, as recommended by the International Hydrographic Organization (IHO).

Lebanon's ports are diverse, ranging from commercial and industrial ports like Selaata, Zouk, Jieh, and Ghazieh, to petroleum and gas terminals along the coast, to military ports in Beirut and Jounieh. The Lebanese Navy also assists with managing the traffic of commercial ships, playing a critical role in the organization of maritime activities.

The country boasts several free zones, with the Logistics Free Zone at the Port of Beirut being a prime example. Established in 1995, it offers significant incentives like 100% foreign ownership and customs exemptions. The port's extensive facilities, including a container terminal with a capacity of 700,000 TEU a year, demonstrate its important role in Lebanon's maritime trade. The Tripoli port includes a free zone that caters to import, export, and re-export activities, underscoring the strategic importance of Lebanon's northern region in maritime commerce. Customs operations are integral to the functioning of these ports, ensuring adherence to both national and international trade regulations. The Lebanese Oil Installations at Beddaoui and Zahrani, along with power plants at Jiyeh and Zouk, highlight the interconnection between Lebanon's energy sector and its maritime activities.

The shipbuilding industry, including traditional boat builders in Saida (Akkad family), Tyre (Barbour family), Tripoli (Badaoui family), and yacht builders like LencoMarine (Chamoun family), underscores the diversity within the sector. The planning of the Jounieh Floating Island Resort adds a fairly recreational and tourism dimension to Lebanon's maritime landscape. Ship repair services, essential for vessel maintenance, and oil and gas companies, such as TotalEnergies, Eni, Medco, Coral, Natgaz, and Unigaz, reflect the sector's wide-ranging economic impact. Maritime transport companies including CMA CGM, Maersk, Mediterranean Shipping Company, Fast Bollere, and Sealine, are integral to the logistics chain, ensuring the efficient movement of goods.

Lebanon, despite not being an oil-producing country, relies heavily on imported oil to meet its energy needs. The country consumes approximately 101,000 barrels/day of oil, all of which is imported. This reliance on imported oil underscores the strategic importance of the sector within Lebanon's maritime activities. Recent seismic surveys have indicated the potential for oil production in Lebanese waters, pointing towards a future where Lebanon could transition from an oil-importing to an oil-producing nation. Historically, Lebanon's geographic location made it a center for refining crude oil exported from Iraq and Saudi Arabia via pipelines to Lebanese coastal refineries at Zahrani in the south and Tripoli in the north. However, the civil war led to the closure of these refineries, significantly impacting the country's oil infrastructure. Currently, the government of Lebanon imports two types of fuel: diesel and fuel oil. These are brought in through two government-owned terminals, previously used as refineries: Sidon (Zahrani area) in the south and Tripoli (Beddawi area) in the north. This governmental involvement in the import of essential fuels underlines the sector's importance to national energy security.

In contrast, other petroleum products like gasoline, diesel, LPG, and bitumen are imported by the private sector. The Association of Petroleum Importing Companies in Lebanon (APIC) represents these importers, with major players including IPT, Total, Liquegas, and Medco. The market is predominantly controlled by Total, Medco, and Hypco, collectively holding a market share of over 50 percent. The remaining market is fairly distributed among the other importers. Petroleum products are imported through private terminals scattered along the Lebanese coast. With 19 private fuel and gas import terminals boasting a total holding capacity of approximately 440,500 liters, the majority of this storage capacity is located along the coast of Mount Lebanon, indicating the region's significance in the national fuel storage infrastructure.

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Figure 15: Distribution of petroleum terminals across Lebanon

The oil and gas sector's future in Lebanon is closely tied to the development of new laws and regulations governing petroleum activities. Concerns exist about how new laws might interact with or supersede existing environmental decrees. Critical legislation like the EIA (Environmental Impact Assessment) Decree, essential for planning and permitting in anticipation of the increased infrastructure pressure from the oil and gas industry, is still pending approval. The accountability of various ministries in managing oil spills and other emergencies related to the oil and gas sector is not clearly defined. The National Emergency Plan currently only provides for scenarios like war and natural disasters, indicating a need for more comprehensive planning that includes potential industrial disasters. The oil and gas sector within Lebanon's port activities is a complex and strategically crucial industry. It not only involves the import and storage of vital fuels but also encapsulates potential future developments in domestic oil production. This sector's efficient functioning is essential for Lebanon's energy security and economic stability, highlighting the need for continued investment, development, and regulatory clarity.

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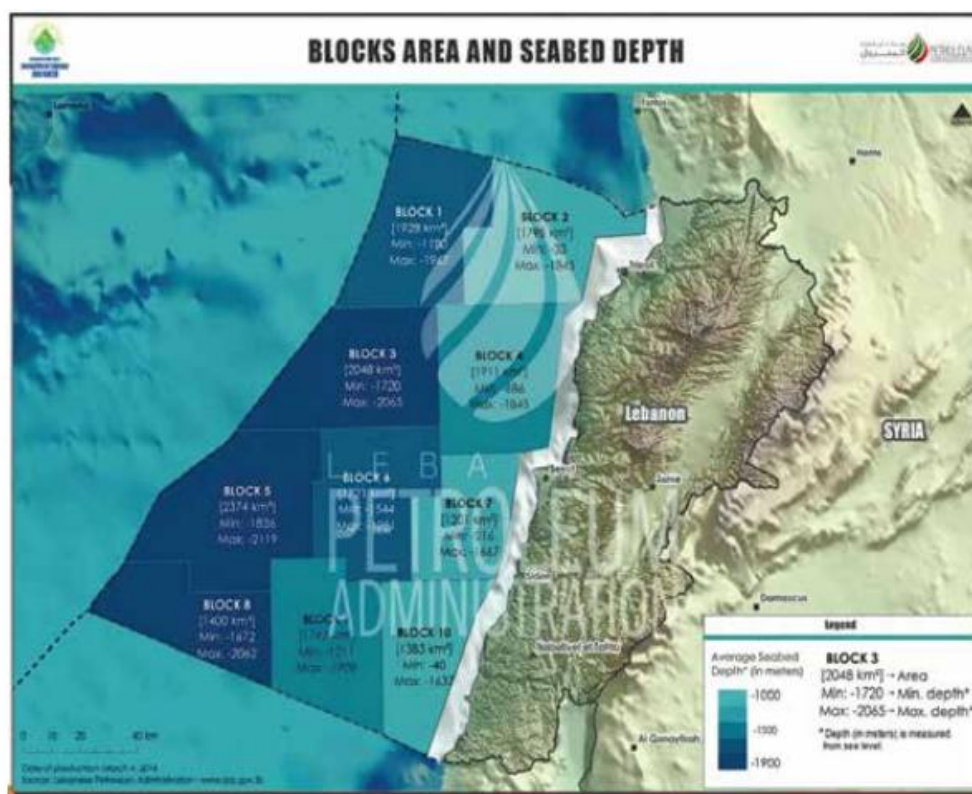


Figure 16: Blocks area and seabed depth

Community-based organizations like the Lebanese Forwarders Syndicate and the Association of Lebanese Ship Owners play a critical role in representing the interests of various stakeholders within the sector. The International Chamber of Navigation -Beirut further facilitates communication and cooperation among maritime entities. Despite Lebanon's reliance on oil imports, the country has demonstrated potential for oil production, particularly in its territorial waters. The import of petroleum products is managed by both governmental and private entities, highlighting the complexity and strategic importance of this aspect of the sector.

In summary, Lebanon's port activities sector is a dynamic industry, including a range of satellite sectors essential for the country's economic health and maritime security. These sectors collectively ensure the efficient operation of port activities and contribute significantly to Lebanon's position in the regional and global maritime trade.

Coastal Tourism

Lebanon's coastal tourism sector is vital in the nation's vibrant economy and is supported by an array of satellite sectors encompassing coastal engineering, environmental conservation, and cultural activities. These sectors not only enhance the tourist experience but also plays a crucial role in the preservation and development of Lebanon's coastline.

The field of coastal engineering is pivotal in shaping Lebanon's coastal landscape. This discipline deals with the complexities of shoreline management and infrastructure development, balancing human activity with environmental preservation. Projects like Linord in Beirut's suburbs showcase the transformative potential of coastal engineering. Despite initial setbacks, this project represents a significant endeavor to revitalize coastal areas through strategic development, including residential and commercial spaces, recreational facilities, and ecological parks. These efforts are crucial in enhancing the coastal experience while safeguarding the natural environment. Other projects include the Solidere area (former Normandy landfill), Tripoli and Saida landfills, and the more recent Costa Brava Land Fill behind Beirut International Airport.

Lebanon's dedication to preserving its natural coastal beauty is further manifested in the establishment of protected areas. The Tyre Coast Nature Reserve, The Palm, Sanany, and Ramkeen Islands, the Coastal Front Rocks of Wata Silm in Tabarja, the National Marine Hima at the Marine Sciences Center in Batroun, and proposed marine protected

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areas underscore the country's commitment to marine biodiversity conservation. These protected areas are not only vital for ecological balance but also serve as attractions for eco-tourism, offering visitors opportunities to engage with Lebanon's rich marine life sustainably.

The Lebanese coastline is dotted with museums and cultural sites that offer insights into the region's maritime heritage. Institutions like Les Merveilles de la Mer and the Lebanese Marine and Wildlife Museum play a significant role in educating visitors about the marine ecosystem and Lebanon's ecological diversity. The innovative underwater museums in Saida and Batroun, featuring submerged military vehicles, add a unique dimension to Lebanon's cultural tourism, merging history with environmental conservation efforts.

The active involvement of NGOs and community-based campaigns in coastal protection and advocacy highlights the growing consciousness regarding sustainable coastal management. Campaigns like "The Coast for All", the Civil Campaign to Protect the Dalieh of Raouche, "Ramlet al-Bayda for all", "Advocating for the preservation of Adloun Coast", or The Orange House Project and initiatives led by groups such as the Lebanese Environment Forum and Greenpeace focus on policy influence, beach access rights, and environmental stewardship. These efforts are instrumental in preserving the coastline's natural beauty and ensuring its accessibility to the public.

Lebanon's coastal tourism is further invigorated by festivals and events that celebrate the country's maritime culture. The Lebanon Water Festival and Beirut Boat Show exemplify the fusion of recreation, culture, and environmental awareness. These events not only showcase Lebanon's potential in water sports and maritime leisure activities but also foster community involvement and emphasize the importance of preserving the coastal environment. In addition to these sectors, Lebanon's coastal tourism is bolstered by an array of water sports facilities, offering activities like scuba diving, snorkeling, and boating. These activities not only provide thrilling experiences for tourists but also contribute to the local economy, supporting small businesses and creating employment opportunities.

Moreover, the role of coastal gastronomy in Lebanon cannot be overstated. The Lebanese coastline is renowned for its culinary offerings, especially its seafood. Seaside restaurants and cafes not only tantalize the palates of visitors but also support local fishermen, creating a symbiotic relationship between the tourism and fishing industries. The Lebanese coastal tourism sector, supported by a myriad of satellite sectors, offers a comprehensive and sustainable tourism experience. From the engineering of sustainable coastal infrastructure and the protection of natural reserves to the celebration of maritime culture and the promotion of environmental stewardship, these sectors collectively contribute to the richness of Lebanon's coastal tourism, ensuring its enduring appeal and sustainability for future generations.

3. GAP ANALYSIS

Sector 1

Port Activities/Transport and Trade in Lebanon's Blue Economy

1. Current State

Lebanon's maritime gateways include the ports of Beirut and Tripoli and the several petroleum terminals and industrial harbors. They serve as pivotal anchors for the nation's economic vitality, enabling a flow of trade and logistics that underpins various sectors of the economy. In the wake of the 2020 explosion at the Port of Beirut, there has been a discernible shift toward rehabilitating and expanding the infrastructure, highlighting the ports' critical role in national recovery and economic stabilization. However, these ports are grappling with systemic issues that compromise their efficiency and potential. Operational inefficiencies, such as delays in cargo handling and logistical bottlenecks, are symptomatic of deeper governance challenges. These challenges are compounded by environmental concerns, with ports contributing to coastal pollution and facing the impacts of inadequate waste management practices.

2. Desired State

The vision for Lebanon's ports is to transform them into modern, efficient, and sustainable hubs that facilitate international trade while driving economic growth. This entails establishing governance and regulatory frameworks that are robust, transparent, and compliant with international standards, ensuring that the ports operate as commercial centers and as stewards of environmental sustainability. To achieve this, the ports must integrate green initiatives, such as reducing emissions, managing waste effectively, and safeguarding marine biodiversity. These efforts should align with global best practices, positioning Lebanon's ports as leaders in sustainable maritime operations.

3. Gaps

A significant gap lies in the underinvestment in modernizing the port infrastructure and technology. Lebanon's ports need to adopt cutting-edge technologies and automation to enhance operational efficiency and meet the escalating standards of global trade and security. Furthermore, governance issues, marked by duplication of responsibilities, mismanagement, and corruption, erode the operational efficiency and trust in port authorities. This undermines the ports' ability to attract international partnerships and investments, essential for their growth and modernization. On the environmental front, existing policies and practices are outdated and insufficient to address the current challenges. The ports contribute to coastal and marine pollution, necessitating a comprehensive overhaul of environmental policies to mitigate the impact on Lebanon's marine ecosystems. Table 9 outlines potential regulatory gaps and the necessary actions to be implemented:

Table 9: Gap Analysis of the Ports Sector

Area of Focus	Regulatory Gap	Needed Regulation or Action
Port Management and Operations	Lack of comprehensive legal framework governing port operations.	Implement laws that standardize port operations, management practices, and service quality.
Environmental Protection	Insufficient regulations on pollution control and waste management in port areas.	Enact and enforce strict environmental regulations related to waste disposal, emissions, and spill response in maritime zones. Adopt the National Oil Spill Rescue Law to establish protocols and responsibilities for oil spill management.

Area of Focus	Regulatory Gap	Needed Regulation or Action
Safety and Security	Inadequate safety protocols and emergency response mechanisms in port facilities.	Develop and implement rigorous safety and security standards, including emergency response plans for accidents or disasters. Establish the Joint Search and Rescue Committee to coordinate emergency responses and rescue operations.
Infrastructure Development	Lack of guidelines for sustainable infrastructure development inside and outside port areas.	Create regulations that promote sustainable infrastructure development, ensuring that new projects comply with environmental and social standards.
Maritime Traffic Management	Ineffective regulations on vessel traffic and harbor activities, leading to congestion and inefficiencies. Not enough traffic controllers.	Update and enforce maritime traffic management regulations and infrastructure to streamline vessel movements and reduce port congestion. Open vacancies to employ more traffic controllers.
Technology and Innovation	Limited legal incentives for adopting new technologies and innovative practices in port operations.	Introduce policies that encourage technological innovation in port operations, including automation and digitalization incentives.
International Compliance	Non-alignment with international maritime conventions and standards.	Harmonize national laws with international maritime conventions, ensuring compliance with global standards and practices. Implement the International Ship and Port Facility Security (ISPS) Code to enhance maritime security.
Conventions Ratification	Non-ratification of some international conventions creates gaps in addressing crises	Urgent ratification of these conventions is necessary to strengthen Lebanon's legal framework, enhance maritime safety, protect the environment, and ensure effective accident response.
Disaster Risk Reduction (DRR)	Inadequate disaster preparedness and risk reduction measures in port areas.	Enact a Disaster Risk Reduction (DRR) law specifically tailored for ports to improve resilience and safety.
Quality, Health, Safety, and Environment (QHSE)	Lack of standardized QHSE practices across all ports.	Mandate the establishment of QHSE units at all ports to ensure consistent and high-quality safety standards.
Legal and Judicial Training	Insufficient expertise in maritime law among legal professionals and judiciary.	Develop training programs for lawyers and judges specializing in maritime law to improve legal proceedings and enforcement in the maritime sector.

4. Strategies for Improvement

To bridge these gaps, there should first be a significant investment increase to upgrade the port infrastructure, incorporating advanced technology and automation. This will streamline operations, enhance security, and improve environmental management. Second, governance reforms are imperative to tackle the root causes of inefficiency and corruption. These reforms should aim at improving management practices, enhancing transparency, and aligning the ports' operations with international standards and best practices. Lastly, environmental policies need thorough revision and enforcement. Adopting green port initiatives, such as reducing emissions, implementing waste management protocols, and promoting sustainable maritime practices, will be critical. These measures should aim at minimizing pollution, protecting marine life, and ensuring the long-term ecological health of Lebanon's coastal and marine environments. By addressing these

gaps with targeted strategies, Lebanon can revitalize its port sector, fostering a sustainable and prosperous maritime trade environment that contributes to the broader objectives of the national Blue Economy.

Sector 2

Marine Living Resources/Seafood in Lebanon's Blue Economy

1. **Current State**

The Marine Living Resources/Seafood sector is a pillar of local economies across Lebanon's coastal regions, providing essential employment and contributing partly to national food security. However, the sector is besieged by challenges that jeopardize its future. Overfishing and illegal fishing practices, driven by outdated practices and the absence of comprehensive management plans, is depleting fish stocks at an alarming rate. Coupled with unsustainable practices, this overexploitation is leading to severe environmental degradation and biodiversity loss, undermining the sector's long-term sustainability. Moreover, inefficiencies plague the entire value chain from catch to market, impacting the quality of seafood products and diminishing their profitability. This inefficiency is attributed to outdated infrastructure, lack of technological integration, and the absence of streamlined processes for distribution and marketing.

2. **Desired State**

The envisioned future for this sector is one where sustainable management of marine resources prevails, ensuring their long-term viability and bolstering economic growth. This entails adopting best practices in fishing and aquaculture, thereby enhancing productivity and sustainability while minimizing environmental impacts. Key to this vision is establishing a robust value chain that supports efficient distribution, processing, and marketing of seafood products, ensuring that they reach markets in optimal condition and fetch fair prices, thus benefiting the entire ecosystem from fishers to consumers.

3. **Gaps**

The sustainability of current fishing practices is a pressing concern, with existing methods leading to resource depletion and significant biodiversity loss. There's a stark lack of infrastructure and technology that supports efficient and sustainable aquaculture, hindering the sector's ability to modernize and grow sustainably. Furthermore, the regulatory frameworks in place are inadequate for effectively managing fishing practices and safeguarding marine biodiversity, resulting in unchecked exploitation and environmental damage. Below is a structured table that outlines potential regulatory gaps and the necessary actions to be implemented:

Table 10: Gap Analysis of the Fishery Sector in Marine Living Resources Sector

Area of Focus	Regulatory Gap	Needed Regulation of Action
Governance and Coordination	Complexity in the plurality of responsibilities among different ministries.	Simplify governance structures to clearly define responsibilities; streamline licensing processes to a single authority or establish a unified regulatory body for the fishing sector.
Investment in the Sector	Lack of targeted investment initiatives.	Strengthen the role of the Ministry of Economy and Trade (MoET) through IDAL to increase investment in the fisheries sector.
Integrated Coastal Zone Management (ICZM)	Absence of a comprehensive ICZM framework.	Adopt and implement the Integrated Coastal Zone Management (ICZM) strategy and law to ensure sustainable coastal development and management..
Fisheries Legislation	Outdated or missing fishing laws and regulations.	Pass the new fishing law to modernize the regulatory framework, ensuring sustainable exploitation of fishery resources.
Marine Protected Areas (MPA)	Slow progress in establishing and operationalizing MPAs.	Accelerate the declaration of all MPAs listed in the 2012 Strategy as protected areas within an MPA Network approach. Pass the MPA laws quickly and declare the MPA network.
Wastewater Treatment)	Delay in establishing coastal wastewater treatment plants (WWTPs)..	Expedite the development and commissioning of coastal WWTPs to prevent untreated sewage from reaching the sea, thus protecting marine life and water quality.
Sustainable Fishing Practices	Lack of comprehensive laws to prevent overfishing and illegal fishing practices.	Implement and enforce strict quotas and monitoring systems to manage fish stocks sustainably. Control illegal practices.
Marine Biodiversity Protection	Insufficient legal measures to protect marine biodiversity.	Enact laws to establish and MPAs, and regulate activities that harm marine ecosystems. Declare no-take zones. .
Technology and Innovation	Limited legal support for technological advancement in fisheries.	Promote policies that encourage the adoption of advanced technologies in fishing.
Market and Trade Regulations	Lack of standards and regulations for seafood quality and trade.	Introduce regulations to ensure the quality, traceability, and sustainable trade of seafood products.
Education and Training	Limited legal frameworks for education and capacity building in the marine sector.	Develop regulations that mandate training and education programs for sustainable fishing and boat mastery conducts.

4. Strategies for Improvement

To bridge the gaps and move towards a more sustainable and productive future in the Marine Living Resources and Seafood sector, Lebanon needs to focus on several pivotal strategies. First, the promotion of Sustainable Fishing Practices is essential. Implementing strict quotas and establishing robust monitoring systems are crucial to prevent overfishing and illegal fishing practices. This effort should be supported by adopting scientifically informed management plans that ensure the long-term health and sustainability of fish stocks. Second, there is a significant need for investment in modern fleets, port infrastructure, and technology. The sector's sustainability and productivity hinge on substantial investments in modern facilities and technologies. Third, the Enhancement of Regulatory Frameworks is imperative. Strengthening the laws and regulations that govern the fishing industry is essential to enforce sustainable practices and protect marine ecosystems. This strategic focus should include creating and enforcing MPAs, creating no-take zones, regulating fishing gear and methods, and ensuring compliance with international conservation standards. By adopting these strategies, Lebanon can pave the way for the sustainable development of its Marine Living Resources/Seafood sector. This approach will not only contribute to the preservation of marine ecosystems but also support local economies and ensure food security for future generations.

Sector 3

Coastal Tourism/Tourism and Recreation in Lebanon's Blue Economy

1. Current State

In Lebanon, the tourism sector stands as a cornerstone of the economy, yet it faces challenges that limit its potential. Tourism's economic contributions are significant but are predominantly concentrated in certain areas, leading to seasonal fluctuations and localized pressures on resources and communities. Environmental impacts are a growing concern, with insufficient infrastructure exacerbating the situation, often detracting from the overall tourism experience and threatening the sector's sustainability. Furthermore, Lebanon's rich potential for cultural and eco-tourism remains largely untapped, representing a missed opportunity to diversify and enrich its tourism offerings.

2. Desired State

The aspiration for Lebanon's tourism sector is to evolve into a diversified and sustainable industry that harmonizes economic benefits with environmental and cultural conservation. Achieving this requires high-quality infrastructure and services that not only enhance the visitor experience but also advocate for and implement sustainable practices. Integral to this vision is the development of eco-tourism and cultural heritage tourism, positioning these as central components of Lebanon's tourism sector. Such an approach aims to provide immersive, educational, and environmentally respectful experiences that celebrate Lebanon's unique natural and cultural assets.

3. Gaps

The development trajectory of Lebanon's tourism has been less than sustainable, frequently leading to environmental and cultural degradation. The infrastructure and services currently in place are inadequate to support a high-quality, year-round tourism experience, often failing to meet the needs of a diverse tourist demographic. Additionally, there is a notable deficiency in the promotion and development of alternative tourism forms, such as eco-tourism and cultural tourism, which are essential for diversifying the sector and enhancing its appeal to a broader audience. Below is a structured table that outlines potential regulatory gaps and the necessary actions to be implemented:

Table 11: Gap Analysis of the Fishery Sector in Coastal Tourism Sector

Area of Focus	Regulatory Gap	Needed Regulation or Action
Sustainable Tourism Practices	Lack of comprehensive regulations to ensure sustainability in tourism.	Enact and enforce laws that mandate sustainable practices in tourism, including guidelines for environmental preservation and cultural heritage protection.
Infrastructure Development	Insufficient standards for tourism infrastructure and services.	Develop and implement regulations that establish high-quality standards for tourism infrastructure and services to support year-round activities.
Eco-Tourism and Cultural Tourism	Absence of specific legal frameworks promoting eco-tourism and cultural tourism.	Create policies and regulations that support the development and marketing of eco-tourism and cultural tourism, ensuring these practices are sustainable and educational.
Environmental Impact	Inadequate regulations on the environmental impact of tourism activities.	Introduce stringent environmental impact assessment requirements for tourism projects to minimize negative effects on ecosystems and communities.
Encroachments of the coastline	Current laws inadequately protect the Maritime Public Domain (MPD)	Amending Law 64/2017 to restrict occupation rights of the MPD exclusively to

Area of Focus	Regulatory Gap	Needed Regulation or Action
		the Lebanese State, ensuring it serves only the public interest.
Investment and Economic Development	Limited investment initiatives in the tourism sector.	Strengthen the role of the MoET through IDAL to increase investment in the tourism sector.
Recreational Fishing Law	No legal framework for recreational/touristic fishing.	Draft specific laws for managing recreational and touristic fishing to ensure sustainable practices and resource conservation.
Institutional Framework for Blue Economy	Absence of a dedicated entity for Blue Economy oversight.	Establish a Blue Economy Council to centralize efforts, promote sustainable practices, and ensure sectoral growth and coordination.
Maritime Spatial Planning	Lack of integrated planning for maritime and coastal activities.	Adopt Maritime Spatial Planning to manage the use of marine and coastal spaces sustainably and cohesively.
Sustainability Certification	No standardized sustainability recognition for local products and activities.	Create a specific Blue Label for products and activities (like sea salt, local fish, scuba diving, jet skiing) that adhere to sustainability criteria.
Recreational Infrastructure Development	Inadequate facilities for eco-friendly recreational activities.	Develop a Lebanese coastal trail for biking and hiking to promote eco-tourism and implement boat taxis between harbors to enhance marine tourism and reduce pollution.

4. Strategies for Improvement

To bridge these gaps in a sustainable and thriving tourism sector, Lebanon needs to embrace a comprehensive strategy. The first step involves the implementation of sustainable tourism practices. This effort should focus on minimizing the environmental impact of tourism activities while promoting the preservation of cultural heritage. It is essential to integrate sustainable practices into the planning and operation of tourism services, ensuring that these initiatives contribute positively to local communities and ecosystems. Moreover, there is a critical need for investment in infrastructure improvements. Developing robust infrastructure capable of supporting a diverse array of tourism activities throughout the year is paramount. This development is not limited to physical enhancements, such as transportation, accommodation, and visitor facilities, but also extends to soft infrastructure, including the training of service providers to guarantee the quality and sustainability of tourism services. Additionally, the development and marketing of eco-tourism and cultural tourism are vital for diversifying Lebanon's tourism sector and attracting new visitor segments. Investing in these areas requires creating experiences that allow tourists to interact with the natural environment and cultural heritage in ways that are respectful, educational, and sustainable. By pursuing these strategies, Lebanon can forge a tourism sector that is not only economically advantageous but also environmentally sustainable and culturally vibrant. This approach will ensure the long-term viability and allure of Lebanon's coastal and recreational tourism, making it a model for sustainable tourism development.

Barriers to Achievement

The challenges undermining Lebanon's blue economy are complex and they are deeply rooted in historical exploitation and contemporary practices. Historically, marine ecosystems in Lebanon, much like in other parts of the world, were treated as inexhaustible resources, open for unrestricted use and disposal of waste. This perception has led to a reality where these ecosystems are under severe strain, far from being limitless. The coastal and marine environments of Lebanon are now facing the pressures of overutilization by various sectors, including port activities, marine living resources exploitation, and coastal tourism, all compounded by the growing impacts of climate change. This scenario has ushered in a period of inefficiently regulated competition among users, leading to over-exploitation and, in some instances, causing irreversible damage to the aquatic resources and coastal areas that are vital for the nation's socio-economic well-being.

Concerning marine living resources, Lebanon faces the critical challenge of overfishing, driven by technological advancements that enable more efficient fish extraction, coupled with poorly managed access to fish stocks and rising demand for seafood. This issue is exacerbated by Illegal, Unreported, and Unregulated (IUU) fishing activities, which inflict significant economic and environmental damage, undermining the sustainability of marine biodiversity and the livelihoods dependent on it. The coastal tourism sector is grappling with habitat degradation due to coastal development, encroachment on public lands, deforestation, mining activities, and unsustainable fishing practices. Pollution from untreated sewage, agricultural run-off, and marine debris, including plastics, further exacerbates this degradation, leading to the destruction of infrastructure and livelihoods. These environmental impacts not only detract from the quality of the tourism experience but also threaten the long-term viability of the tourism sector.

Climate change poses an overarching threat, with phenomena such as sea level rise, increased sea temperatures, and more intense and frequent weather events disrupting marine ecosystems. These changes have profound implications for marine life and habitats, affecting both the marine living resources and coastal tourism sectors. The uncertainty surrounding the long-term impacts of climate change on ocean systems adds a layer of complexity to the challenge of sustainably managing these vital resources. Unfair trade practices and ad-hoc development contribute to the challenges faced by Lebanon's blue economy. These practices often result in externalities between sectors, leading to suboptimal siting of infrastructure, overlapping land and marine area uses, marginalization of vulnerable communities, and loss or degradation of critical habitats. Such development patterns undermine the efforts in one sector by causing negative spillovers into others, exemplified by how unregulated tourism development or ill-suited infrastructure projects can negate the benefits of coastal zone management or conservation efforts.

Furthermore, anthropogenic interventions like coastal erosion, sand accumulation, illegal mining, and construction activities, including breakwaters, have altered the natural state of coastal and marine environments, leading to further degradation. Only 42% of the Lebanese coast remains accessible to all. Socio-economic challenges such as fluctuating employment trends in blue economy sectors, gender and social inclusion issues, erosion of traditional knowledge, and significant gaps in necessary infrastructure and investment further compound the problem, necessitating a holistic and integrated approach to address these multifaceted issues. To effectively counter these challenges and capitalize on the opportunities for sustainable development, Lebanon needs to adopt a systematic and comprehensive strategy. This strategy should be grounded in a thorough understanding of nationally defined priorities, social context, and the available resource base. Integrated coastal zone management stands out as a critical approach to safeguarding coastal and nearshore resources while optimizing their use for economic activities. Accurately assessing the value of marine resources and leveraging new data can inform decision-making processes, driving the transition towards a sustainable blue economy.

Innovative solutions, technological advancements, and nature-based approaches are essential to address the environmental and socio-economic challenges head-on. Sustainable tourism development, coupled with strategies for economic resilience and adaptation, can create a balanced pathway for growth that respects both ecological boundaries and community needs. Financing opportunities that focus on improved governance will pave the way for investable projects, enhancing the blue economy's contribution to national and local economies and safeguarding these resources for future generations. By aligning natural capital with investment capital through responsible finance and governance, and by harnessing science, data, and technology to underpin governance reforms and shape effective management decisions, Lebanon can cultivate a blue economy that is not only robust and sustainable but also inclusive and adaptable to future environmental and economic challenges.



BLUE ECONOMY CONFERENCE



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III. BLUE ECONOMY CONFERENCE

1. CONFERENCE OVERVIEW

1. CONFERENCE OVERVIEW

On May 2, 2024, Beirut hosted the inaugural Lebanon Blue Economy Dialogue (LBED 2024), marking a crucial milestone in Lebanon's commitment to sustainable management of its marine and coastal ecosystems. This event was organized under the joint auspices of the United Nations Environment Programme (UNEP), the Hariri Foundation for Sustainable Human Development, and the Lebanese Ministry of Environment. The conference was a key component of the SwitchMed II initiative, generously funded by the European Union, and aimed at integrating sustainable economic practices with environmental conservation efforts across the Mediterranean region. The conference not only unveiled the comprehensive findings of the national Blue Economy assessment but also set the stage for a robust dialogue on implementing sustainable practices that harmonize economic development with ecological preservation. This gathering of policymakers, industry leaders, and environmental experts demonstrated Lebanon's proactive approach to embracing the Blue Economy as a cornerstone of national economic strategy, highlighting its potential to drive innovation, boost job creation, and promote social equity while adhering to environmental sustainability.



Objectives and Goals

The Blue Economy Dialogue was set against a backdrop of growing recognition of the vital role that blue ecosystems play in global sustainability. These ecosystems are essential not only for food security and leisure but also serve as natural carbon sinks that help mitigate the impacts of climate change. However, coastal regions—which accommodate 40% of the global population and include many of the world's major cities—are increasingly vulnerable to a host of environmental threats. The triple planetary crisis, characterized by pollution, biodiversity loss, and climate change, poses severe risks to these areas, threatening their social, economic, and environmental fabric. In response to these challenges, LBED 2024 aimed to champion the Blue Economy as a transformative approach for Lebanon. The conference's objectives were multifaceted: it sought to mainstream the Blue Economy in national discourse, spotlight the sector's immense potential for promoting economic growth, and enhance social inclusion. The conference endeavored to outline a path toward a circular and resilient economic model that prioritizes profitability and sustainability by focusing on key areas such as fisheries, coastal tourism, and port activities. The dialogue aimed not only to present data and insights but to catalyze tangible actions that could translate the principles of the Blue Economy into real-world outcomes. By fostering high-level political and technical engagements, the conference provided a vital platform for stakeholders to commit to collaborative initiatives, ensuring the Blue Economy's role as a beacon of sustainable development in Lebanon.

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Themes

The Lebanon Blue Economy Dialogue 2024 (LBED 2024) explored several crucial themes, each selected to address the multifaceted challenges and opportunities within Lebanon's Blue Economy. The conference focused on the integration of sustainable practices in marine and coastal management, with a spotlight on fisheries, coastal tourism, and port activities. These themes were elaborated through expert presentations, stakeholder discussions, and strategic policy recommendations, aiming to harness the potential of Lebanon's blue resources sustainably.

1. Port Development and Environmental Sustainability

Ports are critical to Lebanon's economy, serving as gateways for trade and commerce. However, port operations can lead to significant environmental degradation if not properly managed. The conference explored sustainable practices in port management, focusing on reducing pollution, managing waste, and mitigating the ecological impacts of port activities. This theme examined innovative technologies and management practices that can be employed to make port operations more sustainable. Discussions included the integration of renewable energy sources, the implementation of green shipping practices, and the enhancement of port infrastructure to prevent environmental contamination. The role of international collaboration and compliance with global environmental standards were also emphasized as key factors in promoting sustainable port development.

2. Coastal Tourism and Its Impacts

Coastal tourism in Lebanon offers substantial economic opportunities but also poses environmental risks if not managed sustainably. The discussions around this theme focused on developing eco-friendly tourism practices that minimize environmental footprints while maximizing economic returns. Panelists presented case studies on successful sustainable tourism models from around the world, suggesting adaptations for Lebanon's unique coastal landscape. Topics included the development of green infrastructure, waste management strategies, and the promotion of local culture and heritage as integral parts of the tourism experience. The conference stressed the need for a collaborative approach involving government, industry stakeholders, and local communities to develop regulations and initiatives that support sustainable tourism.

3. Sustainable Fisheries Management

Fisheries are a vital component of Lebanon's Blue Economy, providing significant employment opportunities and contributing to food security. However, the sector faces challenges such as overfishing, habitat destruction, and pollution, which threaten its long-term viability. The conference addressed the need for sustainable fisheries management, emphasizing the adoption of practices that could balance economic benefits with environmental health. Experts discussed the implementation of stricter regulations, the promotion of sustainable fishing techniques, and the importance of establishing marine protected areas (MPAs) to ensure fish populations and their habitats are conserved. The dialogue also highlighted the role of community engagement in enforcing sustainability practices and the potential for science-based approaches to inform policy and operational decisions.

4. Policy Frameworks and Multi-Level Governance

A significant part of the conference was dedicated to examining the policy frameworks necessary to support the sustainable development of the Blue Economy. This theme addressed the need for comprehensive national policies that align with regional and global standards and goals. The discussions underlined the importance of multi-level governance, involving national and local authorities, private sector stakeholders, and civil society. Experts advocated for policies that are inclusive, transparent, and based on scientific research, ensuring that they effectively address the specific needs and challenges of Lebanon's blue economy sectors.

5. The Role of Technology and Innovation

Technology and innovation play pivotal roles in transforming the Blue Economy into a sustainable sector. The conference showcased advancements in marine science and technology, such as remote sensing, data analytics, and biotechnology, which can lead to better monitoring, management, and conservation of marine resources. Panelists discussed how technological innovations could be leveraged to improve efficiency, reduce costs, and enhance the sustainability of economic activities related to the sea. Emphasis was placed on the need for investments in research and development and the creation of partnerships between academia, industry, and government to foster innovation in the Blue Economy.

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Participant Profiles

The Lebanon Blue Economy Dialogue 2024 attracted a diverse group of participants, each bringing unique insights and expertise to the conference. The assembly included high-level government officials such as the Minister of Environment and representatives from the Ministry of Public Works and Transport, showcasing the strong governmental commitment to the Blue Economy. Academics and researchers from prestigious institutions provided scientific insights and innovative approaches, enriching the discussions with the latest findings and methodologies. Key figures from the private sector, including leaders in the fisheries, tourism, and port industries, contributed practical perspectives on integrating sustainable practices into business operations. Environmental NGOs and civil society representatives were also well-represented, advocating for community involvement and sustainable development practices. International delegates, including experts from the United Nations and European Union, offered global viewpoints and discussed international best practices, making the conference a comprehensive gathering of minds dedicated to advancing Lebanon's Blue Economy in a sustainable manner.

Format and Structure

The Lebanon Blue Economy Dialogue 2024 was meticulously organized to facilitate in-depth discussions and effective networking among stakeholders. The conference format included a mix of keynote speeches, panel discussions, and breakout sessions, allowing for both broad overviews and focused conversations. The day began with a high-profile opening ceremony featuring keynotes from influential leaders, setting the stage with strategic visions for Lebanon's Blue Economy. This was followed by expert-led panels that delved into specific themes such as sustainable fisheries, coastal tourism, and port management, fostering interactive dialogue among participants. Breakout sessions were structured to encourage detailed discussions and collaborative problem-solving, targeting specific challenges and opportunities in the Blue Economy. The conference also incorporated a dynamic digital dashboard launch, demonstrating real-time data and analytics pertinent to Lebanon's marine and coastal sectors. The day concluded with a networking lunch, providing a valuable opportunity for participants to forge connections, discuss potential collaborations, and share insights. This comprehensive structure was designed to maximize participant engagement and promote actionable outcomes.



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2. CONFERENCE PROCEEDINGS

2. CONFERENCE PROCEEDINGS

The Lebanon Blue Economy Dialogue 2024 commenced with a grand opening ceremony that set an ambitious tone for the day. The event brought together prominent figures who collectively stressed the critical integration of environmental conservation with economic activities stemming from marine and coastal resources.

Keynote Addresses

1. **H.E. Dr. Nasser Yassine, Minister of Environment, Lebanon**

In his compelling address, Minister Yassine highlighted the demographic significance of Lebanon's coastal regions, home to over 75% of the population. He advocated for a proactive approach to the Blue Economy in Lebanon, emphasizing the need for effective management of marine resources, prevention of sea pollution, and an increase in marine protected areas to mitigate the growing risks of climate change. Dr. Yassine outlined the workshop's goal to harmonize marine and ecological protection with economic activities like fishing, coastal tourism, and transportation, which demand prudent resource management for sustainability and continuity.

2. **Dr. Rubina Abu Zeinab, Executive Director, Hariri Foundation for Sustainable Human Development**

Dr. Abu Zeinab discussed the comprehensive and scientific approach of the dialogue as a new national covenant between the Lebanese people and their natural and built environments. She conveyed the sea's role not just as a resource but as a vital space for connection and growth. Her vision extended to exploring new economic horizons in a sustainable and equitable manner and leading regional dialogues across the Eastern Mediterranean with Arab and European partners, emphasizing that such initiatives could only succeed through trust-based and aligned partnerships.

3. **Alessia Squarcella, Deputy Head of Cooperation, EU Delegation to Lebanon**

Ms. Squarcella expressed her appreciation for the partnership among the UNEP, the Ministry of Environment of Lebanon, and the Hariri Foundation under the SwitchMed program. She emphasized the importance of enforcing environmental protection laws to safeguard Lebanon's maritime and coastal ecosystems. Her remarks encouraged all partners to continue collaborating to protect Lebanon's natural resources, underscoring the European Union's commitment to supporting Lebanon's journey towards sustainable blue growth despite environmental challenges.

4. **Abdel Majeid Haddad, UNEP Representative and Regional Vice-Director for West Asia**

Mr. Haddad opened his remarks by underscoring the UNEP's role in facilitating environmental initiatives that align with sustainable economic development. He highlighted the importance of the national Blue Economy assessment's findings, which provided a detailed overview of gaps, current status, opportunities, and challenges across key sectors like fisheries, coastal tourism, and port activities. His address set the stage for a deeper understanding of how Lebanon can capitalize on its strategic Mediterranean location for sustainable growth.

The opening ceremony of the Lebanon Blue Economy Dialogue 2024 effectively framed the day's discussions by providing high-level insights into the strategic importance of marrying economic development with environmental stewardship. The keynote speakers laid a solid foundation for the subsequent sessions, emphasizing the necessity of integrated, sustainable approaches to harnessing Lebanon's blue resources. Their unified call for collaboration across sectors set a motivating and constructive tone for the rest of the conference.

Keynote Presentations

1. **Lebanon Blue Economy Baseline**

Dr. Georges Gharrios and Engineer Malek Al Jebaie delivered a pivotal assessment of Lebanon's Blue Economy during their keynote presentation, which mapped out the current landscape and the future trajectory of this vital sector. They provided a thorough analysis, pinpointing fisheries, tourism, and maritime commerce as key areas with significant potential for sustainable growth. Their detailed examination revealed critical challenges such as pollution control, resource overexploitation, and inadequate regulatory frameworks currently hindering

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progress. Their presentation went beyond identifying problems, offering a visionary approach for moving forward. Dr. Gharios and Eng. Al Jebaie proposed a series of strategic initiatives aimed at revitalizing these sectors. They emphasized the importance of integrating innovative technologies—like advanced data analytics and eco-friendly marine infrastructure—and adopting sustainable practices that align economic activities with environmental conservation. The proposed strategies include enhancing fisheries management through technology-driven monitoring systems, promoting eco-tourism to leverage natural beauty while preserving it, and modernizing ports to reduce environmental impact. They stressed that these changes would not only protect the marine ecosystem but also spur economic development by making these industries more efficient and globally competitive.

2. Launch of the Lebanon Blue Economy Dashboard

One of the highlights of the conference was the official launch of the Lebanon Blue Economy Dashboard, introduced by the National Council for Scientific Research (CNRS). This cutting-edge digital platform marks a significant advancement in how Blue Economy data is accessed and utilized in Lebanon. Designed to furnish real-time analytics, the dashboard provides an invaluable resource for policymakers, industry leaders, and environmental advocates to track the health and trends of various marine and coastal sectors. The dashboard's capabilities extend to offering detailed performance metrics and management outcomes across different Blue Economy sectors. By providing a clear view of progress and pinpointing areas needing attention, the dashboard supports strategic decision-making, enabling stakeholders to respond swiftly and effectively to emerging challenges and opportunities. Additionally, this tool enhances transparency and accountability in environmental and resource management by making pertinent data readily available. Its introduction represents a crucial step towards a more data-driven approach in managing Lebanon's marine resources, ensuring that growth in these sectors is both sustainable and beneficial to the broader economy.

Panel Discussions

The Lebanon Blue Economy Dialogue 2024 featured two main panel discussions, each meticulously addressing crucial aspects of Lebanon's Blue Economy. The panels were designed to delve deep into the operational, environmental, and policy challenges and to explore integrative strategies and innovative solutions. Detailed notes and minutes from these discussions provided a rich base of information, reflecting the dynamic exchange of ideas among the panelists.

1. Panel 1: Enhancing Sector Integration and Sustainability in the Blue Economy

Facilitated by Mr. Miraq Aljubouri, Regional Coordinator for Environmental Governance at UNEP – Regional Office of West-Asia, the first panel focused on the current state and potential growth areas within the Blue Economy, with an emphasis on integrating development with sustainability. Panelists included experts from the Ministry of Public Works & Transport and the Lebanese Petroleum Administration, among others. Key highlights from this panel included:

- **Collaboration and Training:** The Ministry of Agriculture and Marsati announced plans to provide targeted training for fishermen, enhancing sustainable practices within the sector.
- **Policy and Regulation:** Discussion points highlighted the importance of the Integrated Coastal Zone Management (ICZM) strategy to align stakeholders and regulate sector interactions to maintain ecological balance. The enforcement of overarching laws such as the ICZM law was stressed as vital for preventing adverse cross-sectoral impacts.
- **Challenges and Enforcement:** The panel addressed significant barriers such as inadequate solid waste management and wastewater treatment, which pose challenges to sustainable development. The reluctance of some sectors to adopt ICZM and the critical need for enhanced law enforcement and awareness were also discussed.
- **Strategic Assessments and Plans:** The Lebanese Petroleum Administration shared insights from their advanced analyses and environmental impact assessments in the oil and gas sector. Discussions also covered the need for continuous legal updates, oil spill contingency plans, and the overarching need for a unified framework to guide the Blue Economy's sustainable development.

2. Panel 2: Integrating Circular Economy Principles within the Blue Economy Framework

Facilitated by Architect Mohammad Al Hariri, Research & Development Manager at the Hariri Foundation, the second panel delved into the application of circular economy principles across the Blue Economy sectors. This discussion emphasized the need for systemic change to minimize waste and maximize resource reuse and recycling. Insights from this panel included:

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- **Infrastructure and Innovation:** Panelists discussed the necessity for substantial upgrades in infrastructure to support circular economy initiatives, such as implementing rainwater harvesting systems and enhancing solid waste management.
- **Sustainable Practices and Policy Support:** The importance of promoting sustainable practices among fishermen and encouraging aquaponics was highlighted. Panelists also stressed the need for legislative support to ensure environmental and financial sustainability.
- **Engagement and Collaboration:** The panel emphasized the critical role of involving all stakeholders in circular economy discussions, advocating for a collaborative ecosystem to avoid duplicative efforts and enhance synergy across sectors.
- **Local Focus and Empowerment:** Discussions underscored the importance of tailoring strategies to the Lebanese context, leveraging local knowledge, and empowering ministries like the Ministry of Environment to regulate and disseminate circular economy practices effectively.

3. Conclusions from the Panel Discussions

Both panels not only underscored the multifaceted aspects of the Blue Economy but also fostered a collaborative dialogue among stakeholders, emphasizing the conference's theme of sustainable and inclusive economic growth. The discussions reflected a strong consensus on the need for integrated management approaches, enhanced regulatory frameworks, and the adoption of innovative and sustainable technologies and practices to drive the Blue Economy forward. These insights are crucial for shaping Lebanon's strategies to harness its maritime and coastal resources sustainably and productively.



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3. KEY OUTCOMES

3. Key Outcomes

The Lebanon Blue Economy Dialogue 2024 concluded with a strong commitment from participants to advance the national blue economy framework. This commitment was reflected in the creation of the LBED network with an interministerial focus, crucial for mainstreaming transition management within Lebanon's blue economy framework. Additionally, the development of the national Blue Economy dashboard by CNRS Lebanon represents a significant stride towards filling informational gaps through a quantitative assessment. These frameworks and assessments, to be published across various scientific platforms, lay the groundwork for actionable recommendations and policy interventions essential for sustainable practices across blue economy sectors.

Highlights of Key Discussions

The discussions at LBED 2024 were rich and multifaceted, emphasizing the need for integrated coastal zone management strategies and the role of digital transformation in enhancing sector efficiency. The conference also spotlighted the potential for green entrepreneurship within the blue economy, discussing ways to innovate while maintaining environmental stewardship. The dialogue employed inclusive and adaptable engagement strategies, which facilitated effective multi-level governance dialogue. This approach, involving qualitative assessments, focus group discussions, and key informant interviews, helped shape a nuanced understanding of Lebanon's blue economy's current state and potential.

Findings and Recommendations

Key findings from the conference underscored the urgency of addressing pollution control, resource overexploitation, and the need for robust regulatory frameworks. Recommendations called for:

- The adoption of comprehensive environmental protection laws and enforcement measures.
- Increased investment in sustainable technologies and practices.
- Development of partnerships between public and private sectors to enhance resource management and economic growth.
- Implementation of educational programs to raise awareness and foster community engagement in sustainable practices.
- Continued and expanded field observations and assessments, particularly covering all key ports in Lebanon, as part of ongoing efforts to evaluate and enhance the blue economy sectors comprehensively.
- Adoption of a policy-oriented output approach, leveraging interdisciplinary expertise to navigate through socio-economic and political challenges.
- Solidification of the dialogue as an annual platform, expanding its scope to include broader system boundaries of the Blue Economy in Lebanon, focusing on sectors like BlueTech in Energy and Water.

Future Directions and Closing Remarks

LBED 2024 has set a new standard for dialogue and action within Lebanon's blue economy sector. By fostering an environment of collaboration among government, private sector, and civil society, the conference has paved the way for transformative changes that promise to bring about economic prosperity and environmental sustainability. The proceedings from this event, along with continued discussions and upcoming initiatives like the Ideathon and LBED 2025, will significantly contribute to the national strategy aimed at developing a resilient and thriving blue economy in Lebanon.

IV

RECOMENDATION NOTES



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IV. RECOMMENDATION NOTES

Overview of the Blue Economy and Its Importance

The concept of the "blue economy" encompasses a broad spectrum of economic activities related to oceans, seas, and coastal areas. It includes traditional sectors such as fisheries, shipping, and tourism, as well as emerging industries like offshore renewable energy, aquaculture, and marine biotechnology. The importance of the blue economy extends beyond its significant economic contribution, which includes billions of dollars in revenue and millions of jobs worldwide. It also plays a crucial role in environmental sustainability, as the health of marine ecosystems is essential to global biodiversity, climate regulation, and food security. Marine environments are critical to human livelihood and biodiversity, providing essential services such as carbon sequestration, coastal protection, and waste detoxification. Moreover, the seas are a key source of nutrition for billions of people and hold immense potential for renewable energy generation. However, these resources are under threat from overexploitation, pollution, climate change, and habitat destruction. Thus, sustainably developing the blue economy is vital to ensure that marine and coastal resources continue to provide economic benefits while maintaining the ecological balance necessary for the planet's health.

Objectives of the National Blue Economy Dialogue and Conference

The National Blue Economy Dialogue and Conference aims to bring together policymakers, industry leaders, academics, and community representatives to foster a comprehensive understanding of the blue economy's potential and challenges. The objectives of the conference are multifaceted:

1. **To raise awareness** about the economic, social, and environmental significance of the blue economy.
2. **To facilitate knowledge exchange** among different stakeholders on best practices, innovative technologies, and effective policy frameworks that support sustainable marine and coastal development.
3. **To strengthen networks and partnerships** between public and private sectors, enabling more coordinated efforts in blue economy initiatives.
4. **To encourage investment** in blue economy sectors by showcasing opportunities and demonstrating successful models of sustainable development.
5. **To formulate and refine policies** that promote sustainable use of ocean resources, ensuring that economic development does not come at the expense of environmental health.

By achieving these objectives, the conference aspires to catalyze action and foster an environment conducive to sustainable and inclusive growth within the blue economy.

The Role of Policymakers and SMEs in Enhancing the Blue Economy

Policymakers and small and medium-sized enterprises (SMEs) are pivotal to the growth and sustainability of the blue economy. Policymakers hold the responsibility of creating a favorable regulatory environment that balances economic growth with environmental sustainability. This includes crafting laws and regulations that protect marine ecosystems while enabling economic activities, providing incentives for sustainable practices, and investing in marine science and education to enhance understanding and innovation in managing ocean resources. SMEs, on the other hand, are often at the forefront of innovation within the blue economy. With their flexibility and local knowledge, SMEs have the potential to pioneer sustainable practices in fisheries, develop eco-friendly tourism packages, and introduce cutting-edge technologies in marine biotechnology and renewable energy. Their role is crucial in operationalizing the concepts and policies formulated at higher levels, translating them into practical, on-the-ground actions that contribute to economic vitality and environmental resilience.

Both policymakers and SMEs must work in synergy to create a robust blue economy framework. Policymakers need to support SMEs through accessible financing, technical assistance, and market access, while SMEs must engage with policy processes to ensure that new regulations support sustainable and profitable business practices. This mutual interaction is essential for the development of a blue economy that is both economically viable and ecologically sound, ensuring long-term benefits for present and future generations.

IV. RECOMMENDATION NOTES

2. RECOMMENDATIONS FOR SMES IN THE BLUE ECONOMY

1. Policy Recommendations for Blue Economy Enhancement

1. Streamline Governance in the Fisheries Sector

- **Objective:** Reduce the plurality of responsibilities among multiple ministries impacting the fisheries sector.
- **Action:** Reorganize and centralize control by establishing a dedicated National Fisheries Authority (NFA). This body would assume all regulatory, licensing, and enforcement responsibilities currently divided among the Ministry of Agriculture, Labor, and Public Transport. By having a singular, streamlined entity, the sector can enjoy more coherent policy-making, enhanced resource management, and more efficient resolution of sector-specific issues.

2. Promulgate and Implement the New Fishing Law and Recreational Fishing Law

- **Objective:** Modernize and standardize regulations to ensure sustainable practices in both commercial and recreational fishing.
- **Action:** Pass the new comprehensive fishing law that addresses modern challenges such as overfishing, habitat destruction, and climate change impacts. Simultaneously, introduce a Recreational Fishing Law to specifically regulate personal fishing activities, setting clear guidelines on catch limits, gear restrictions, and specific zones for fishing to protect sensitive marine ecosystems and ensure the sustainability of fish stocks.

3. Implement Comprehensive Port Management Laws, Including Environmental and Emergency Response Measures

- **Objective:** Standardize port operations to enhance safety, security, and environmental management.
- **Action:** Develop a cohesive set of port management laws that cover operational standards, environmental protection, and emergency responses. This includes the implementation of the National Oil Spill Rescue Law, which establishes a preparedness and response strategy for oil spill incidents. Additionally, establish a Joint Search and Rescue Committee that coordinates between various maritime and coastal agencies to manage emergencies effectively, ensuring rapid and organized responses to accidents and natural disasters.

4. Enact Strict Environmental Protection Regulations and Develop Safety and Security Standards

- **Objective:** Minimize environmental impact and enhance safety in maritime zones.
- **Action:** Implement stringent regulations targeting pollution control, which include strict waste management protocols and emissions standards. This effort is complemented by robust safety and security measures that mandate emergency preparedness plans, regular safety drills, and updated infrastructure to withstand both environmental and human-made threats. The integration of these regulations ensures a holistic approach to maritime safety and environmental conservation.

5. Upgrade Maritime Traffic Management Systems and Incentivize Technological Innovation

- **Objective:** Improve port efficiency and promote advanced operational technologies.
- **Action:** Overhaul existing maritime traffic management systems to reduce congestion and enhance logistical efficiency through technology such as AI-driven traffic modeling and real-time monitoring systems. Encourage the adoption of innovative technologies in port operations by providing tax incentives, subsidies, or grants for investments in automation and digitalization. These efforts aim to make ports more efficient and environmentally friendly, setting a standard for future developments in the sector.

6. Harmonize National Laws with International Maritime Standards and Establish Disaster Risk Reduction Measures

- **Objective:** Ensure global compliance and enhance port resilience.
- **Action:** Align national maritime laws with international standards, such as the International Ship and Port Facility Security (ISPS) Code, to ensure safety and facilitate international maritime cooperation. Simultaneously, enact Disaster Risk Reduction (DRR) laws that focus on enhancing infrastructure resilience, promoting disaster preparedness, and establishing clear protocols for disaster response. These laws will help mitigate the impact of both natural and man-made disasters in maritime and coastal areas.

7. Establish a National Blue Economy Council

- **Objective:** Facilitate cohesive and efficient policymaking across the blue economy sectors.
- **Action:** Form an inter-ministerial committee to oversee and synchronize efforts across various domains of the blue economy. This committee would be responsible for policy alignment, resource optimization, and strategic planning. It would also serve as a platform for stakeholder engagement, ensuring that policies are comprehensive and supported by empirical data and sector-specific insights.

IV. RECOMMENDATION NOTES

2. RECOMMENDATIONS FOR SMES IN THE BLUE ECONOMY

2. Recommendations for SMEs in the Blue Economy

Business Opportunities Identification

1. Identifying Niche Markets

- **Objective:** Enable SMEs to pinpoint and exploit unique opportunities within the blue economy such as eco-tourism, marine biotechnology, and artisanal fisheries.
- **Action:** Establish a dedicated online portal that aggregates real-time data on market trends, demand forecasts, and consumer behavior related to blue economy sectors. This tool should offer analytics tailored to help SMEs identify untapped areas and emerging opportunities.

2. Utilizing Local Marine Resources

- **Objective:** Encourage sustainable and profitable exploitation of local marine resources by SMEs.
- **Action:** Launch collaborative programs with research institutions to help SMEs develop innovative uses of local marine resources, such as seaweed for bio-packaging or fish waste for bioplastics, ensuring sustainable practices that also open new market avenues.

Capacity Building and Support

1. Access to Financing

- **Objective:** Improve the availability of financial resources for blue economy initiatives.
- **Action:** Partner with financial institutions to introduce low-interest loans and blue bonds specifically for SMEs investing in sustainable marine projects. Implement a one-window policy to streamline the application and approval processes for these financial products.

2. Training and Mentoring Programs

- **Objective:** Build the operational capacity of SMEs to thrive in the blue economy.
- **Action:** Set up a series of state-sponsored training camps and webinars that cover crucial areas such as sustainable fishing techniques, marine conservation, and the economic management of coastal zones.

3. Networking Opportunities

- **Objective:** Facilitate connections between SMEs and larger enterprises/government entities.
- **Action:** Regularly schedule industry meetups, mentorship pairings, and partnership forums specifically designed for SMEs in the blue economy, enhancing their access to larger markets and governmental project tenders.

Innovation and Technology Adoption

1. Adopting Green Technologies

- **Objective:** Encourage the integration of eco-friendly technologies in maritime operations.
- **Action:** Introduce tax incentives and rebates for SMEs that invest in green technologies. Establish a certification program that publicly recognizes and rewards SMEs for achieving high standards in environmental sustainability.

2. Supporting R&D

- **Objective:** Foster innovation in environmentally friendly marine products and services.
- **Action:** Provide funding and tax credits for SMEs that engage in R&D activities focused on sustainability in the blue economy, such as developing biodegradable fishing gear or energy-efficient boat designs.

Market Expansion and Diversification

1. International Market Expansion

- **Objective:** Support SMEs in accessing and competing in global markets.
- **Action:** Offer export coaching programs and facilitate participation in international blue economy conferences and trade fairs. Provide grants for market entry strategies including localization of products to meet foreign regulatory standards.

2. Diversification and Integration

- **Objective:** Motivate SMEs to explore and enter new sectors within the blue economy.

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- **Action:** Develop incubator programs that help SMEs pilot new products in sectors like marine renewable energy or sustainable marine tourism, providing both technical and financial support during the initial phases.

Regulatory Compliance and Advocacy

1. Navigating Regulatory Environments

- **Objective:** Simplify the regulatory process for SMEs in the blue economy.
- **Action:** Implement a 'one-stop-shop' for all blue economy-related regulatory approvals, reducing bureaucratic hurdles and simplifying compliance procedures.

2. Advocacy for SME-friendly Policies

- **Objective:** Champion the interests of SMEs in policy-making forums.
- **Action:** Establish an SME advisory panel that works directly with government agencies to design policies that are conducive to small business growth and sustainability in the blue economy.

3. Engagement in Policy Formulation

- **Objective:** Ensure SME voices are heard in the legislative process.
- **Action:** Create mechanisms for regular consultation with SMEs on upcoming regulations and policies, ensuring their feedback and concerns shape the legislative landscape favorably.

IV. RECOMMENDATION NOTES

3. BLUE ECONOMY PROJECT PROPOSALS

3. Blue Economy Project Proposals

Project Proposal 1: Marine Debris Recycling Initiative

This initiative aims to address the pervasive issue of port debris by turning waste into valuable products, thereby promoting environmental sustainability and fostering economic growth. Leveraging the successful models of existing recycling centers in Lebanon, such as Yalla Return, Plastic Lab, and Live Love Recycle, the project will establish specialized facilities along the coast dedicated to collecting and processing marine debris. These centers will employ innovative recycling technologies to transform waste into usable materials, creating a closed-loop system that mitigates ocean pollution and stimulates local industries. This initiative will involve collaborations with local governments, environmental NGOs, and the private sector to ensure broad-based support and effectiveness.

Project Proposal 2: Salt Producers Sustainable Certification

Focusing on the historic salt pans of Enfeh, this project aims to promote sustainable salt production practices under the Blue Economy Label. Similarly to the EniCBCMED project MedArtSal, this initiative will develop certification criteria that highlight environmentally friendly and economically sustainable salt production. The certification program will help preserve traditional methods while ensuring they meet modern environmental standards, enhancing marketability and supporting local heritage. This project will serve as a model for sustainable practices in small-scale industries across the Mediterranean region.

Project Proposal 3: Legal and Educational Enhancement for Marine Conservation

This proposal focuses on strengthening the legal and educational frameworks necessary for effective marine conservation. In collaboration with the Order of Lawyers in Beirut and Tripoli, the initiative will develop a series of specialized training programs in maritime law for legal professionals. These programs aim to enhance expertise in marine legal issues, improving enforcement and compliance with environmental regulations. Simultaneously, the project will partner with educational institutions to integrate marine conservation into their curricula, fostering a generation well-versed in sustainable practices and marine ecosystem management.

Project Proposal 4: Comprehensive Coastal Trail Development

In collaboration with the Lebanese Mountain Trail Association, this initiative will develop a coastal trail that extends from Naqoura to Aarida, enhancing access to Lebanon's scenic coastline while promoting eco-tourism and environmental education. The trail will be designed to serve not only as a recreational resource but also as an educational pathway, featuring informational kiosks and guided tour opportunities that emphasize the ecological, historical, and cultural significance of the coastal regions. This project aims to boost local tourism, support community businesses, and foster a deeper appreciation and understanding of Lebanon's marine and coastal heritage.

Project Proposal 5: Recreational Fishing Development

This project aims to promote sustainable recreational fishing practices through a comprehensive training and development program. In partnership with the Syndicate of Fishermen, the initiative will offer courses and lessons on sustainable fishing techniques, focusing on conservation and responsible resource management. The program will also facilitate the creation of designated recreational fishing areas that are managed to ensure ecological sustainability. By educating amateur anglers and promoting responsible fishing practices, this initiative will help reduce overfishing and contribute to the conservation of marine biodiversity.

V

CONCLUSIONS

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LEBANON'S BLUE ECONOMY
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V. CONCLUSION

The National Dialogue & Assessment Report for Lebanon's Blue Economy presents a comprehensive framework that integrates Lebanon's maritime resources into a sustainable economic powerhouse, carefully balancing economic development with ecological sustainability and social equity. This strategic blueprint is a testament to Lebanon's commitment to aligning its maritime practices with global sustainability initiatives such as the United Nations Sustainable Development Goals, which emphasize ecological health, economic benefit, and social inclusion.

Central to the success of this initiative is the extensive stakeholder engagement that the report underscores. By involving government bodies, private sectors, local communities, and international organizations, the dialogue ensures a holistic approach where all perspectives are integrated into the development plans. This inclusivity is crucial for formulating strategies that are robust, equitable, and widely accepted.

The dialogue identifies key sectors such as port activities, marine living resources, and coastal tourism as the main pillars of the Blue Economy, while also highlighting the potential in emerging sectors like marine biotechnology and renewable energy. These sectors are envisioned not only to diversify economic opportunities but also to contribute significantly to environmental conservation.

Moreover, the report candidly addresses the environmental, economic, and social challenges that Lebanon faces, including pollution, overfishing, and inadequate infrastructure. It proposes innovative solutions such as sustainable tourism, waste reduction practices, and enhanced marine management strategies. These solutions aim to mitigate the current challenges and prevent future issues, thereby promoting a sustainable interaction with marine and coastal environments.

The strategies suggested are designed to build resilience against environmental pressures and economic instability. By fostering adaptability in economic and environmental policies, the framework aims to protect marine resources and ensure sustainable growth. This dynamic approach is vital for Lebanon, given its complex socio-economic and ecological landscape.

The report also emphasizes the importance of future directions and continuous improvement in the Blue Economy strategy. It advocates for ongoing research, monitoring, and community engagement to dynamically adjust and refine practices in response to new challenges and opportunities. This ongoing dialogue is extended through planned follow-up activities, including conferences, workshops, and collaborative projects, which are intended to keep stakeholders engaged and actively involved in advancing the Blue Economy agenda.

In sum, the National Dialogue & Assessment Report for Lebanon's Blue Economy lays down a robust foundation for sustainable maritime and coastal development in Lebanon. It not only provides a clear vision and detailed roadmap for enhancing Lebanon's economic output but also ensures the conservation of its rich marine biodiversity and promotes social equity. Through its strategic, inclusive, and adaptive approach, Lebanon is poised to become a leader in sustainable maritime practices in the Mediterranean region, setting a benchmark for others to follow.

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