



RECOMMENDATIONS FOR A BLUE ECONOMY ROADMAP FOR JAMAICA

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Abbreviations

BE	Blue Economy	MOAF	Ministry of Agriculture and Fisheries
BEDF	Blue Economy Development Framework	MOEY	Ministry of Education and Youth
CAGR	Compound Annual Growth Rate	MOFPS	Ministry of Finance and Public Service
CASE	College of Agriculture Science and Technology	MOHW	Ministry of Health and Wellness
CCI	Caribbean Challenge Initiative	MOT	Ministry of Tourism
	Caribbean Maritime University	MOTM	Ministry of Transport and Mining
EEZ	Exclusive Economic Zone	MSET	Ministry of Science, Energy and Technology
FAD	Fish aggregating device	MST	Measuring the Sustainability of Tourism
FD	Forestry Department	MTF	Medium-term socio-economic policy framework
GDP	Gross Domestic Product	MTM	Ministry of Transport and Mining
GOJ	Government of Jamaica	NCOCZM	National Council on Ocean and Coastal Zone Management
HEART	Human Employment and Resource Training Trust/National Training Agency	NDC	Nationally Determined Contribution
HEART/NSTA	Human Employment and Resource Training Trust/National Training Agency	NEPA	National Environment And Planning Agency
IMF	International Monetary Fund	NFA	National Fisheries Authority
IUU	Illegal, Unreported, and Unregulated	NWSMA	National Solid Waste Management Authority
JAMPRO	Jamaica Promotions Corporation	NWC	National Water Commission
JBDC	Jamaica Business Development Corporation	ODPEM	Office of Disaster Preparedness and Emergency Management
JCF	Jamaica Constabulary Force	PAJ	Port Authority of Jamaica

JDF	Jamaica Defence Force	PIOJ	Planning Institute of Jamaica
JIS	Jamaica Information Service	R&D	Research and development
LHI	Logistics hub initiative	RADA	Rural Agricultural Development Authority
MAJ	Maritime Authority of Jamaica	SEA	Strategic Environmental Assessment
MCGES	Ministry of Culture, Gender, Entertainment and Sport	SI	Spotlight Initiative
MDAs	Ministries, Departments and Agencies	STATIN	Statistical Institute of Jamaica
MEGJC	Ministry of Economic Growth and Job Creation	TEF	Tourism Enhancement Fund
MFAFT	Ministry of Foreign Affairs and Foreign Trade	TPDCo	Tourism Product Development Company
MIIC	Ministry of Industry Investment and Commerce	UNWTO	World Tourism Organization (United Nations)
MLGRD	Ministry of Local Government and Rural Development	VAT	Value added tax
MLSS	Ministry of Labour and Social Security	WRA	Water Resources Authority

Executive summary

This report provides recommendations for the development of a Blue Economy Roadmap for Jamaica.

The blue economy holds great promise for Jamaica. The blue economy seeks to promote economic growth, social inclusion, and the preservation or improvement of livelihoods while at the same time ensuring environmental sustainability of the oceans and coastal areas. In a context where Jamaica must seek new economic opportunities to boost shared prosperity, the blue economy offers the prospect of both strengthening existing growth drivers (tourism, fisheries) and allowing new industries (bioprospecting, maritime transport) to flourish. The blue economy can also play a critical role in helping Jamaica respond to the threats posed by climate change. With careful management, the benefits of the blue economy can be directed to some of Jamaica's most vulnerable populations.

Jamaica has many strengths that it can capitalize on to develop a thriving blue economy.

- **Data, analysis and dissemination.** Jamaica's strong government capacity and the presence of leading academic institutions means that it has a wealth of data to support action in the blue economy. This includes the State of Jamaican Climate Report, State of the Environment reports, and rich data collected and published on Jamaica's fish and forest (including mangrove) stocks.
- **Policies and institutions.** There is a strong political commitment to the blue economy. The Medium Term Framework includes several blue economy priorities and key policy commitments to sustainable ocean management have been reaffirmed at the highest political levels. A solid legislative foundation can support the blue economy, and a wide range of public institutions already have a track record of supporting the blue economy. These public bodies are ably supported by a network of non-governmental organizations, community organizations and private sector co-management partners, especially through the MPA network.
- **Fostering investment.** Jamaica has a supportive environment for encouraging private sector investment with performance on the World Governance Indicators and the Ease of Doing Business Index typically better than that of its regional and income group peers. Its strong commitment to macroeconomic stability has been widely praised.

However, it also needs to address some key weaknesses. While data collection is strong in many cases, there is a need to make better use of new data analysis and collection techniques, particularly remote sensing techniques to collect geospatial data, and to better process and analyze the data that is collected so that it can more easily inform decision-making. Similarly, while there are a variety of institutions and policies that illustrate Jamaica's commitment to the blue economy, there is no unified policy framework or strategic plan for the blue economy. Some policies are outdated and implementation can be uneven. In terms of promoting investment, the strong commitment to macroeconomic prudence makes it difficult for the government to support investment in the blue economy, a challenge that is compounded by the difficulties some private sector actors face in accessing finance. These challenges are underpinned by a limited understanding/knowledge of the blue economy and its potential.

Based on these strengths and weaknesses, the Roadmap's recommended actions are

organized around three pillars and a cross-cutting theme:

- **Strengthening fundamentals:** ensuring that the broader enabling environment is conducive to the development of the blue economy.
- **Supporting growth drivers:** supporting the growth of key blue economy sectors, building on key strengths and addressing constraints to their development.
- **Managing natural resources and addressing climate change:** taking actions within the blue economy that seek to preserve or restore Jamaica's rich natural habitat, especially in the face of growing climate risks. This also includes actions related to ensuring that Jamaica's blue economy supports the country's Nationally Determined Contribution (NDC) and broader low-carbon development aspirations.
- **Ensuring the blue economy works for all:** harnessing the opportunities presented by the blue economy in a way that is inclusive, fair, and accessible to all Jamaicans.

In total, 58 actions are identified under these four pillars. These actions are identified as being either short-term actions that are a particular priority, other short-term actions that should be undertaken in the next 1-3 years (2024-2026), and longer term actions that might be undertaken between 2027 and 2030. This prioritization takes into account whether actions are no-regrets despite future uncertainty, whether they provide greater flexibility in the future, whether they are actions that have long lead times and/or help to avoid lock in and whether they benefit from strong political support. For all actions, the Roadmap identifies both lead and, where appropriate, supporting institutions to take the action forward.

The 17 actions in the strengthening fundamentals pillar relate to updating and improving policies and institutional frameworks, improving data collection and dissemination processes and strengthening capacity. A particularly important action is to define and operationalize the lead institutions to oversee and drive the development of the blue economy. This should be led by the Ministry of Economic Growth and Job Creation (MEGJC), but with the National Council on Ocean and Coastal Zone Management (NCOCZM), or equivalent coordinating body, revitalized and given sufficient resources to coordinate and drive action across the many different institutions with an interest in the blue economy. Other priority actions include the development of a blue economy finance and investment framework; a series of actions to enhance data collection, analysis and dissemination; and capacity development actions, including within the National Environment and Planning Agency (NEPA) and the National Fisheries Agency (NFA).

The strengthening growth drivers pillar contains 21 actions. Some of the high priority actions focus on protecting and supporting existing elements that are already widely recognized as core elements of the blue economy - for example, the NFA updating and finalizing the National Fisheries and Aquaculture policy and Mariculture policy. Other high-priority actions include conducting feasibility studies to explore potential new growth opportunities in the blue economy, including maritime transport (yacht maintenance), bio-prospecting and marine renewable energy.

The pillar on managing natural resources and climate risks identifies 11 actions that Jamaica should take to reduce water and noise pollution and to respond to the challenges that climate change poses to Jamaica's blue economy. Priority actions include assessing the climate vulnerability of Jamaica's coastal communities and major seaports, developing a marine spatial plan, and conducting an assessment of water resources and needs under different climate scenarios.

The fourth pillar - ensuring that the blue economy works for all - includes 9 actions focused on gender mainstreaming and social equity, as well as building awareness and skills related to the blue economy. A framework to ensure that all newly initiated blue economy policies and regulations are assessed for their impact on disadvantaged people is a particular priority. Other short-term priorities include developing public education and awareness campaigns on the blue economy, conducting a blue economy skills assessment, and offering targeted scholarships to support women's full participation in the blue economy.

This Roadmap should be complemented by the development of a results monitoring and reporting framework to enhance accountability and promote learning and adaptive management. This framework should include a clear set of target outcomes and impacts related to the development of the blue economy over the next decade. These target outcomes and impacts should be linked to a theory of change for how the actions described above will contribute to achieving these outcomes. The development of this framework should include strong stakeholder engagement from the outset.

1. Introduction

The blue economy offers Jamaica tremendous opportunities for sustainable economic development. The blue economy seeks to promote economic growth, social inclusion, and the preservation or improvement of livelihoods while at the same time ensuring environmental sustainability of the oceans and coastal areas. It covers the intersection of climate and climate change, and key economic sectors such as tourism, fisheries, waste management, transport and logistics, and renewable energy generation. The potential for the blue economy in Jamaica is huge: its exclusive economic zone covers more than 258,000 square kilometers of ocean - about 25 times the size of its land mass. However, despite some significant successes, the country has not yet fully realized this potential.

This report provides recommendations for a Blue Economy Roadmap in Jamaica¹, based on the opportunities that exist and the barriers that need to be overcome, to realize Jamaica's blue economy potential. Jamaica has a number of policy, institutional, and data-related strengths that it can build on to realize the full potential of its blue economy. On the other hand, there are also a number of barriers - such as the lack of a unified strategic plan and limited awareness of the potential of the blue economy - that need to be overcome in order to realize the full potential of the blue economy.

The Roadmap sets out a series of concrete actions and associated implementation arrangements to unlock Jamaica's blue economy potential, structured around 4 pillars: (1) strengthening fundamentals, (2) supporting growth drivers, (3) managing natural resources and addressing climate change, underpinned by (4) ensuring the blue economy works for all. The implementation of these recommendations will provide Jamaica with the opportunity to leverage the blue economy to realize the development aspirations reflected in Vision 2030

The work builds on a series of analytical reports that were commissioned in 2022 as part of the World Bank's and PROBLUE technical assistance 'Enabling Blue Economy Development in Jamaica'. PROBLUE is a US\$200 million multi-donor trust fund, managed by the World Bank, that helps countries chart their course toward a sound blue economy approach. Previous work supported by PROBLUE in Jamaica, conducted by NLA International, explored some of the key opportunities for Jamaica's blue economy, as well as some of the constraints that are holding back its growth. This Roadmap consolidates the key findings of these analytical reports and has been complemented by further stakeholder input and desk research in close collaboration with the Planning Institute of Jamaica (PIOJ) and the World Bank.

The remainder of the Roadmap is structured as follows:

- **Section 2** describes the Jamaica's macroeconomic context, and the role the blue economy can play in unlocking opportunities for economic development.
- **Section 3** summarizes the existing strengths in relation to key pillars underpinning the development of the blue economy on which Jamaica can build.

¹ Hereafter, Roadmap.

- **Section 4** highlights weaknesses that would need to be addressed to support a thriving blue economy.
- **Section 5** provides a prioritized and phased action plan to deliver on Jamaica's blue economy potential.
- **Section 6** summarizes the institutional and implementing arrangements that will be needed to support delivery of the action plan.
- **Section 7** concludes with a summary of blue economy potential and priorities to take action.

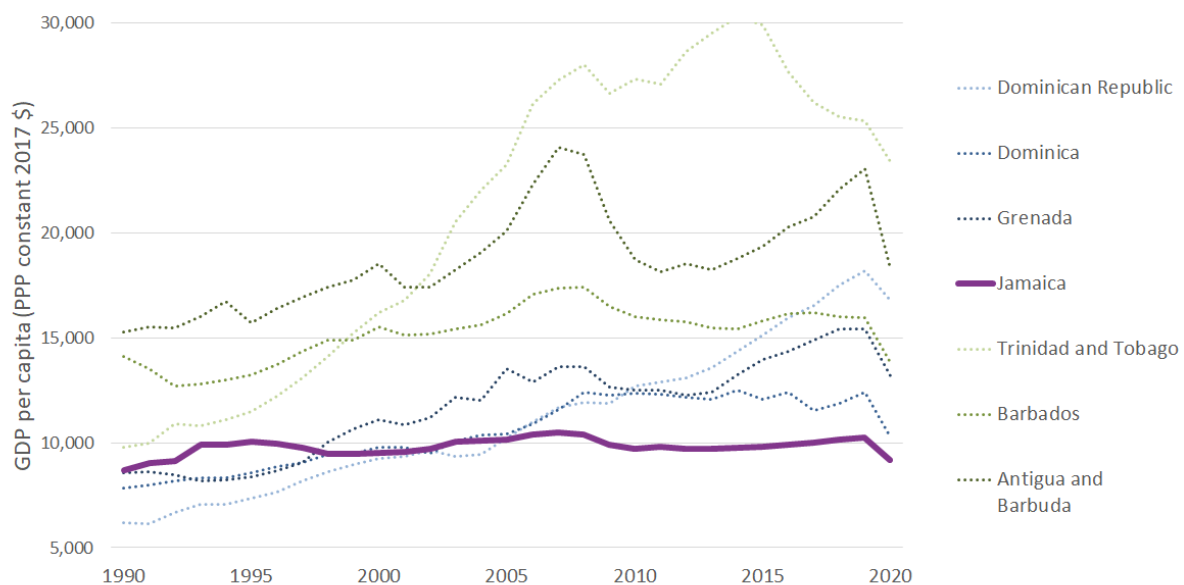
2. Jamaica's blue economy potential

2.1. Country macroeconomic context

Jamaica is a middle-income country that successfully delivered a significant economic reform program over the decade prior to the Covid-19 pandemic. The macroeconomic and fiscal reform program, which received national and international support, resulted in an all-time low unemployment rate of 5% in 2019, down from over 15% in the 1990s and early 2000s. This has been accompanied by a steady structural transformation of the economy. Over the same period, employment in the agricultural sector has gradually declined from 25% to 15%, while employment in the service sector has increased from 53% to 69%.²

Since the 1970s, however, there has been little progress in some of the standard metrics of economic development. Jamaica's GDP per capita has remained essentially constant over the last 50 years. As Figure 1 shows, this is in contrast to some of its peers. Inequality in Jamaica has also remained largely constant, with a Gini coefficient at 45.5 according to World Bank data³, although this has not been updated since 2004.⁴ This emphasizes the importance for Jamaica to find new drivers of inclusive growth - such as those potentially offered by the blue economy - to deliver shared prosperity for its citizens.

Figure 1: Jamaica economy has remained stable over the past 20 years



Source: World Development Indicators

² World Development Indicators, ILO estimates

³ The Gini coefficient is a measure of the statistical dispersion typically applied to income or wealth data. A Gini coefficient of 0 reflects perfect equality where all income or wealth values are the same while a Gini coefficient of 100 indicates that a single household or individual possesses all of the income or wealth.

⁴ Data from World Development Indicators

A variety of shocks threaten Jamaica's development, including macroeconomic and climate-related shocks and demographic trends. As a Small Islands Developing State (SIDS), the country is heavily reliant on international trade and capital flows. This makes it vulnerable to shocks in the global economy, as illustrated by the negative terms of trade shock resulting from the Ukraine crisis. The economy is also highly vulnerable to extreme weather events. Coastal areas are crucial to the national economy and to livelihoods, accounting for 50% of economic assets and hosting 70% of the population.⁵ This concentration makes the economy highly vulnerable to both acute and chronic climate change impacts including hurricanes, sea-level rise etc. In 2004, Hurricane Ivan caused US\$ 575 million in damages.⁶ These impacts are expected to worsen as climate change accelerates. One study suggests that, by 2100, climate change could reduce per capita income, compared to what it otherwise would be, by as much as 100% by 2100.⁷ Moreover, both current and future impacts are expected to fall disproportionately on women, children, the poor, and other vulnerable groups. In addition to these potential shocks, Jamaica's economy will face headwinds from demographic trends in the medium term, as the dependency ratio is expected to increase to c.60%⁸ by 2050 as the population ages, increasing the burden on the working age population.

Jamaica is taking important steps to reduce its vulnerability to these risks. As noted above, the country has embarked on an ambitious but successful macroeconomic stabilization program. This has given it greater fiscal flexibility to respond to unexpected shocks, as evidenced by its Covid-19 response, which was praised by the IMF for being nimble and prudent. In addition, it is taking a number of important steps to improve its climate resilience. It has already significantly improved the availability and accessibility of climate-related data and information to support informed decision-making, and is seeking to diversify its economy into less climate-vulnerable sectors. It is also seeking to ensure that its infrastructure planning fully incorporates future climate risks, and to develop public financial management processes that allow it to understand and build its financial resilience to climate extremes.

2.2. Opportunities provided by the Blue Economy

This section explores why sustaining and growing the blue economy is important to Jamaica. It is structured around the blue economy's importance to each of the three pillars of sustainable development: (1) economic prosperity, (2) ecosystem services and (3) social equity/inclusion.

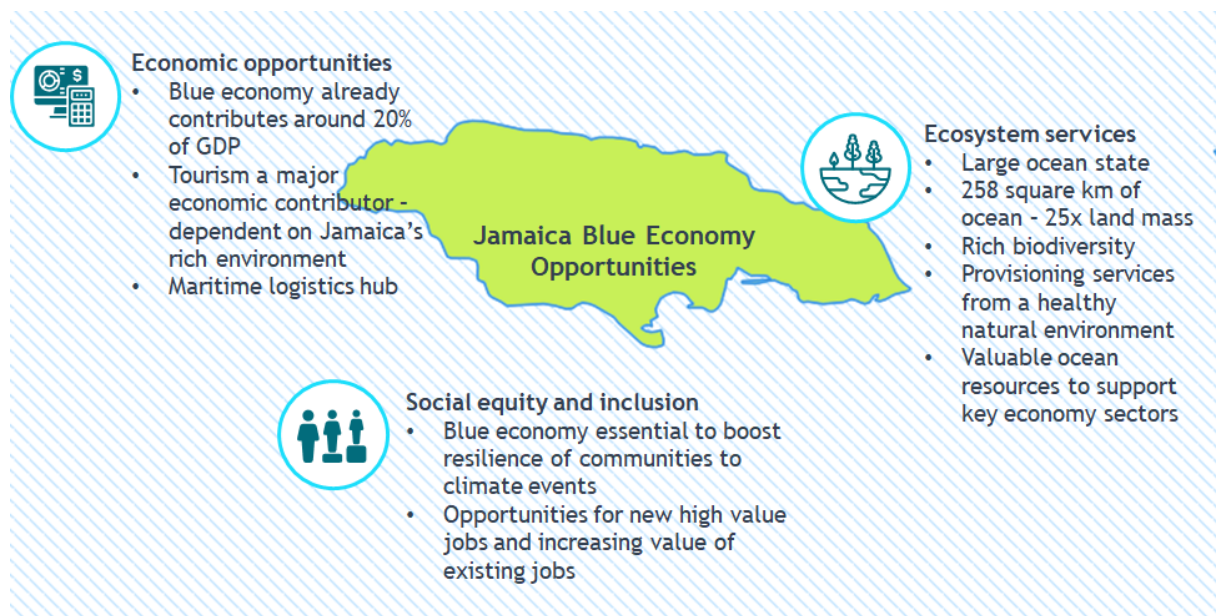
⁵ Previous NLA International scoping studies

⁶ USAID (2017), "Climate Risk Profile - Jamaica", [Link](#)

⁷ Climate Studies Group, Mona (2020): "*State of the Jamaican Climate 2019: Information for Resilience Building (Second draft)*". Produced for the Planning Institute of Jamaica (PIOJ), Kingston Jamaica, [Link](#)

⁸ Andre Richards (2019), "Demographic Changes and their Implications in Jamaica", [Link](#)

Figure 2: Current opportunities presented by the blue economy in Jamaica



2.2.1. Economic opportunities

Blue economy activities already make a significant contribution to national output, with the gross value added (GVA) of key sectors of the blue economy estimated at just under 20% of GDP in 2020. Despite the challenges facing sectors such as tourism during the COVID-19 pandemic, the blue economy contributed US\$ 2.5 billion in GVA, and a similar amount in wages, according to previous scoping studies conducted by NLA International.⁹ Sectors related to the blue economy are estimated to provide over 500,000 jobs, or 37% of the workforce.

The future of the tourism sector depends on a thriving natural environment. In 2020, tourism's direct and indirect contribution accounted for 34% of GDP, 31% of employment, and over 50% of exports.^{10,11} A thriving blue economy is essential to support existing tourism activities, and also offers opportunities to develop new activities, such as eco-tourism. This can attract a high-value clientele and could create opportunities to work together with local communities and NGOs developing sustainable resorts, conserving and rehabilitating the natural environment.

In terms of employment, fisheries and aquaculture are important blue economy sectors. Jamaica has a very high per capita consumption of fish, but is dependent on imports for 79% of consumption.¹² Jamaican fisheries remain largely small scale and artisanal, making a relatively small contribution to the national economy (just 0.5% of GDP in 2018). This suggests the scope

⁹ From previous NLA International scoping studies, based on direct computation from the Blue Economy Valuation Toolkit (BEVTK) and estimates made by the NLA consultant team, indirectly calculated from STATIN/Jamaican Government/World Bank estimates.

¹⁰ Rounded statistics from IDB (2020) "*Caribbean Quarterly Bulletin: Volume 9: Issue 2, July 2020*", [Link](#)

¹¹ The 'direct' contribution of tourism to GDP and employment was 10.5% and 9.4% respectively.

¹² 25.8 kg/year in 2017, according to FAO Fisheries and Aquaculture Department (2019) "*Jamaica Country Brief*"

for significant potential growth in the economic contribution of this sector, although any growth will need to be managed carefully to ensure resources are not over-exploited. Moreover, a narrow focus on the sector's contribution to GDP understates its important contribution to food security and employment, particularly in coastal communities, where it is responsible for the direct employment of about 40,000 people. Taking into account sector linkages, direct and indirect employment in fisheries accounts for about 8.6% of the employed labor force, or 127,000 people, mostly artisanal fishers.¹³

While direct employment in fisheries is male dominated, there are substantial opportunities for women in complementary industries, although these may be at risk. Just 6% of the almost 25,000 fishers in 2017 were female, and only 105 were engaged in aquaculture.¹⁴ However, the majority of workers in complementary industries such as vending and cleaning are female, although overfishing and declining livelihoods are also leading to increased competition from young men in these industries.¹⁵

Jamaica is a major hub for maritime logistics, and several initiatives are underway to open up further opportunities in this sector. Jamaican ports handle significantly more cargo than any other Caribbean country, and revenues from cruise tourism stood at US\$ 244 million in 2017-18 before the impact of the Covid-19 pandemic.¹⁶ Ongoing initiatives include the promotion of Special Economic Zones, and the upgrading of cruise and cargo port. The Jamaica Logistics Hub Initiative seeks to build on these existing strengths to *“capitalize on the trade and business opportunities that will emanate from the expansion of the Panama Canal”*. This recognizes that Jamaica benefits from a strategic location with vessels traveling through the trade lanes of the Latin America and Caribbean serving a consumer market of approximately 800 million people.¹⁷ Box 1 provides more information.

Box 1: Jamaica is already positioning itself to become a global logistics hub

Jamaica is already a regional leader in the logistics and shipping space and had the greatest number of container ship arrivals of comparable Caribbean nations in 2018.¹⁸ The country's location close to the Panama Canal, within reach of main shipping lanes accessing Europe, North America, and Africa makes it ideally placed to expand its activity in this sector even further.¹⁹ Furthermore, global trends towards nearshoring provide an opportunity for Jamaica to take advantage of US efforts to bring segments of their supply chains closer to home.



¹³ Previous NLA International scoping studies

¹⁴ FAO Fisheries and Aquaculture Department (2019) *“Jamaica Country Brief”*

¹⁵ Fisheries Division, Ministry of Industry, Commerce, Agriculture and Fisheries (2017) *“Promoting Community-based Climate Resilience in the Fisheries Sector - Environmental and Social Management Framework”*, [Link](#)

¹⁶ V. González, *“Impact of COVID-19 on transport and logistics connectivity in the Caribbean”*, Project Documents, (LC/TS.2020/157), Santiago, Economic Commission for Latin America and the Caribbean (ECLAC), 2020, [Link](#)

¹⁷ <https://www.jseza.com/jamaica-logistics-hub-initiative/>

¹⁸ Phang et al (2022), *“A review of the blue economy, potential, and opportunities in seven Caribbean nations pre-COVID-19”*, [Link](#)

¹⁹ Durant (2014) *“The Jamaica Logistics Hub and the Jamaica Growth Agenda - Implications for Funding and International Competitiveness”*, [Link](#)

In 2017, Jamaica outlined its comprehensive Logistics Hub Master Plan based around 7 strategic enablers:²⁰

- Improving institutional effectiveness;
- Ensuring supportive policies and legislative and regulatory frameworks;
- Enhancing workforce capacity;
- Developing efficient and productive infrastructure;
- Providing efficient transport logistics systems;
- Facilitating sustainable financing; and
- Promoting the LHI.

The enablers are underpinned by 65 strategies and 105 actions. The actions set out in the plan are expected to be an engine for growth which will lead to 87,000 direct jobs.²¹ There will be over 3,800 hectares of land developed and US\$ 28 billion invested.

Since setting out the master plan, Jamaica has made impressive strides towards improving its regulatory and administrative environment. In 2018, the rate of timely manifest submissions to the Jamaica Customs Agency fell by 40% thanks to the implementation of an electronic customs clearance process.²² In 2019, average application processing reduced to 28 hours and overall clearance times to an average of 32 hours, which is approaching the gold standard of same day clearances.²³

There is significant future economic potential in other blue economy sectors. These include various forms of renewable energy, ship maintenance and repair, and, potentially, desalination. An important feature of many of these growth opportunities is that they will help diversify Jamaica's economy away from the climate sensitive agriculture and, to a lesser extent, tourism sectors and towards economic activities that are likely to be more resilient to a changing climate. These opportunities are discussed further in section 5.3 below.

2.2.2. Ecosystem services

Jamaica's coastal environment - its core blue economy resource - delivers value to the country that is not fully captured in metrics such as GDP. Jamaica's exclusive economic zone covers over 258,000 square kilometers of ocean - approximately 25 times that of its landmass. While some of the importance of this coastal ecosystem is captured in current employment, trade, and economic output statistics²⁴ there are a range of other crucial ecosystem services that are not directly represented in economic markets and values. The true value of a healthy blue economy to the welfare of Jamaican citizens (and beyond) is likely to be significantly underestimated by metrics such as gross value added (GVA) or gross domestic product (GDP). It is notable in this regard that while Jamaica's GDP growth has lagged behind others in the

²⁰ Nathan Inc (2017) "Implications for Funding and International Competitiveness", [Link](#)

²¹ Jamaica Special Economic Zone Authority (20th November 2017) "Logistics Hub Master Plan Presented To Public", [Link](#)

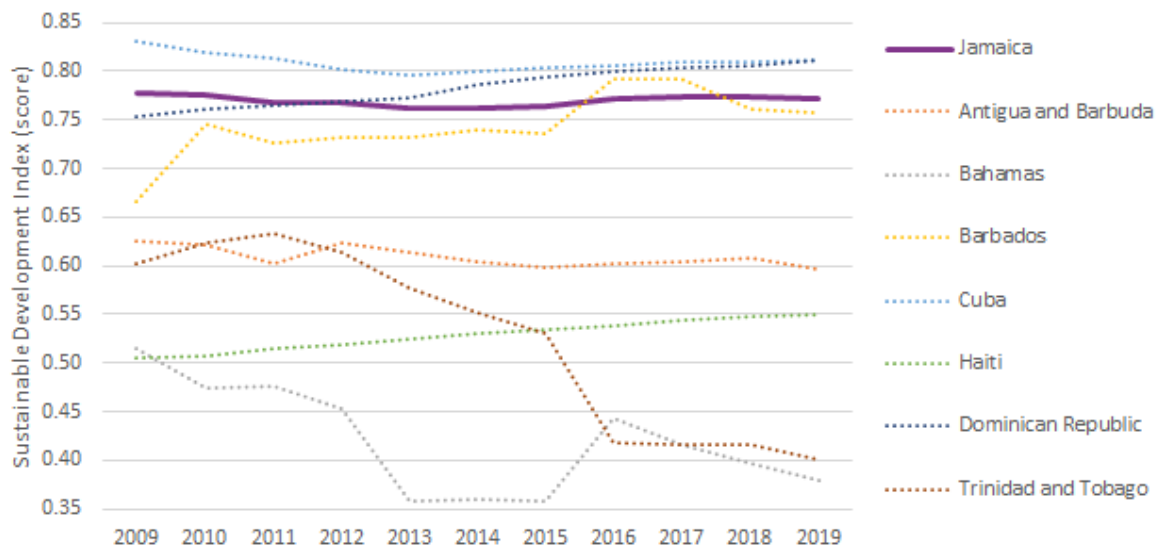
²² ASYCUDA (2019) "ASYCUDA IN ACTION - COMPENDIUM 2019, [Link](#)

²³ ASYCUDA (2021) "ASYCUDA Partnerships for Sustainable Development - COMPENDIUM 2020, [Link](#)

²⁴ For instance, as noted above, healthy ocean ecosystems are essential for tourism and fisheries to make their contribution to the Jamaican economy -

region (see Figure 1 above), it is one of the highest performers on the Sustainable Development Index in the region, which is a composite index comprising indicators of human development, quality of life, and environmental footprint, as shown in Figure 3.

Figure 3: Jamaica Sustainable Development Index over time



Source: Sustainable Development Index

The coastal environment provides provisioning services to, as yet, undeveloped economic activities, as well as services, such as flood protection and remediation of pollution. Secondary products such as algae, timber, minerals etc. can support development of other product and service industries, such as pharmaceuticals and biochemicals, construction sector materials and inputs, health products etc. Marine ecosystems can also protect against floods and remediate pollutants such as excess nutrients and sewage, as long as they remain balanced.

Jamaica's mangroves, in particular, provide important indirect services including flood protection, carbon sequestration, support to healthy fisheries, and provisioning services to other economic activities. The value of flood protection alone is valued at around US\$ 216 million per year.²⁵ Where mangroves are present there is a higher rate of carbon absorption, and mangroves provide a highly effective breeding environment for fish that later relocate offshore to adjacent habitats, such as coral reefs.²⁶ Mangroves also support timber, honey, and fuel wood markets, and may also contribute to boosting amenity value and water quality for tourism.²⁷

Finally, a thriving local environment delivers amenity value in and of itself. Not typically

²⁵ Ortega, S.T., Losada, I.J., Espejo, A., Abad, S., Narayan, S., Beck, M.W., (2019). "The Flood Protection Benefits and Restoration Costs for Mangroves in Jamaica". Technical Report. World Bank, 2019, [Link](#)

²⁶ Edwards, Peter E.T. (2019) "Valuation of Selected Ecosystem Service Co-Benefits Beyond Coastal Protection", Technical Report, World Bank. [Link](#)

²⁷ *ibid*

part of market-based economic valuations, environmental ecosystems offer value for:

- **Usage** i.e. the welfare derived from use of a healthy natural environment (for leisure, for example)
- **Option value** i.e. the potential to make use of the natural environment, even if not always actively used
- **Existence value** i.e. the value of knowing a pristine ecosystem and all its diversity exists.

In Jamaica, these values are likely to be very high, especially the latter; the ocean is deeply embedded in Jamaican culture and could be said to form part of the national consciousness.²⁸

2.2.3. Contribution to social inclusion

Jamaica aims to enhance social inclusion, although this is made more challenging by climate change. Jamaica's Vision 2030 is of a country with a *“high level of human capital development; greater opportunities and access to these opportunities for the population; and a high level of human security”*.²⁹ However, climate impact threatens this vision, as it is relatively poorer communities, women, and vulnerable groups who are most likely to be affected by climate events.

The blue economy can support social inclusion and equity through a number of impact channels:

- **Blue economy services are particularly important for the vulnerable.** Some of the key ecosystem services described in Section 2.2.2, most notably food provision and flood protection, are likely to be particularly important to relatively vulnerable and disadvantaged groups.
- **The blue economy offers opportunities for employment and human capital development.** The blue economy can unlock higher-value activities, such as eco-tourism, or sustainable logistics and infrastructure, which could bring with it higher value jobs.
- **Blue economy development can support empowerment.** Natural resources will best be maintained when the communities living around them are involved in decisions and see the direct benefit of a sustainably managed, thriving, local environment. A conscious approach to developing the blue economy can and should involve local communities, ensuring participation of both men and women in the opportunities presented, providing both intrinsic benefits from enhanced participation as well as making sure the benefits unlocked are inclusively shared. As discussed further below, the network of organizations responsible for Jamaica's existing fish sanctuaries and marine parks, the MPA network, provides a platform and framework that can be used to deliver these benefits.

While the blue economy offers potential for social inclusion, this needs to be consciously fostered. The social inclusion benefits of the blue economy are not inevitable; without

²⁸ Previous NLA International scoping studies

²⁹ Government of Jamaica, *“Vision 2030 - National Development Plan”*, [Link](#)

conscious planning the gains of a thriving blue economy could be concentrated among relatively wealthier businesses and individuals, who are often best placed in terms of accessibility to economic opportunities. Section 5.5 proposes actions that can help make sure the blue economy delivers benefits for all Jamaicans.

2.3. Summary

The blue economy provides huge opportunities for Jamaica to scale up sustainable and inclusive development. It is already making a substantial contribution to Jamaica's economy, with potential to unlock further opportunities for economic prosperity. At the same time, the sustainable management of the country's ocean resources can support environmental sustainability and generate a range of ecosystem services that will become increasingly valuable as climate impacts accelerate. With careful management, both these economic and non-economic benefits can be fostered in a way that ensures they particularly benefit the youth, women and disadvantaged groups.

3. Strengths that Jamaica can capitalize on

Jamaica has a number of intrinsic strengths in relation to the blue economy. Its exclusive economic zone covers over 258 thousand square kilometers; an area approximately 25 times larger than its land mass. It is also strategically located in both major cruise routes and as a hub for logistics along major international shipping lines, and already benefits from five cruise terminals and three international airports.

This section explores the strengths Jamaica can build on beyond these characteristics, organized around the pillars of PROBLUE's Blue Economy Development Framework (BEDF).³⁰ It explores in turn Jamaica's strengths in relation to: (1) data, analysis, and dissemination, (2) policy and institutions, and (3) fostering investment. Each of the three subsections presents areas of relative strengths and recognizes progress already made in Jamaica which can be build on in relation to each of these three areas. Nonetheless, there are also challenges that need to be addressed in each of the three BEDF pillars - these are discussed below in Section 4.

3.1. Strengths in relation to data, analysis and dissemination

Jamaica's strong government capacity gives it a strong foundation for collecting data, and analyzing and disseminating it in a way that facilitates the growth of the blue economy. According to the World Governance Indicators, Jamaica's 2021 ranking for government effectiveness was in the top third of all countries in the world and well above the average for the Latin America and Caribbean region as a whole.³¹

Some examples of strong data collection, analysis, and dissemination which can support blue economy development include:

- **The State of Jamaican Climate Report, published by PIOJ.** The report Volume III includes detailed information on weather patterns, climate projections, and their impact on key sectors that fall under the blue economy.³²
- **The National Environment and Planning Agency publishes a periodic State of the Environment report.** This is released around once every five years,³³ and includes data and analysis on land and coastline ecosystems, and linkages with key economic sectors. NEPA also publishes regular reports on the health of the coral reef,³⁴.
- **The National Fisheries Authority (NFA) collects regular data on catch per unit effort.** The NFA data is collected from a sample of several fishing beaches every month, with a structured sampling plan over the course of the year. This data, alongside biological

³⁰ For a description of the BEDF and the three pillars followed here, see the World Bank BEDF flyer available [here](#)

³¹ <http://info.worldbank.org/governance/wgi/Home/Reports>

³² PIOJ (June 2022) "State of the Jamaican Climate (vol III): Information for Resilience Building - Summary for Policymakers", [Link](#) ; and

PIOJ (June 2022) "State of the Jamaican Climate (vol III): Information for Resilience Building", [Link](#)

³³ NEPA (n.d.). "State of the Environment Report)". [Link](#).

³⁴ Annual up to 2021, now once every three-years in line with practice in other regions

data on catch, is recorded annually for the lobster and queen conch fishery. Furthermore, a periodic survey every three to five years on the Pedro Bank capture provides further data on conch, including abundance, density, biomass and distribution. This data is already put to practical use in sustainable ecosystem management, for example to determine the yearly national total allowable catch quota for fisheries. More broadly, the NFA is placing a priority on data-gathering and research, with a commitment to making sure that *“surveys that are required are being executed in a timely manner for analysis, so that we can make the best possible informed decisions for the industry”*.³⁵ In line with this spirit, since April 2022, the NFA has produced a quarterly ‘Jamaica Fisheries: Quarterly Statistics Report’.

- **The Forestry Department has undertaken various studies relating to the state of mangrove forests.** The World Bank sponsored a study on the value of mangrove forests for coastal protection.³⁶ The Forestry Department is currently in the final stages of developing the National Mangrove and Swamp Forest Management Plan 2023-2033 and Financial Strategy, which aims to promote the conservation, sustainable use and where necessary, restoration (or rehabilitation) of forested wetland ecosystems and habitats.

International agencies also centralize key indicators relating to the blue economy, which provide an evidence base which can be capitalized on for blue economy development. For example, the Ocean Biodiversity Information System records over 16,000 species in the Jamaican Exclusive Economic Zone (EEZ). The Allen Coral Atlas uses satellite imagery to generate high resolution spatial and thematic maps of coral reefs and other habitat types, including detailed data on Jamaica’s reef systems.³⁷

The Government of Jamaica is also harnessing the strong academic credentials in the region to support blue economy development. In particular, Jamaica provides funding support to the regional ‘Centre of Excellence for Oceanography and Blue Economy’, based at the University of the West Indies’ Five Islands Campus in Antigua and Barbuda. The Caribbean Maritime University’s “Centre for Blue Economy & Innovation” was established in 2018 and has great potential to support development in the sector. More generally, the University of the West Indies, which is headquartered in Jamaica, is the second highest ranking academic institution in the Caribbean,³⁸ and publishes a range of reports and data analysis of relevance to the blue economy.

3.2. Strengths in relation to policy and institutions

Jamaica has a firm commitment to sustainable development enshrined in the Vision 2030 Jamaica - National Development Plan and the medium-term socio-economic policy frameworks. The four Goals expressed in the Vision 2030 Jamaica include: (1) empowering Jamaicans to achieve their fullest potential, (2) a secure, cohesive, and just society, (3) a prosperous economy, and (4) a healthy natural environment.³⁹ The Medium-Term Framework

³⁵ Wheelan (2022). “Research Central to NFA Development Plans”. [Link](#).

³⁶ Described in Section 2.2.2 above; Ortega, S.T., Losada, I.J., Espejo, A., Abad, S., Narayan, S., Beck, M.W., (2019). “The Flood Protection Benefits and Restoration Costs for Mangroves in Jamaica”. Technical Report. World Bank, 2019, [Link](#)

³⁷ Allen Coral Atlas (n.d.). [Link](#).

³⁸ Webometrics (2023). “Ranking Web of Universities”. [Link](#).

³⁹ Government of Jamaica “Vision 2030 National Development Plan”, [Link](#)

(MTFs) set out a series of plans and target indicators to monitor progress on delivering these four goals and the 15 associated National Outcomes.⁴⁰ The blue economy related priorities in the most recent MTF are largely related to fisheries and nutraceuticals. These include developing overarching policies in areas such nutraceuticals (the framework for the National Nutraceutical Industry) and fisheries (the National Fisheries and Aquaculture policy) and also creating management plans for different species in fisheries.

This overarching policy ambition is clearly in line with the aims of a thriving blue economy and is supported by further policy statements. By 2025, the Government of Jamaica is committed to achieving 100% sustainable ocean management of areas under its national jurisdiction, guided by sustainable ocean plans. This supports the global target to protect 30% of the ocean by 2030. This policy ambition has been affirmed at the highest political level:

“I reiterate that the richness of Jamaica’s oceans must be managed sustainably to ensure that productivity and diversification is achieved for the benefit of people and communities whose livelihoods depend on it and for the benefit of a healthy planet”

[Prime Minister, the Most Hon. Andrew Holness]⁴¹

There is a rich foundation of legislation that can support the blue economy. There are over 50 pieces of legislation related to the management of maritime, marine, and ocean governance related concerns.⁴² As an example, since the beginning of 2019 Jamaica has banned the importation, manufacture, distribution and use of certain types of plastics. Similarly, the modernized Fisheries Act 2018, which legislated the creation of the NFA, provides a firm foundation for fisheries management. The Act also mandated the establishment of a National Fisheries Advisory Council, which includes elected representatives from the fishing community to foster community involvement in management of resources.

There are also a wide range of institutions that are positioned to help support the blue economy, with 12 ministries and 39 agencies identified.⁴³ as having a role in supporting the agenda. Some of the most prominent examples of ministry and agency work in relation to the blue economy include:

- **The Ministry for Economy Growth and Job Creation (MEGJC) is the portfolio ministry responsible for the blue economy.** There is now a clearly mandated institutional lead with overall responsibility for the blue economy.
- **The National Council on Ocean and Coastal Zone Management (NCOCZM) was founded in 1998 and published a policy and action plan in 2000.** The Council represents a promising start as a coordinating agency responsible for coastal zone policy and management. The policy, ‘Towards Ocean and Coastal Zone Management in Jamaica’, provides a comprehensive review of current legislation relating to coastal zone management, and sets out strategies for sustainable use of coastal resources,

⁴⁰ Government of Jamaica “Medium Term Socio Economic Policy Frameworks”, [Link](#)

⁴¹ Smith (2020). “PM Affirms Jamaica’s Commitment to Protecting the Ocean’s Resources”. [Link](#).

⁴² Previous NLA International scoping studies

⁴³ A complete list of relevant agencies is provided in Appendix 1, based on previous scoping studies by NLA International

proposes a strengthened institutional framework and plans to mobilize financial and human resources.

- **The National Environment and Planning Agency (NEPA) has overall responsibility for spatial planning and environmental conservation.** This includes responsibility for both Planning and Environmental Acts, setting the requirements and terms of reference for environmental impact assessments (governed by Section 10 of the Natural Resources Conservation Authority (NRCA) Act) and carrying out research and regular monitoring and reporting on environmental quality.
- **The Ministry of Tourism’s Strategic Business Plan sets out a future for the sector based on sustainable management of natural resources and inclusive development.**⁴⁴ It is centered on the ‘Blue Ocean Strategy’ and seeks to increase value creation through product differentiation and diversification, to open up new markets and create new demand, while fostering inclusive economic and social development. The Ministry of Tourism is currently furthering its ‘*Destination Assurance Framework and Strategy*’ (DAFS) as a White Paper’
- **An updated Climate Change Policy Framework 2023.** This will update and replace the Government of Jamaica’s first Climate Change Policy Framework of 2015.
- **Jamaica is also the headquarter of the Caribbean Hub of the international Blue Justice Initiative,**⁴⁵ which aims to support implementation of the Copenhagen Declaration 2018 to combat fisheries crime, and promote resilience and fairness among fishing communities globally.

These public institutions are supported by a range of NGOs and private bodies who play an important role in Jamaica’s blue economy. In particular, the MPA network, which, as a network of NGOs and community-based organizations that are responsible for the management of Jamaica’s existing fish sanctuaries and marine parks, plays a critical role in promoting marine resource management and conservation. Some of the specific activities undertaken by this network include monitoring, ecosystem rehabilitation, awareness building and enforcing regulations.

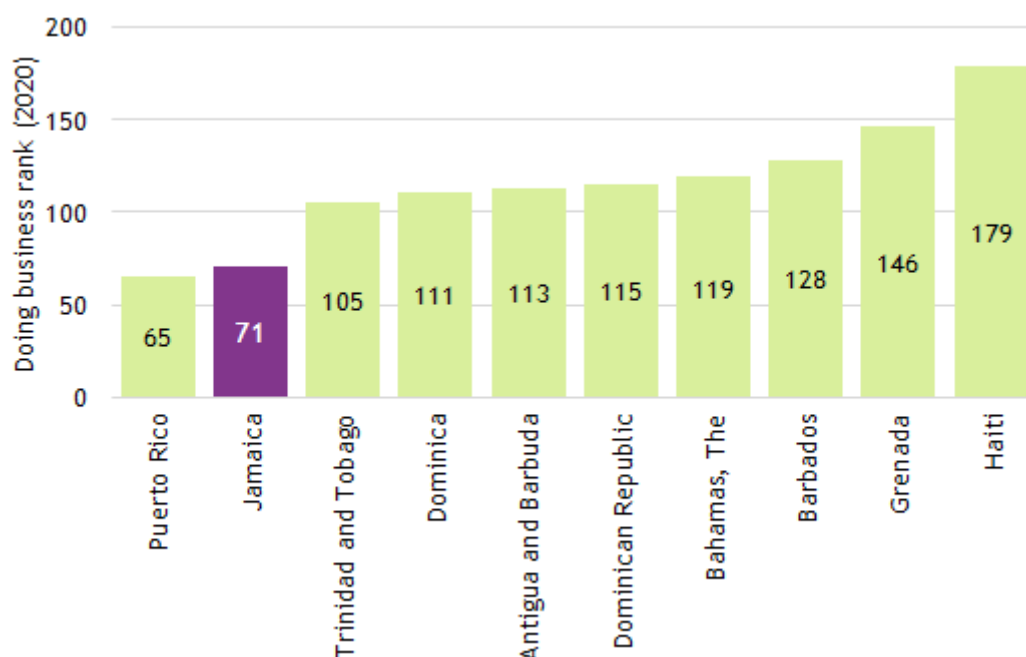
3.3. Strengths in relation to fostering investment

Jamaica’s business climate has all the fundamentals needed to attract investment, including into the blue economy. In 2020, the last year for which data is available, Jamaica was one of the best performers in the region on the World Bank’s ‘Ease of Doing Business’ index, 2nd only to Puerto Rico (see **Error! Reference source not found.**). Similarly, the World Governance Indicators rank its regulatory quality and control of corruption to be higher than the regional average.

⁴⁴ Government of Jamaica Ministry of Tourism, “*Strategic Business Plan 2022/2023 - 2025/2026*”, [Link](#)

⁴⁵ Blue Justice (n.d.). “Blue Justice Initiative”. [Link](#).

Figure 4: Jamaica has a favorable business climate compared to its regional peers



World Bank Ease of Doing Business data

This strong performance was based on the sound macroeconomic fundamentals established in the preceding decade. An annual fiscal deficit of 11% of GDP in 2009 was reversed into a 1% surplus in 2019, with public debt lowered from 142% to 94% of GDP over the same period.⁴⁶ As a result of these progress, the International Monetary Fund (IMF) concluded that Jamaica was on ‘the path to higher growth’⁴⁷ while the World Bank’s Managing Director of Operations commended Jamaica on a ‘silent revolution’ leading to a ‘quite extraordinary’ macroeconomic turnaround⁴⁸.

The country is showing strong signs of recovery after a challenging few years for the global economy. To respond to the public health needs arising from the COVID-19 pandemic, targets relating to fiscal balance were loosened, spending on health and social protection increased, and VAT reductions introduced. War in Ukraine has since had an impact on worldwide supply chains and further constrained international public funding. Despite these challenges, Jamaica’s 2022 real GDP growth is expected to have been at around 4%, and the financial system is well-capitalized and liquid.⁴⁹

To support business growth and to attract investment, the government has put in place a range of incentive programs. For example, the pioneering ‘Omnibus’ legislative bills include provisions for a range of fiscal incentives to support eligible growing businesses - including customs duty waivers, income tax relief, revisions to regulations governing utilization of tax

⁴⁶ IMF (2022). “Jamaica Works to Maintain its Hard-Won Economic Stability”. [Link](#).

⁴⁷ IMF (2019). “Jamaica: On the path to higher economic growth”. [Link](#).

⁴⁸ Herald & van Trotsenburg (2019). “Jamaica has made an “extraordinary” economic turnaround. [Link](#).

⁴⁹ IMF (2023). “IMF Executive Board Concludes 2022 Article IV Consultation with Jamaica”. [Link](#).

losses, employment tax credits etc.⁵⁰ There are also specific incentive programs for renewal of special development in urban areas, and to support growth in specific industries.⁵¹

Jamaica is also a relatively high performer on economic gender parity and on social progressiveness. According to the World Economic Forum's 'Global Gender Gap Index 2022' rankings, Jamaica is situated 38 out of 146 countries, although this is behind regional leaders such as Barbados (30th) and on mainland countries such as Nicaragua (7th) and Costa Rica (12th).⁵² In the 'Social Progress Index', Jamaica ranks 57th out of 169 countries, slightly lower than regional peers such as Barbados (40th) and Trinidad and Tobago (46th).⁵³

⁵⁰ Linton (2013). "House Passes Omnibus Bills". [Link](#).

⁵¹ For more information, see [here](#) for example.

⁵² World Economic Forum (2022) "Global Gender Gap Report 2022 - Insight Report", [Link](#)

⁵³ Social Progress Imperative (2022) "Social Progress Index", [Link](#)

4. Challenges to address

Despite its considerable strengths, there are also a number of challenges that Jamaica will need to overcome for the blue economy to reach its full potential. In some cases, progress on economic growth, inclusive development, and natural resource management within the blue economy has been slower than planned. Much of this is related to challenges in implementation, including limited financial and human resources.

This section explores the challenges that need to be addressed, structured according to the three pillars of the blue economy development framework. It explores in turn Jamaica's challenges in relation to: (1) data, analysis, and dissemination, (2) policy and institutions, and (3) fostering investment.

4.1. Challenges in relation to data, analysis and dissemination

Although Jamaica has made strides in collecting, analyzing and disseminating data in relation to the blue economy, there are two aspects, in particular, where further progress remains important:

- the need to collect more and better data, including through making better use of new technologies;
- the ability to analyze and process data in order that it can better inform decision-making, especially by policymakers.

In terms of the first issue, while there is regularly collected and high-quality data for some fish and shellfish, the status of most fish stocks remains poorly understood. While higher value catch like queen conch and lobster are monitored and regulations have been developed, additional effort is needed to quantify the health of fish stocks and to support the development of management plans across different species.

Modern data and analytic techniques using geographic information systems (GIS) could support more detailed spatial planning. This would support integrated management by providing data on habitat, species distribution and abundance, the relationship between fish occurrence and oceanographic variables, as well as fishers' activities.⁵⁴ More and better geospatial data could also support higher-value products and labelling, for example sustainability and eco-labelling for domestic and export markets.

In terms of data analysis, there is little information on the value of a range of nature's contributions to people from marine ecosystems in Jamaica. As described in Section 2.2.2 and Section 2.2.3, there are many services provided by natural ecosystems that are not directly traded in economic markets and therefore do not have a directly observable value. However, such services are important to quality of life, and to provisioning of other markets which rely on the preservation and/or restoration of the natural environment.

⁵⁴ Previous NLA International scoping studies

A key priority is to collect better data to help identify the skills needed to support a thriving blue economy. There is limited data relating to gender, skills, and the potential training needs to support key blue economy sectors (see Section 2.2). Jamaica currently lacks the data and analysis that would allow it to understand the sectors and subsectors of the blue economy where it may have a comparative advantage now and in the future, and/or to understand the skills needed to unlock these opportunities in an inclusive way that makes them accessible and for all Jamaicans.

4.2. Challenges in relation to policy and institutions

Despite the strong commitment to sustainable development, and the large number of institutions with a demonstrable interest in the blue economy, there remains no unifying policy framework or strategic plan in relation to the blue economy. While there is a broad umbrella of institutions, laws, and regulations that are relevant to the blue economy, and institutional coordination remains weak. There has been important recent progress on this through the identification of the Ministry for Economy Growth and Job Creation (MEGJC) as the portfolio ministry responsible for the blue economy, but there is further work required to develop a unifying framework and to cultivate a clear set of institutional relationships to drive change.

Where policies do exist, some are dated and implementation has not always been followed. For example, the Ocean and Coastal Management Policy was not put into practice because the NCOCZM was not given the legal mandate, capacity or resources to enable it to become an implementing agency.⁵⁵ Similarly, the capacities and enforcement powers of both NEPA with respect to monitoring marine water quality, and the Water Resources Authority (WRA) with respect to surface and ground water resources, currently suffer from weaknesses that make water quality monitoring and enforcement deficient.

More broadly, while there is a large suite of relevant legislation and policies, many need updating, and effective implementation. As noted in section 3.2, there are several pieces of legislation relevant to the blue economy. However, many are in need of updating to keep abreast of current developments, and the process to develop and enact these pieces can be slow. The Attorney General's Department could be included at an earlier stage in the policy making process to avoid delays in finalization and implementation.

4.3. Challenges in relation to fostering investment

Notwithstanding Jamaica's many strengths in relation to fostering investment in the blue economy, there are also aspects of the enabling environment that are less supportive. Some of these relate to the overall macroeconomic and financing constraints in the country, others are more specifically related to the blue economy.

While the country's macroeconomic stabilization program has substantially improved the country's macroeconomic fundamentals, continued implementation restricts the government's flexibility to support the expansion of the blue economy. Supported by international partners, Jamaica is pursuing a course of fiscal consolidation targeting a primary

⁵⁵ Previous NLA International scoping studies

surplus of 5.5% of GDP for Fiscal Year 2023/24, with projections suggesting that it will remain above 5.0% per annum in the period to 2027/28.⁵⁶ While this strategy will ensure that Jamaica retains the flexibility to respond to future shocks as well as maintaining debt sustainability, it inevitably limits the opportunity for using fiscal stimulus to foster investment in the blue economy.

This is matched by the difficulties that companies can have in accessing credit. While the country has benefited from rapid financial sector deepening over the last decade as a consequence of its macroeconomic stability, recent monetary tightening in response to the high inflation environment has restricted credit availability. For example, a recent study revealed that while, in 2014, approximately 40% of Jamaican firms reported barriers to credit access (e.g., from collateral requirements) as major or severe obstacles to growing their businesses, by 2020, the proportion of firms reporting these challenges had risen to about 60%. Other concerns expressed by businesses relate to complex application procedures, the incompatibility of firm borrowing needs with bank preferences (e.g., regarding loan size or maturity), and broader scepticism regarding their ability to secure credit from providers.⁵⁷

These general challenges in fostering investment are compounded by specific challenges in relation to the blue economy. These include:

- Most people and firms suffer from limited understanding/knowledge of the blue economy and its potential, inevitably making it less likely that they would either seek investment for, or provide capital to, the blue economy.
- Within the fishing sector, overfishing and illegal, unreported, unregulated (IUU) have resulted in declining fishing yields in recent decades making further investments in the sector neither financially or socially desirable ahead of sustainable management practices or alternatives being introduced. However, there is also a degree of resistance to alternatives such as aquaculture.
- Private sector investment in the blue economy may need the development of financial instruments which are tailored to suit the opportunities, risk-profile, and maturity of its different sectors. This challenge is compounded by environmental and social externalities that are not valued in traditional market values, and therefore need innovative finance mechanism to “price in” these externalities.




4.4. Summary

Figure 5 below summarizes the key strengths and challenges that Jamaica must contend with as it develops its blue economy roadmap.

Figure 5: Strengths and challenges influencing Jamaica’s blue economy development

⁵⁶ IMF (2023). “Jamaica: 2022 Article IV Consultation - Press Release”. [Link](#).

⁵⁷ IDB and IDB Invest (2022) “Finance for Firms: Options for Improving Access and Inclusion”. [Link](#).

BEDF Pillar	Strengths	Challenges
 <p>Data, Analysis & Dissemination</p>	<ul style="list-style-type: none"> ✓ Strong government capacity ✓ Prestigious academic institutions ✓ Range of specific publications and data releases of direct relevance to the BE 	<ul style="list-style-type: none"> ✗ Data collection gaps in key areas ✗ Limited use of new technologies to collect data (especially geospatial) ✗ Use of data to support policy making is limited e.g. skills assessments, natural capital valuation
 <p>Policy, Institutional and Fiscal Reforms</p>	<ul style="list-style-type: none"> ✓ Strong political commitment to sustainable development ✓ Foundation of legislation and regulation for blue economy ✓ Wide range of public institutions with interest in the BE ✓ Network of NGOs and community organizations playing an active role in marine resource management and conservation 	<ul style="list-style-type: none"> ✗ No unifying framework or strategic plan ✗ Some outdated policies and/or weaknesses in implementation
 <p>Fostering Investment</p>	<ul style="list-style-type: none"> ✓ Favorable business climate ✓ Sound macroeconomic fundamentals ✓ Some incentive programs ✓ Strong performance on gender equality 	<ul style="list-style-type: none"> ✗ Limited fiscal space ✗ Tight monetary conditions and difficulties accessing finance ✗ Limited knowledge and understanding of the BE ✗ Unsustainable practices undermining investment opportunities ✗ Absence of specific financing instruments

5. Actions - Blue Economy Roadmap

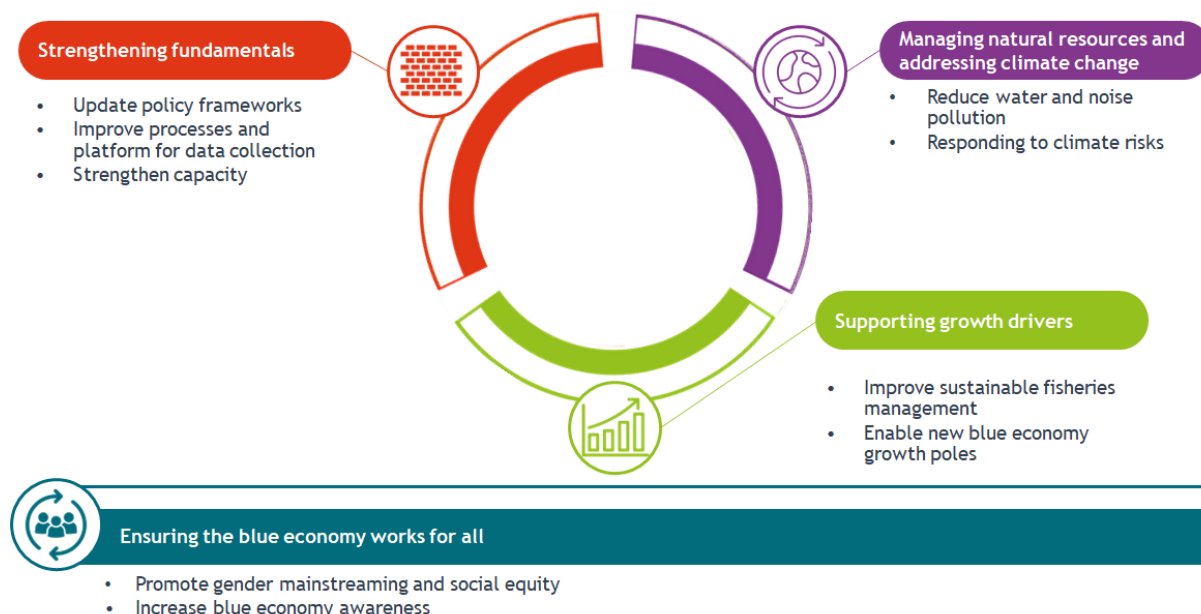
5.1. Framework for prioritizing and phasing actions

The Roadmap organizes actions to develop the blue economy around three pillars, and a cross-cutting theme. These build on the blue economy development framework pillars (discussed in section 4), reorganized around pillars that reflect the Jamaican context. As shown in Figure 666, these are:

- **Strengthening fundamentals:** This is about making sure the broader enabling environment conditions support the development of the blue economy. Actions related to two of the BEDF pillars are concentrated here, relating in particular to: (1) data, analysis and dissemination, and (2) policy, institutional and fiscal reform.
- **Supporting growth drivers:** This is focused on supporting the growth of key blue economy sectors, taking advantage of the opportunities set out in Section 2.2. It includes actions across all three BEDF pillars, with improved data and stronger policies helping to foster investment.
- **Managing natural resources and addressing climate change:** This comprises actions which seek to conserve or restore Jamaica's rich natural habitat, especially in the face of growing climate risks. It also includes actions related to ensuring Jamaica's blue economy supports the country's Nationally Determined Contribution (NDC) and broader low-carbon development aspirations. Actions in this category primarily relate to (1) data, analysis and dissemination, and (2) policy, institutional and fiscal reform.
- **Ensuring the blue economy works for all:** This cross-cutting theme is in place to make sure that harnessing the opportunities presented by the blue economy is inclusive, fair, and accessible to all Jamaicans. It spans all of the BEDF pillars.⁵⁸

⁵⁸ For a description of the BEDF and the three pillars followed here, see the World Bank BEDF flyer available [here](#)

Figure 66: Jamaica's Blue Economy roadmap across three pillars and one cross-cutting theme






Actions are also categorized as either short-term or longer-term priorities. Short term actions are the focus of the coming 1-3 years (2024-2026), while longer term actions would be the priority in the period 2027-2030.

The prioritization is based on an analysis of risk type, and dependencies between actions. Actions earmarked for the short term are based on:

- **No or low regrets nature.** Actions are prioritized if they will be, or are highly likely to be, valuable regardless of future uncertainty, especially where they are expected to be net positive in terms of delivering benefits in the short term.
- **Enabling greater flexibility.** Actions which have high synergies with other actions, or which can increase the “option set” of future actions should be prioritized. This includes for example, actions which help build capacity so that stakeholders in Jamaica are better equipped to promote and deliver the blue economy despite future uncertainty.
- **Long lead times and avoiding lock-in.** Actions which would have long lead times, or which help to avoid “lock in” should be prioritized. Avoiding lock-in means minimizing the risk of over-committing to a specific set of actions which result in dependency and may later turn out to be sub-optimal. For example, this may include actions to respond to potential long-term risks such as increased saline intrusion.
- **Strong political buy-in.** Finally, actions which are likely to be supported in the short-term and have the political will and institutional capacity to implement, should also be prioritized in the short-term.

Moreover, within those actions identified as important in the short-term, the Roadmap specifically highlights those actions which are of particular priority. These have been identified as their implementation is critical for helping to unlock future actions or opportunities in the blue economy. Figure 7 illustrates the prioritization framework.

Figure 7: Prioritizing actions in the Blue Economy Roadmap

Phasing / prioritization		Description
 Priority Actions	Short term actions which should be considered a priority	
 Short-term	Actions that should be undertaken in the next 1-3 years, between 2024 and 2026	
 Longer-term	Actions that can be undertaken over the period between 2027 and 2030	

5.2. Strengthening Fundamentals

Strengthening fundamentals aims at making sure the broader enabling environment conditions support the development of the blue economy. Actions broadly relate to:

- Updating and improving policy and institutional frameworks
- Improving processes for data collection and dissemination
- Strengthening capacity

In total 17 actions are identified to strengthen the fundamentals and facilitate development of the blue economy, of which five are high priority short-term actions. Most of these relate to the development or updating of policies, defining the role of and capacitating key government institutions and agencies, and improving the collection and application of data. The full set of actions is set out in Figure 8.

An overarching priority is to define and operationalize lead institutions responsible for overseeing and driving the development of the blue economy. The MEGJC is mandated to oversee the blue economy. However, under the leadership of the MEGJC, recognizing the cross-sectoral nature of the blue economy, the NCOCZM or a similar agency with a multi-agency composition, could help coordinate and drive action. Once established, for example, this body can take the lead in updating or finalizing key policy documents including the 2001 Ocean and Coastal Zone Management Policy and the Cays Management Policy. It can also work with specific agencies such as NEPA and the National Fisheries Agency to enhance their capacity. However, any such body would need to be clearly mandated with clear responsibilities and targets defined and be granted sufficient resources, including secretariat support, to perform this role.

Once a revitalized and clearly mandated multi-agency body is operationalized, it will need to develop the institutional framework to coordinate actions across multiple agencies and ensure a whole-of-government approach. This can be facilitated by specific cross-agency working groups on key issues such as fisheries, water quality and data collection.







There is an urgent need to develop a blue economy finance and investment framework. This will need to consider how to support both private sector investment into key growth drivers provided by the blue economy, as well as the public investment that may be needed, including to protect and restore the natural resources on which the blue economy depends. In this way, the investment needs associated with the (short-term) economic ambitions for the blue economy can be aligned with the protection and restoration of critical ecosystems. In the

short term, this work will be led by PIOJ and the Ministry of Finance and Public Service (MOFPS).





















There is a need to assess and improve both technical capacity and access to relevant technologies across various blue economy related agencies and activities. An assessment should be undertaken to assess which agencies would benefit most from initiatives to improve technical capacity and access to technology. For example, economics was an area identified in previous work⁵⁹ as one which could benefit from improved technical capacity, while human capacity could be improved at NEPA for undertaking environmental monitoring activities.









There are several areas where better data collection, analysis and dissemination are needed, which, among other benefits, will facilitate better understanding of the value of the blue economy. A key action is to undertake a comprehensive strategic environmental assessment relating to blue economy priorities, to be led by NEPA. This assessment will serve to establish critical baseline data on Jamaica's marine ecosystems and provide the basis for a valuation of the ecosystem services. In addition, more detailed national statistics on blue economy indicators should be collected, including data on emergent risks and enhanced national statistics on the blue economy. Data quality and accessibility can be improved by STATIN creating a framework for, and populating, a central data warehouse on the blue economy.

Figure 8: Strengthening Fundamentals - prioritized action plan

#	BEDF Pillar	Phasing	Action	Institutions
Updating policy and institutional frameworks				
1			Define role & responsibility(ies) of the NCOCZM (or other) as coordinating blue economy body / council with a legal mandate, under the leadership of MEGJC (including necessary legislative and administrative changes)	Lead: Cabinet of Jamaica / MEGJC Support: NFA, MFAFT and/or NEPA
2			Create working groups on cross institution issues to foster better coordination and efficient processes, e.g. working groups on fisheries and water quality	Lead: Various, under leadership of MEGJC and NCOCZM (or equivalent coordinating body)
3			Create Blue Economy Finance & Investment Framework	Lead: MOFPS & PIOJ Support: MEGJC, JAMPRO, MIIC, Development Bank of Jamaica (DBJ) and Jamaica Business Development Corporation (JBDC)

⁵⁹ NLA International (2022), Preliminary Options for Fostering a Sustainable Blue Economy in Jamaica

#	BEDF Pillar	Phasing	Action	Institutions
4			Finalize the Cays Management Policy	Lead: MEGJC (Environment and Risk Management Branch) Support: NZOCZM, NEPA, NFA, JDF Coast Guard, JCF Marine Police
5			As part of regular periodic update of relevant sector policies (e.g. climate change, tourism, maritime, energy etc.), ensure blue economy is explicitly taken into account	Lead: Various Support (and coordination): MEGJC and NCOCZM
6			Update the 2001 Ocean and Coastal Zone Management Policy	Lead: NCOCZM (or equivalent coordinating body)
7			Explore opportunities for collaboration with other regional peers on blue economy issues	Lead: NCOCZM (or equivalent coordinating body)
Improving processes for data collection and dissemination				
8			Set up data gathering coordinating unit, and specific working groups, composed of various ministries, departments and agencies as well as relevant bodies, with annual events	Lead: NCOCZM (or equivalent coordinating body) and STATIN
9			Undertake comprehensive Strategic Environmental Assessment	Lead: NEPA
10			Create framework for and populate central data warehouse with, key data on blue economy including social data and emergent risks e.g. pollution, climate data, vulnerability indices	Lead: STATIN Support: PIOJ, NEPA, Academia
11			Conduct carrying capacity studies on resources that can sustainably be extracted in the fisheries sector.	Lead: NFA
12			Enhance national statistics on the economic contribution of the Blue Economy for example via satellite accounts and systems of natural capital accounting	Lead: STATIN Support: PIOJ, MOFPS, MPA network, NEPA, Academia
Strengthening capacity				
13			Enhance environmental monitoring at NEPA, supported by academia	Lead: NEPA Support: Academia

#	BEDF Pillar	Phasing	Action	Institutions
14			Improve enforcement of environmental laws and regulations, coordinated with other relevant MDAs	Lead: NEPA Support: MDAs
15			Invest in institutional and human capacity at the National Fisheries Authority	Lead: NFA Support: NGOs
16			Explore opportunities for access to and transfer of relevant technologies across blue economy use cases	Lead: NCOCZM (or equivalent coordinating body) Support: Academia, MSET, NGOs
17			Identify opportunities for building technical capacity at various agencies relevant to the blue economy (beyond those already identified above)	Lead: NCOCZM (or equivalent coordinating body) Support: Academia, NGOs

5.3. Supporting growth drivers

There are 21 actions identified to support blue economy growth drivers of the blue economy in Jamaica, of which six have been identified as high priority. These actions primarily relate to either:

- Protecting and supporting existing growth drivers (e.g. fisheries) and
- Identifying, prioritizing and implementing policies to support new growth areas.

The full set of actions is set out in Figure 9.

A number of actions relate to undertaking feasibility studies, to allow for prioritization of the various potential growth areas. There are a number of areas with blue economy growth potential in Jamaica, for example, yachting maintenance (Box 3) and bioprospecting (Box 4). Feasibility studies in these areas, as well as others such as offshore renewable energy, led by the respective lead ministries, are urgent. These will allow for the prioritization of these growth opportunities, and for the establishment of tangible plans for the development of those that are prioritized. These policies should also include appropriate incentive frameworks for investment.

Development in other areas is more advanced, with growth projects already identified and policies being finalized. For opportunities such as mariculture and aquaculture, specific investment projects have been identified, including upgrading the Bowden mariculture facility and establishing a mariculture facility in western Jamaica. The development of these investment opportunities can be complemented by development or finalization of key policy documents. For example, NEPA should finalize the Mariculture policy in the short-term while NFA should complete National Fisheries and Aquaculture policy, give consideration to pelagic fishing. It should also ensure that the insights provided by Pilot Program for Climate Resilience regarding how to integrate climate change considerations are fully reflected in the finalized policy (see also section 5.4).⁶⁰ In a similar vein, the Ministry of Tourism should update the tourism sector development plan in the short term, to place greater emphasis on sustainability and eco-tourism - see discussion of sustainable tourism (Box 2)

There is a need to increase protection of the fisheries, through NFA action to introduce new policies and to enhance monitoring and enforcement, and supported by the participatory frameworks and arrangements already provided by the MPA network. The fisheries are a key area of the blue economy and their protection should be prioritized. There is a need for increased resources across various agencies to reduce illegal, unreported, unregulated (IUU) fishing, and technology can be better utilized to monitor and evaluate catch data. New policies, guidelines, and regulations in areas such as fishing technology and restricting inshore fishing by larger vessels should also be developed. An international guiding framework is already provided by the Copenhagen Declaration and the Blue Justice Initiative,⁶¹ with the Blue Justice Caribbean Hub headquartered in Jamaica, while the existing participatory approaches to fisheries management provided by the MPA network can be leveraged to

















⁶⁰ CIF (2022). “Promoting community-based climate resilience in the fisheries sector in Jamaica”. [Link](#).





















⁶¹ Blue Justice (n.d.). “Blue Justice Initiative”. [Link](#).







increase their scale.

Growth opportunities across all of these sectors can be supported by innovation and the development of new technologies. This lies behind the action for a variety of actors including Jamaica Promotions Corporation (JAMPRO) and the Jamaica Business Development Corporation to collaborate in ensuring that innovation related to the blue economy is prioritized in the country's accelerator labs.

Figure 9: Supporting growth drivers - prioritized action plan

#	BEDF Pillar	Phasing	Action	Institutions
Protecting and supporting existing growth drivers				
18			Update tourism sector development plan, and the Master Plan for Sustainable Tourism Development to increase emphasis on sustainable - and eco-tourism - linked to the blue economy.	Lead MOT Support: TEF, TPDCo
19			Finalize the National Fisheries & Aquaculture Policy	Lead: NFA
20			Introduce policy/regulations on banning or modifying certain gear types (e.g. pot fishing), explore alternatives such as fish aggregating devices (FADs) and line fishing, and introduce regulations on key economic species	Lead: NFA
21			Introduce moratorium on larger vessels fishing inshore	Lead: MOFPS, MOAF NFA
22			Undertake research needed to set clear sustainable catch limits and act on results of research	Lead: NFA, Support: Fisheries Compliance, Licensing and Statistics Division
23			Increase resources of key agencies to properly regulate and enforce laws and increase penalties for fisheries offences	Lead: MOFPS, MOAF NFA, MAJ, NEPA, Ministry of National Security Support: JDF Coast Guard, JCF Marine Police
24			Develop a Vessel Monitoring System/Monitoring Control and Surveillance for all fishing vessels. This may be undertaken under the Blue Justice Initiative (for which Jamaica is the Caribbean regional hub)	Lead: NFA, MAJ
25			Leverage existing fish sanctuaries management arrangements to establish Fisheries Management Zones	Lead: NFA Support: MPA network

#	BEDF Pillar	Phasing	Action	Institutions
26			Conduct institutional review on options for monitoring and evaluation of fisheries, including options on utilizing inexpensive technology	Lead: NFA Support: MOAF, Cooperatives
27			Make arrangements (e.g. expansion of existing ports) such that larger and international fishing vessels can be accommodated at Jamaican ports	Lead: Port Authority Support: NFA, MAJ
Identifying, prioritizing and implementing policies to support new growth areas				
28			Finalize updated Mariculture Policy	Lead: NFA
29			Undertake feasibility studies in offshore renewable energy areas (e.g. offshore wind, tidal, floating solar and ocean thermal energy conversion)	Lead: Ministry of Science, Energy and Technology (MSET)
30			Undertake feasibility study for Bioprospecting and identify suitable financing products to support sector development (as appropriate)	Lead: JAMPRO, Development Bank of Jamaica, PIOJ Support: Universities, Scientific Research Council
31			Undertake feasibility study, building on earlier research, for further vessel repair and maintenance/ship yards/dock yards (north and south coasts), following the German Ship Repair Jamaica project	Lead: MAJ / JAMPRO Support: PIOJ, PAJ, Academia
32			Promote Blue Economy innovation across various accelerator labs	Lead: JAMPRO Support: Jamaica Business Development Corporation, Development Bank of Jamaica, MOT, Ministry of Industry, Investment and Commerce
33			Develop a yachting policy document with steps for the policies and measures which would need to be put in place to make Jamaica an attractive location for yacht maintenance and repair	Lead: MOT Support: JAMPRO, MAJ, PAJ, Development Bank of Jamaica
34			Upgrade existing facilities for seaweed & shellfish processing, and other parts of the value chain, ensuring sufficient finance is available (grant, loan or other instrument)	Lead: NFA Support: MOAF, DBJ
35			Upgrade Bowden Mariculture facility	Lead: NFA / MOAF Support: JAMPRO, Development Bank of Jamaica

#	BEDF Pillar	Phasing	Action	Institutions
36			Establish Mariculture facility in western Jamaica	Lead: NFA / MOAF Support: JAMPRO, Development Bank of Jamaica
37			Establish new mariculture farms for sea moss, sea cucumber, oysters	Lead: NFA / MOAF Support: JAMPRO, Development Bank of Jamaica
38			Develop policies and incentive frameworks for new areas identified	Lead: NFA / JAMPRO / MOFPS / MIIC / Development Bank of Jamaica

Box 2: Tourism as a driver of blue economy potential

Tourism is a crucial component of the Jamaican economy, accounting for 9.8% of GDP in 2019 but is falling short of its full potential.⁶² The sector was unable to reach the ambitious targets set out in the 2000 - 2010 Tourism Master Plan, such as to account for 15% of GDP by 2010.⁶³



Ecotourism is a potential growth area which could expand the offering of the tourism sector while also supporting conservation and climate goals. At present, although Jamaica has a detailed plan for expanding the tourism sector⁶⁴, this plan places little focus on the sector's sustainability and possibilities to leverage opportunities presented by ecotourism.

There is precedent in the region of initiatives seeking to promote ecotourism. Neighbors like Dominica and Trinidad and Tobago have pinpointed ecotourism as a key growth opportunity.^{65,66}

Costa Rica provides a gold standard example of how sustainability and the promotion of ecotourism can be integrated into sectoral planning. Costa Rica has a long track record of attracting high value tourism with a low environmental impact. Its latest plan looks to build on that record by further expanding and differentiating their tourist offerings. The National Tourism Plan 2022-27 sustainability focused strategic objectives include:⁶⁷

- The development of tailored sustainable development plans for each of the country's 32 designated tourist centers
- Developing community-led tourism offerings in areas of protected forests
- Supporting climate-smart innovation in the sector
- Maintaining a high average length of stay for visitors

Jamaica is making strides with respect to data collection and provision that can support the sector's growth. Jamaica is among the first 26 countries globally to begin implementation of the World Tourism Organization's (UNWTO) Measuring the Sustainability of Tourism (MST) initiative.⁶⁸ The initiative will support Jamaica to develop and disseminate reliable tourism sustainability indicators which will allow for the sector's progress towards meeting its sustainability and climate targets to be evaluated going forward.

The Jamaica-based Global Tourism Resilience & Crisis Management Centre (GTRCMC) could provide thought leadership for Jamaica's transition towards a more sustainable tourist sector⁶⁹. The centre's R&D capability could be used to shape the thinking around how climate resilience and sustainability can be integrated into the sector's management and planning frameworks.

⁶² 2019 is the most recent year for which data is available from the Statistical Institute of Jamaica, [Link](#)

⁶³ Commonwealth Secretariat (2022), "Master Plan for Sustainable Tourism Development", [Link](#)

⁶⁴ Government of Jamaica Ministry of Tourism, "Strategic Business Plan 2022/2023 - 2025/2026", [Link](#)

⁶⁵ UNDP (2019), "Blue Economy Scoping Study for Dominica", [Link](#)

⁶⁶ UNESCO (2021), "A sustainable blue economy: Trinidad and Tobago", [Link](#)

⁶⁷ Costa Rica Institute of Tourism "PLAN NACIONAL DE TURISMO DE COSTA RICA", [Link](#)

⁶⁸ UN World Tourism Organization (2022) "Measuring the Sustainability of Tourism (MST): Current state of play", [Link](#)

⁶⁹ GTRCMC (2018). "Programme Document". [Link](#).

Box 3: Yacht maintenance and repair is a growing industry in the region

Yachting, a growing market worldwide, has long been closely linked with the Caribbean. The global yacht market is projected to expand by a compound annual growth rate (CAGR) of 5.4% between 2022 and 2030 providing an attractive opportunity for Jamaica.⁷⁰



Several countries in the region are beginning to take advantage of opportunities presented by the international yachting market. Building on the region's popularity as a destination, the country has an opportunity to offer goods and services to the yachting community beyond recreation and mooring. For example, while yacht maintenance and repair has often been done in Europe in the off-season, several countries and territories like Trinidad and Tobago, Puerto Rico and Dominica are now looking to offer these services in the Caribbean at competitive price points.

Trinidad and Tobago provides an impressive case study. The 2016 framework for the development of the maritime sector identified the development of yachting infrastructure as a target area for expansion. In 2017 this was formalized in a Yachting Policy document,^{71,72} which sets out specific steps to take between 2017 and 2021 to facilitate the sector's growth, costing at over US\$ 2.6 million, including:

- VAT exemptions for services provided to foreign yachts.
- Extending the allowable stay for foreign yachts to 6 months with the possibility for further extensions based on circumstances.
- Hosting major yachting events as part of a wider marketing and promotional plan.
- Establishing a Yachting Data Repository with the National Statistical Body.
- Implement a national plan for training and certification which formalizes existing skills and includes scholarship programs.

Yacht building is less likely to be a significant opportunity with large yachts being almost exclusively built in Europe. There are some smaller scale producers of smaller vessels in the region but the scale makes it more challenging to justify the investment in skills, training and infrastructure which would be required.

⁷⁰ Research and Markets (2022). "Global yacht market is projected to register a CAGR of 5.4%, in terms of value, between 2022 & 2030". [Link](#).

⁷¹ UNESCO (2021) "A sustainable blue economy: Trinidad and Tobago", [link](#)

⁷² Government of Trinidad and Tobago (2017) "Yachting Policy of Trinidad and Tobago 2017 - 2021", [Link](#)

Box 4: Bioprospecting is a nascent but high potential long-term opportunity

The Caribbean region has high potential for bioprospecting given its extensive biodiversity and the associated genetic diversity. Marine bioprospecting is the process of searching marine environments for the genes, molecules and organisms which have the requisite properties to be used in marine biotechnologies (including pharmaceuticals, chemicals, nutraceuticals and cosmeceuticals). The global marine biotechnology sector forecast to almost double in size from approximately US\$ 6 billion in 2022 to around US\$ 12 billion in 2032, with the Caribbean well-placed to take advantage of this growth.⁷³



Dominica and Trinidad and Tobago have identified bioprospecting as an area of great potential for their blue economies. Dominica has identified focusing on producing niche products such as eco-labelled foods and cosmetics as its preferred approach, given reduced investment needs and shorter lead times compared to the more resource intensive opportunities around pharmaceuticals and chemicals. Nutraceuticals and cosmeceuticals benefit from less rigorous testing requirements which means that the time required to get from discovery to market tends to be around 2 to 5 years as compared to between 5 to 15 years for pharma products. Despite this potential, to date, exploration of these opportunities in the region can be considered negligible.^{74,75}

Expansion of Jamaica's blue economy into the field of bioprospecting would require:

- Robust accounting and regulation to protect ownership rights (e.g., the Convention of Biological Diversity and the Nagoya Protocol)
- Comprehensive environmental regulations
- Private sector investment
- Significant investments in local skills development
- Involvement of local and international research and development (R&D) institutions

A near term opportunity for biotechnology in Jamaica could revolve around the sargassum blooms which have been inundating Jamaican beaches. There are existing methodologies that can use the seaweed to produce biogas, bioethanol or biodiesel and proof of concept has already been established in Mexico.^{76,77}

⁷³ Precedence Research, accessed March 2023, [Link](#)

⁷⁴ UNDP (2019), "Blue Economy Scoping Study for Dominica", [Link](#)

⁷⁵ UNESCO (2021) "A sustainable blue economy: Trinidad and Tobago", [link](#)

⁷⁶ The high levels of arsenic found in Caribbean sargassum biomass can restrict the feasibility of certain use cases and so the algae's potential toxicity needs to be taken into account as the opportunity is explored. Orozco-Gonzalez et al (2022) "Opportunities Surrounding the Use of Sargassum Biomass as Precursor of Biogas, Bioethanol, and Biodiesel Production", [Link](#).

⁷⁷ Zhao et al (2022), "Biofuel Production from Seaweeds: A Comprehensive Review", [Link](#)

5.4. Managing natural resources and addressing climate change

This pillar includes actions related to both:

- Reducing water and noise pollution.
- Responding to climate risks (both the physical risks from climate change and the transition risks from assets with emissions intensive footprints in a world that is focusing on decarbonization).

The Roadmap identifies 11 actions of which four high priority in the short-term. These include actions related to improving water quality and undertaking assessments based on various climate scenarios. The full set of actions is set out in **Error! Reference source not found.**

Improving water quality in Jamaica has been identified as key priority, given its importance to all areas of the blue economy. Water quality has an impact on a number of key blue economy areas, including tourism and fisheries. It is therefore a priority to accelerate the ongoing project to improve Jamaica's water and sewage systems, in particular by eliminating the use of soak-away systems. This will require collaboration from a number of institutions, including the various municipal corporations. It should be complemented by action led by NEPA in cooperation with WRA and the National Solid Waste Management Authority (NWSMA) to improve the legislation, regulation related to sewage systems, and continued work to strengthen regulations and enforcement of solid waste management practices, building on initiatives to cut use of plastics and promote recycling,⁷⁸ as well as reducing upstream pollution and the sedimentation associated with agriculture.

Various assessments can be undertaken to plan for an uncertain climate future. Assessments can be undertaken to inform future policy in areas such as water needs and potential need for desalination (



















Box 5), climate vulnerability of Jamaica's seaports (Box 1) and ecosystem restoration (





Box 6). In addition, studies should be undertaken to assess the potential of climate change risks faced by those coastal communities most exposed and vulnerable to climate change, building on the work already undertaken in the State of Jamaican Climate studies (see Section 3) and the Jamaica Disaster Vulnerability Reduction Project.

Finally, Jamaica needs to take action to reduce its contribution to the pollution affecting the blue economy. This includes ocean noise pollution - requiring the development of a noise pollution strategy; carbon pollution - creating a need for new policy related to decarbonization for ports and shipping (and which can be further supported by ecosystem restoration activities); and to develop policies to adequately protect the maritime environment.

⁷⁸ UNEP web-article (25th January 2021) "Jamaica: plastics ban creates new opportunities", [Link](#)

Figure 10: Managing natural resources and addressing climate change - prioritized action plan

#	BEDF Pillar	Phasing	Action	Institutions
Reducing water and ocean-noise pollution				
39			Accelerate ongoing 5-10 year project to improve water and sewerage systems in major towns, including eliminating use of soak away systems	Lead: NWC Support: NEPA, Municipal Corporations, MOHW, MLGRD
40			Improve legislation, regulation and monitoring related to the sewage systems	Lead: MOHW Support: NWSMA, WRA, NWC
41			Continue to strengthen solid waste management regulations and enforcement, including promoting recycling and reducing plastic waste, and ensure implementation of the National Resource Conservation (Wastewater and Sludge) Regulations (2013).	Lead: NEPA, NWSMA
42			Strengthen watershed management and “ridge to reef” management of natural resources including agricultural runoff	Lead: NEPA Support: FD, MOAF, MPA network, NWSMA, Rural Agricultural Development Authority (RADA), WRA
43			Develop ocean noise pollution strategy	Lead: MTM Support: MAJ
Responding to climate risks				
44			Undertake a climate vulnerability assessment for coastal communities exposed to climate change, identify and implement identified solutions (including mangrove protection and restoration and coral reef protection), building on work already undertaken by Jamaica Disaster Vulnerability Reduction Project	Lead: MEGJC (Climate Change Division), NEPA Support: ODPEM, Municipal Corporations, MLGRD, NEPA, FD, Academia
45			Conduct detailed, location-specific, climate vulnerability and risk assessments for each of Jamaica’s main seaports	Lead: PAJ, MOTM Support: MEGJC (Climate Change Division), ODPEM
46			Undertake assessment of future water needs under different climate scenarios to inform desalination strategy, and explore potential to link with embedded renewable energy generation to contribute to climate change mitigation	Lead: WRA Support: MEGJC (Climate Change Division), Academia, Meteorological Service of Jamaica, NWC
47			Based on the findings of the SEA, develop a marine spatial plan to inform availability and spatial distribution of resources to be extracted and areas to be protected for resilience and biodiversity.	Lead: NEPA, NCOCZM (or equivalent coordinating body) Support: MEGJC, NFA, MSET, MPA network

#	BEDF Pillar	Phasing	Action	Institutions
48			Develop programs for ecosystem protection/ restoration linked to coastal defenses	Lead: NEPA Support: FD, MEGJC (Climate Change Division), NCOCZM (or equivalent coordinating body)
49			Create policy related to maritime decarbonization for ports and shipping	Lead: MTM Support: PAJ, MOFPS, MEGJC (Climate change division), MAJ

Box 5: Desalination could complement improvements to the current water distribution system to alleviate Jamaica's water shortages

Desalination is a well-established water supply technology in the region. There are, for example, active desalination plants in the Bahamas, Trinidad and Tobago and Barbados.



The technology offers a reliable way to meet the increased demands for water, and is resilient to climate risks. Population and economic growth are likely to increase demand for potable water while at the same time the climate is placing increasing stress on ground and surface water availability and quality. For island nations, the risk of rising sea levels risk salinating ground water supplies is particularly acute. Investment costs are falling as technology improves, but desalination of saltwater remains far costlier, and much more energy intensive, than abstraction of groundwater, where groundwater resources are available.

Jamaica faces significant pressures on water supply, to which desalination could play a role in mitigating. Jamaica's water supply constraints, particularly in the Kingston Metropolitan Area (KMA) can necessitate months of rationing in some years. Desalination may offer a potential solution to these shortages, although improvements to distribution and access infrastructure will also play a critical role in ensuring continued water supplies.⁷⁹

However, desalination can be costly, and so other integrated water planning options should also be considered. Desalination is highly energy intensive to operate, and in the context of high local energy costs this needs to be borne into consideration. Alternatives to ensuring adequacy and reliability of supply will also need to be developed (e.g. water storage, water transfer from relatively higher water availability areas, etc.).

Jamaica is currently reviewing a deep-sea desalination project where the water would power hydro turbines before being funneled to houses and other uses in the Kingston area.⁸⁰

⁷⁹ Neufville, Zadi (26th April 2022), "Poor Water Distribution Infrastructure Gives Jamaica a 'Water Scarce' Label", [Link](#)

⁸⁰ Jamaica Information Service (19th March 2022), "Proposed Water Project to Alleviate Scarcity in KMA", [Link](#)

Box 6: Ecosystem protection and restoration would allow other blue economy opportunities to reach their full potential

Ensuring marine ecosystems are healthy and thriving has wide ranging benefits from flood protection to more productive seas. Ecosystem protection and restoration can also enable expansion into other blue economy sectors. For example:



- Eco-tourism is driven by high quality, well protected environments and so expanding the network of national parks, fish sanctuaries, and marine protected areas (MPAs) is critical to fostering this kind of tourism. Recreational diving is a prime example, relying heavily on marine biodiversity and healthy coral ecosystems.
- Fisheries would also stand to benefit from improved ecosystem protection with MPAs cited as a way to conserve biodiversity while providing a net positive impact on fishing yields, if intelligently designed (Gaines et al., 2009; Buxton, 2014).

Jamaica committed to the Caribbean Challenge Initiative (CCI) to designate 20% nearshore marine environment as protected areas by 2020. However, as of 2021, it had only reached around 12%.⁸¹ A number of regional neighbors have met their CCI targets by aggressively expanding their protection of coral reefs, mangroves and fish habitats. Jamaica has also committed to the Global Ocean Alliance's 30x30 target to effectively conserve 30% of its seas by 2030 which will require a step change in their conservation activities.

Increasing the coverage of MPAs in Jamaica will also support Jamaica's wider voluntary environmental commitments. Most notably, the commitments it made as a member of the High Level Panel for a Sustainable Ocean Economy to sustainably manage 100% of the ocean area under its jurisdiction and the commitment made at the 2020 UN Summit on Biodiversity to reverse biodiversity loss by 2030.

5.5. Ensuring the blue economy works for all

This cross-cutting theme focuses on ensuring that the way in which Jamaica harnesses the opportunities presented by the blue economy is inclusive, fair, and accessible to all Jamaicans. This relates to:

- Ensuring that gender mainstreaming and social equity are fully integrated in the development of the blue economy
- Building awareness and skills to ensure that all Jamaicans have the opportunity and ability to participate in the blue economy.

There are nine actions identified to ensure that the blue economy in Jamaica works for all, of which four identified as a high priority. These include actions to ensure that all communities have the opportunity to participate in the growth of the blue economy. The full set of actions is set out in Figure 11.

There should be opportunities for all to participate in the blue economy. Critically, all new blue economy policies should be assessed to understand how they will affect the disadvantaged, including those with disabilities and where appropriate, impacts should be remedied. These assessments and remedies can be informed by historic experiences: provide







⁸¹ UNDP (2021), "Aichi Biodiversity Target 11 Country Dossier: JAMAICA", [Link](#)

insights from the World Bank in relation to integration of gender in the blue economy while Box 8 describes Jamaica's Spotlight initiative which also provides a framework for considering gender integration needs and opportunities. This objective can be further strengthened by offering scholarships and training schemes targeted at certain groups that are traditionally marginalized by the blue economy, for example targeted scholarships, training in database handling and work placements to empower women were flagged as a potential priority area in previous work.⁸² Schemes could also be created to support other groups, including those with disabilities, to ensure they included in blue economy initiatives.













Public awareness campaigns can facilitate greater appreciation of the importance of the blue economy. NCOCZM should undertake public awareness campaigns to i) improve blue economy literacy and ii) promote blue economy careers and opportunities. As a first step, it would be useful to undertake a survey to gain an understanding of current ocean literacy.

Blue economy literacy can be incorporated into national curriculums. Blue economy topics can be incorporated into primary, secondary and tertiary curriculums at schools and universities, and post-education skills training courses can be created for blue economy executives. These training courses should be informed by a skills needs assessment to understand the skills needed to unlock opportunities in the blue economy and make sure opportunities are accessible and inclusive for all Jamaicans

Figure 11: Ensuring the blue economy works for all - prioritized action plan

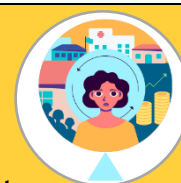
#	BEDF Pillar	Phasing	Action	Institutions
Ensuring that gender mainstreaming and social equity are fully integrated in the development of the blue economy				
50			Offer targeted scholarships for women in areas such as data collection and database maintenance - potentially linked to the Spotlight Initiative	Lead: MSET/MCGES Support: Institute for Gender & Development studies
51			Assess how all newly initiated blue economy policies and regulations will both affect and support the disadvantaged, including those with disabilities	Lead: MEGJC, MOAF Support: MLSS, MCGES, PIOJ
Building awareness and skills to ensure that all Jamaicans have the opportunity and ability to participate in the blue economy				
52			Implement public education and awareness campaigns to improve awareness of the Blue Economy and its importance	Lead: MEGJC and NCOCZM (or equivalent coordinating body) Support: NFA, NEPA, NGOs, JIS

⁸² NLA International (2022), Preliminary Options for Fostering a Sustainable Blue Economy in Jamaica

#	BEDF Pillar	Phasing	Action	Institutions
53			Undertake a skills assessment in relation to current and future blue economy opportunities	Lead: MOEY Support: Academia e.g. HEART/NSTA, CMU
54			Conduct surveys to assess ocean literacy	Lead: NCOCZM, MOEY Support: STATIN, PIOJ
55			Include blue economy literacy in primary and secondary level curriculum	Lead: MOEY
56			Include blue economy courses in tertiary level curriculum	Lead: Universities and colleges
57			Encourage careers related to the blue economy through improved training for careers related to Blue Economy	Lead: MOEY Support: Universities / HEART/NSTA, CASE
58			Develop and execute skills training in the blue economy	Lead: HEART/NSTA, CMU, Universities

Box 7: Integrating gender into blue economy action planning

The World Bank has reviewed gender integration in a portfolio of blue economy projects.⁸³ This box summarizes some of the key insights from the review and identifies opportunities to unlock opportunities for women in Jamaica's blue economy.



While women play a significant role in the blue economy, gender norms prevent them fulfilling their potential. Women are active in the blue economy sectors such as fisheries, aquaculture, coastal tourism activities, environmental conservation etc. However, women tend to have fewer opportunities due to lower access to the education and skills they need, lack of access to financial and productive resources, and the threat of gender-based-violence at the workplace.

Examples of actions that have successfully taken into account constraints particularly affecting women include:

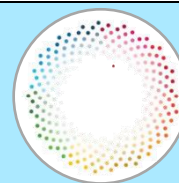
- **Assessing infrastructure connectivity**, and making sure vulnerable groups (including the elderly, children, and women) have access to the transport links they need to safely go about daily activities, such as going to markets, school-runs, health visits etc.
- **Ensuring respect and safety in the workplace**, noting that women often risk being exposed to violence and harassment on worksites.
- **Addressing stigma for women and for men**, by promoting the role of women in the workforce and combatting the stigma for men to be the sole or main provider for their family.
- **Accessing wage employment previously out of reach.** The “Unleashing the Blue Economy of the Eastern Caribbean” project for example, identified the need to provide

⁸³ World Bank (2022), “Gender Integration in the Blue Economy Portfolio - Review of Experiences and Future Opportunities”, [Link](#)

training and career ladder opportunities beyond “traditional” roles in the tourism sector (cleaning, childcare etc.) and into higher value and leadership roles.

Box 8: Jamaica’s Spotlight Initiative could provide a framework to ensure women and girls can safely access opportunities in the blue economy

Tackling gender inequality is at the heart of Jamaica’s Spotlight Initiative (SI) to eliminate violence against women and girls⁸⁴. Gender discrimination and violence can often be driven by unequal gender power relations which result from economic and social inequality. In line with its life-cycle approach, the Spotlight Initiative looks to tackle these inequalities at the root by ensuring that women and girls have safe and equal access to education and opportunities.



Insights and approaches from the Spotlight Initiative that can be integrated into Jamaica’s Blue Economy approach include:

- Developing specific evidence-based programmes that prevent and respond to violence against women and girls.
- Supporting the implementation of effective protection systems so that women and girls can feel safe from violence in all sub-sectors of the blue economy.
- Collecting quality, disaggregated data on gender participation and violence against women and girls.

⁸⁴ UN Women (2019), Spotlight Initiative: Country Programme Document Jamaica. [Link](#).

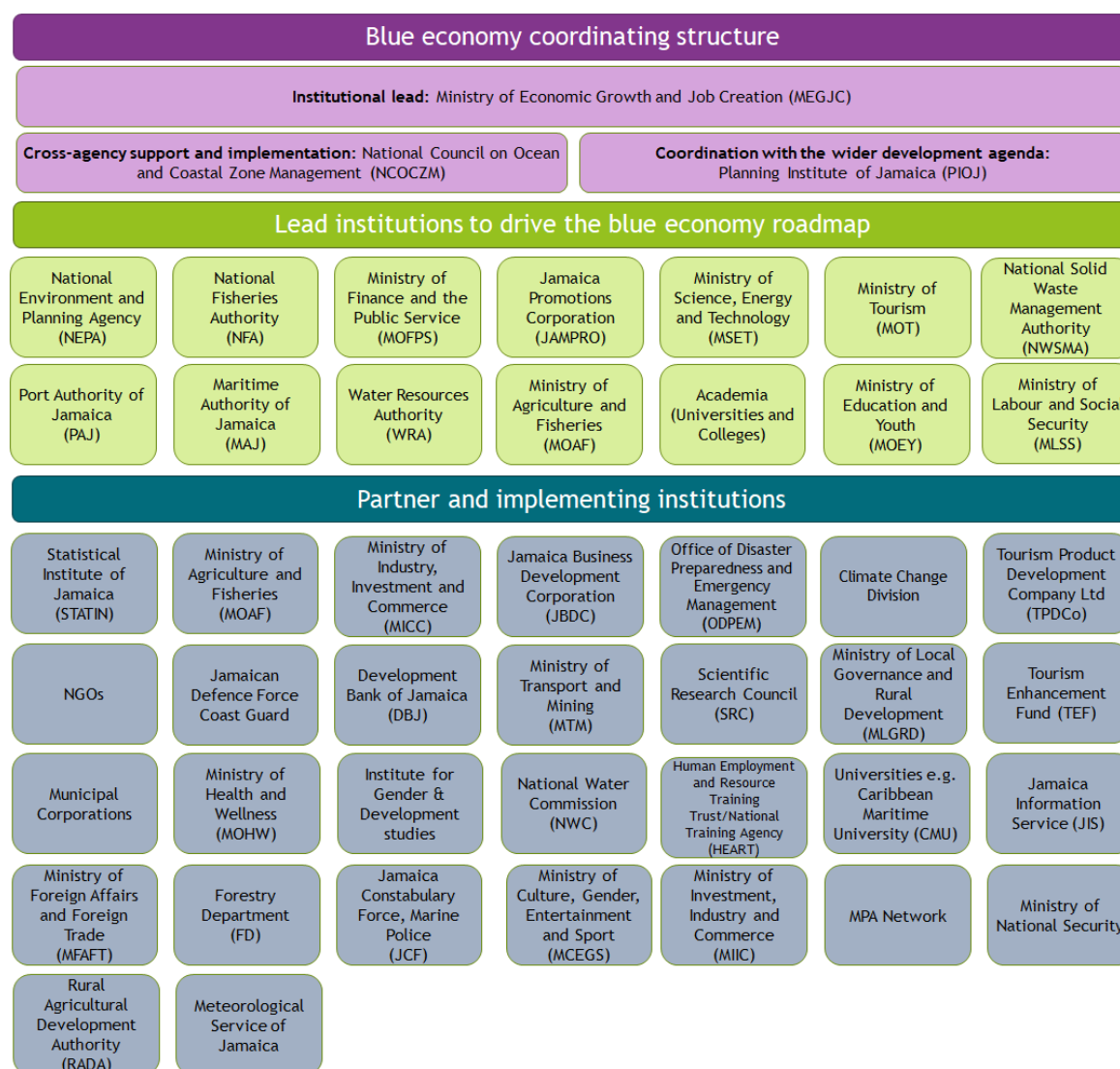
6. Implementation arrangements

This section describes some of the key institutional next steps to deliver on the actions described in this Roadmap. Its purpose is to summarize the institutional framework and next steps for key MDAs to deliver on the actions set out in Section 5, to help guide further actions.

6.1. Institutional arrangements and mapping roles

Delivery on the roadmap will need defined roles and capacitation of key Jamaican institutions and agencies. As set out in Section 5, the actions needed to foster a thriving blue economy span a wide array of institutions and agencies. Figure 12 sets out an overview of the key institutions involved in the blue economy, distinguishing between those institutions responsible for overall coordination of the blue economy roadmap, those institutions that will take a lead in the implementation of the prioritized short-term actions in the roadmap, and those that will play a role in leading other actions or more broadly support implementation.

Figure 12: Organizational structure to deliver on the Jamaica Blue Economy Roadmap



There needs to be a clear institutional lead for the blue economy, and a cross-agency coordinating structure. The key organizations in this regard are:

- **MEGJC:** As the ministry with responsibility for the blue economy, has overall responsibility for blue economy strategy and implementation. Will need supporting institutions and agencies to deliver on this mandate (see below).
- **NCOCZM:** A multi-agency body, under the oversight of MEGJC, mandated and resourced to support coordination across relevant MDAs for delivery of blue economy priorities.
- **PIOJ:** Monitoring of and assisting in the delivery of Jamaica's blue economy strategy by the MEGJC, with a particular focus on ensuring alignment with Jamaica's overall strategic economic development and environmental targets.

As discussed above (Actions #1 and #2), crucial early steps are to put in place a clear organizational structure and set of responsibilities to operationalize the MEGJC's role as ministry with portfolio responsibility for the blue economy. This could be organized by enhancing the role of NCOCZM with more operational responsibility to coordinate and drive action relating to the blue economy. This may also require capacitation of NCOCZM to ensure it has the resources needed to fulfil this role, for example with a secretariat; or alternatively the establishment of a Blue Economy Unit within MEGJC to drive policy and BE coordination.

To implement the actions set out in this roadmap will entail responsibility spread across - and coordination between - several key government agencies. Some of the key actors are listed below, with a further description of these, and the broader set of MDAs spanning the blue economy, provided in Appendix 1:

- **JAMPRO:** to assist in delivering the investment required to support blue economy growth drivers, with a near term focus on undertaking a bioprospecting feasibility study.
- **MAJ:** to work with JAMPRO to undertake a feasibility study for domestic vessel repair and maintenance.
- **MLSS.** to drive workplace related monitoring to ensure the blue economy works for all Jamaicans, and specifically to commit to assessing how all newly initiated blue economy policies and regulations will affect the disadvantaged.
- **MOAF:** As the ministry with responsibility for e.g. the NFA, MOAF has a key role to play in leading conservation and sustainable use of Jamaica's fisheries resources, including fisheries licensing and enforcement; education and training; monitoring of fisheries and the environment; fisheries data collection and research. Implementation of the Fisheries Act, 2018.
- **MOEY:** to coordinate work on skills assessment in relation to current and future blue economy opportunities, and to lead work on including blue economy in primary, secondary, and tertiary level curriculum, and to encourage development of career paths and making training available for careers related to the blue economy.
- **MOFPS:** to set the overall environment and processes for blue economy financing and investment, including as a priority to develop a specific BE finance and investment framework, in conjunction with PIOJ.
- **MOT:** to include blue economy and eco-tourism issues in tourism strategy, and as a short-term priority to build in further emphasis on sustainability, ecotourism, and the blue economy in its next sector development plan.

- **MSET.** to undertake detailed feasibility studies for offshore renewable energy generation and integration into the national grid, and; to work with MCEGS to offer targeted scholarships for women in areas such as data collection and database maintenance.
- **NEPA:** to lead on conducting a strategic environmental assessment, and to work with NFA to update and finalize a Mariculture Policy, and to play a supporting role on some natural resources topics (e.g. fisheries).
- **NFA:** to lead on all issues related to fisheries, and short-term priorities to finalize a national Fisheries and Aquaculture Policy.
- **NWSMA:** working with NEPA and the WRA, to improve legislation, regulation, monitoring and implementation of measures to improve solid waste management, including sewage systems, recycling and reducing plastic waste etc.
- **PAJ:** to ensure the ports are resilient to climate change, with as a first priority to conduct detailed, location-specific, climate vulnerability and risk assessments for each of Jamaica's main seaports.
- **WRA:** in general to lead on driving improved water quality in Jamaica, and in the short-term to assess future water needs under various climate scenarios to inform a climate resilient water supply strategy, including the role of desalination.
- **Academia (universities and colleges):** including for example the CMU, with special mention of the CMU's Centre for Blue Economy & Innovation, and HEART/NSTA; to lead on skills development for current and future generations to fully unlock opportunities presented by the blue economy, including in the near-term to undertake a skills assessment in relation to current and future blue economy opportunities.

Furthermore, a broad set of actors will need to be engaged and brought into the implementing arrangements. This is shown in the bottom layer of Figure 12, identified mostly as supporting actors and agencies in Section 5.

6.2. Results monitoring and reporting, learning and evaluation

In establishing itself as the lead institution in support of the blue economy, MEGJC will need to establish a results monitoring and reporting framework. This should include a clear series of target outcomes and impacts related to blue economy development in the coming decade. These target outcomes and impacts should be linked to a theory of change for how the actions described above will contribute to delivering those outcomes. It may be valuable to structure this theory of change around the four pillars of this roadmap.

The framework should include specified, quantifiable, and measurable indicators wherever possible. The outcome indicators will be defined such that they can be regularly tracked and reported against in periodic progress updates.

The framework should benefit from strong stakeholder engagement in both its development and execution. This will help coalesce action around the blue economy and also ensure that there is strong buy in for the collection of the data necessary to make the framework sustainable into the medium term.

The framework will facilitate a process of continuous learning and adaptive management. Regular results collection can help in understanding whether the blue economy in Jamaica is developing in line with expectations and allow for responsive course correction if certain aspects are not proceeding as initially intended. This will allow Jamaica to manage the considerable uncertainty associated with the development of its blue economy.

7. Concluding remarks

The blue economy holds huge potential for Jamaica. Given the reliance of key economic sectors and livelihoods on coastal resources, the blue economy is essential to promote inclusive development for the benefit of all Jamaicans.

The blue economy offers the prospect to both strengthen existing growth drivers and allow new industries to flourish, to contribute to shared prosperity. The blue economy spans the development of key existing economic activities such as tourism and fisheries, and also allows diversification into new industries such as bioprospecting and maritime transport.

At the same time, a holistic approach to nurturing a balanced blue economy must also conserve, preserve, and restore Jamaica's natural environment. This is essential to ensure the environmental sustainability of ocean and coastal resources for current and future generations. The blue economy can also play a critical role in helping Jamaica respond to the threats posed by climate change. With careful management, the benefits of the blue economy can be put to the benefit of all Jamaicans alike, promoting social inclusion and fairness, and the improvement of livelihoods within local communities.

Jamaica has a strong foundation to build on but will need to be proactive to ensure the blue economy reaches its full potential. As this report has described, Jamaica already has a firm foundation of data and analysis, and a wide range of relevant institutions and laws to oversee development of the blue economy. Ensuring stakeholders are well capacitated to be aware of and seize the opportunities presented by the blue economy, making sure policies and regulations are updated and enforced, and developing means to unlock public and private finance to support investment in the blue economy, are strategic priorities. This report has set out 58 actions, and an organizational implementation structure, as a proposed roadmap to develop Jamaica's blue economy.

Appendix 1 - Blue Economy Agencies in Jamaica

Figure 13 below outlines the key ministries and agencies involved in the blue economy in Jamaica.

Figure 13: Outline of the ministries and their agencies including their specific missions/tasks related to the development of a blue economy

Ministry	Department / Division / Agencies	Purpose
Ministry of Agriculture and Fisheries	National Fisheries Authority	Conservation and sustainable use of Jamaica's fisheries resources including wild-capture fisheries and aquaculture. Fisheries licensing and enforcement; education and training; monitoring of fisheries and the environment; fisheries data collection and research. Implementation of the Fisheries Act, 2018.
	National Irrigation Commission	Provide irrigation services to the agricultural sector.
	Veterinary Services Division	Responsible for animal health, disease diagnosis, testing for contamination of animal food products and for licensing of animal imports which relate to aquaculture; play a role in granting permits for discharge of ship-generated waste for cargo and cruise ships involved in local tourism.
Ministry of Culture, Gender, Entertainment and Sport (MCGES)	Jamaica National Heritage Trust	Cultural heritage, including intangible cultural heritage, flora, fauna, buildings, landmarks, and artefacts of historical or archaeological importance.
Ministry of Economic Growth and Job Creation (MEGJC) and now under NEPA	Beach Control Authority	Controls the use of the foreshore so as to advance on a fair basis the interests of developing enterprises, the interest of the public who have a right to have places for recreation, and for the interests of the fishermen which must be protected and developed. Also charged with protecting beaches and establishing new ones, in addition to licences for cargo and cruise ports.
	Central Wastewater Treatment Company	Charged with treatment of sewage within its defined geographic area (some treatment also undertaken by private entities).
	Climate Change Division	Provides strategic support, coordinate and monitor the transformational changes arising from climate change.
	Environment & Risk Management Division	The Branch's mandate is the development of policies, legislation, projects, and programmes for effective environmental management. In carrying out this mandate the Branch works collaboratively and in partnership with all the Ministries, Departments and Agencies, including the National Environment and Planning Agency and the Forestry Department as well as the private sector, civil society and academia in advancing the country's environment and sustainable development agenda.
	National Environment and Planning Agency	The lead government agency with the mandate for environmental protection, natural resource management, land use and spatial planning in

		Jamaica. Includes the Natural Resources Conservation Authority (NRCA).
	National Land Agency (Hydrographic Office)	Responsible for carrying out hydrographic surveys of Jamaica's harbours and territorial sea.
	National Spatial Data Management Branch	Responsibility for coordinating, implementing and managing national GIS programmes and projects. Its mandate is to establish a national spatial data infrastructure (NSDI) to improve sharing and use of place-based data.
	National Water Commission	Supply of potable water to the public and industry.
	Office of Utilities Regulation	Sets the prices and service level standards for water and sewage.
	Port Authority of Jamaica	Regulate use of ports, provide and support port facilities.
	Urban Development Corporation	Enables Jamaica's sustainable development by facilitating the economic, social and environmental development of urban areas while ensuring a viable corporation.
	Water Resources Authority	Responsible for the management, protection, and controlled allocation and use of water.
	Forestry Department	Management of mangrove forests and coastal swamps
Ministry of Finance and Public Service	Planning Institute of Jamaica	Initiation and coordination of planning for economic, financial, social, cultural, and physical development for Jamaica.
Ministry of Foreign Affairs and Foreign Trade	Marine and Aviation Affairs Department	Coordination of the development of marine and aviation policy.
	National Council on Ocean and Coastal Zone Management	Charged with developing and implementing a national policy on Ocean and Coastal Zone Management (OCZM).
Ministry of Health and Wellness	Standards and Regulation Division	Assess and evaluate foods for safe use by the public (inc. Seafood). Assess and evaluate all chemicals for safe application and use by the public (inc. For mariculture).
	Pesticides Control Authority	Manage pesticides to reduce impacts on food, the environment (inc. For mariculture) and people.
	Technical Services Division	Environmental health.
Ministry of Justice	Attorney General's Office	Preparation of legal instruments.
	Office of the Parliamentary Council	Law Office of the Government charged with the responsibility for the preparation of draft legislation.
Ministry of Local Government and Rural Development	Jamaica Fire Brigade	Protection of life and property from fire or other disasters within the Island and its territorial seas.
	Office of Disaster Preparedness and Emergency Management	Responsible for taking action to reduce the water disasters and emergencies on the Jamaican population and its economy.

Ministry of National Security	Jamaica Constabulary Force (Marine Division)	Fisheries enforcement
	Jamaica Defence Force (Coast Guard)	Fisheries enforcement
Ministry of Science, Energy and Technology	Energy Division	Provides advice on Policy, Legislative and Regulatory initiatives concerning the Jamaica Energy Sector for its strategic and orderly development.
	Petroleum Corporation of Jamaica	Charged with the development of Jamaica's energy resources with exclusive rights to explore for oil and gas but since 1995 includes the development of indigenous renewable energy resources. Now the main entity in implementing the National Energy Policy 2009-2030.
	Scientific Research Council	Principal public sector agency, Responsible for the fostering and coordination of scientific research and the promotion and application of its results.
Ministry of Tourism	Jamaica Tourist Board	Responsible for the worldwide tourism marketing and promotion for Jamaica.
	Tourism Enhancement Fund	Implements recommendations emanating from the Master Plan for Sustainable Tourism Development (2002).
	Tourism Product Development Company	Facilitates the diversification, development and improvement of the tourism. Responsible for enhancing visitor experience in order to engender socioeconomic growth.
Ministry of Transport and Mining	Airports Authority of Jamaica	Management of Norman Manley and Sangster International airports
	Civil Aviation Authority	Regulation and control of airports; development of guidelines in the vicinity of airports.
	Maritime Authority of Jamaica	Marine transportation regulatory agency, inc. Certification of seafarers.
	Mines and Geology Division	Responsible under the Mining Act and the Quarries Control Act to exercise general. Responsible for prospecting, mining and quarrying operations throughout the island including for sand and aggregates.

Source: NLA International, Jamaica Institutional and Regulatory Report, September 2022

