



OPERATIONAL BRIEF

Overview

BLUE ECONOMY FOR RESILIENT AFRICA PROGRAM

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About the Blue Economy for Resilient Africa Program

The Blue Economy generated nearly US\$300 billion for the African continent in 2018, creating 49 million jobs in the process. These and other crucial benefits—most notably food security, livelihoods, biodiversity, and resilience to the effects of climate change—are entirely dependent on the health and productivity of coastal and marine areas.

By safeguarding productive coastal landscapes, countries will be in a better position to take full advantage of future Blue Economy opportunities, which range from sustainable blue energy to aquaculture to blue carbon.

The World Bank's Blue Economy for Resilient Africa Program, announced at COP27, will provide multisectoral analytical, financial, and policy support to Africa's coastal countries and island states to help them leverage the opportunities—and manage the risks—inherent in scaling up their Blue Economies.

About this series of briefs

The Blue Solutions for Africa series of operational briefs captures how a thriving Blue Economy can help African countries better manage the development challenges they face while supporting economic growth, sustainable livelihoods, and the health of these precious ecosystems.

THE BRIEFS COVER THE FOLLOWING THEMATIC AREAS

- Climate change
- Coastal and marine biodiversity and habitats
- Sustainable fisheries
- Marine pollution
- Jobs and livelihoods
- Participatory marine spatial planning
- Data management and knowledge creation
- Innovative financing instruments
- Developing and incentivizing institutions
- New frontiers of innovation



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Key Messages



Africa's Blue Economy has the potential to drive the continent's future economic and sustainable development.



However, the continent's marine and coastal biodiversity and ecosystems are currently under threat from poorly managed fishing practices, unsustainable infrastructure development, pollution, the inadequate management of natural habitats and resources, and weak governance, which intensifies in areas suffering from fragility and conflict. Climate change amplifies these risks.



To reach the full potential of Africa's Blue Economy, countries and regional entities need to work collaboratively to protect and sustainably grow the continent's fisheries, better manage pollution, and safeguard and restore biodiversity and ecosystems.



Such collaboration will require better coordination between and within well-capacitated government and regional entities, supported by strengthened and accessible current knowledge of the marine system.



Marine spatial planning is a useful tool for supporting such coordination, while modern data and information technologies can be used to grow the marine knowledge base and share it at scale by ensuring open access to knowledge resources.



Creating an enabling environment for the rollout of new technologies would help leverage the Africa's youth dividend.



Achieving informed, integrated, and collaborative management of Africa's marine resources will require substantial scaling up of financial resources, with increases in investments from both public and private sources.



The World Bank offers new and innovative sources of financing that can be used to implement on-the-ground resilience-building Blue Economy projects while partnering with governments to put in place policies that support the Blue Economy. Together, these projects and supporting policies reduce the risk involved in investing in Africa's Blue Economy, creating an attractive environment for private investors.

Introduction

The Blue Economy is at the core of economic development and competitiveness for African coastal countries. Job-creating economic sectors like tourism and food-production sectors like fisheries depend on a clean and healthy coastal environment. Future development opportunities in sustainable blue energy and ocean mining are key to countries' competitiveness. Ecosystem services from mangroves and coastal habitats, upon which coastal populations depend, can be supported by new revenue-generating instruments, like blue carbon.

However, unsustainable infrastructure development, pollution, and the inadequate management of natural habitats and resources are threatening the productivity of coastal marine ecosystems on the African continent. Climate change-related events such as sea-level rise, land subsidence, storm surge, and coastal flooding are exacerbating the region's vulnerability.

The challenge today is: How can coastal countries manage their coastal landscapes to spur economic growth and reduce poverty while adapting to the effects of climate change?

The World Bank produces Country Climate and Development Reports, a new series of core diagnostic reports that integrates climate change and development considerations. These reports help countries prioritize impactful actions that reduce greenhouse gas emissions and boost adaptation while delivering on broader development goals.

In this series of briefs, the World Bank reflects on successful Blue Economy operations that support African countries as they pursue green, resilient, and inclusive recovery and development.



The importance of Africa's resilient Blue Economy today and in the future

According to the African Union, the continent's Blue Economy generated nearly **US\$300 billion and supported 49 million jobs in 2018**. In West Africa, the coastal zone generated 56 percent of GDP. A review of Africa's Blue Economy subsectors reveals that, before COVID-19:

- Coastal tourism contributed US\$80 billion, or about 3.4 percent of gross domestic product (GDP), and 24 million jobs in 2018.
- Capture fisheries contributed US\$21 billion, of which US\$8.1 billion comes from marine artisanal fisheries. In 2018, the fisheries sector employed about 13 million people, of which 7 million were fishers and 6 million were processors.
- Aquaculture contributed US\$2.8 billion to African economies and provides jobs for about 1.2 million people. This sector recorded the fastest growth among all regions between 2016 and 2018, averaging 10 percent. This shows the enormous potential of this economic sector, which is also essential for food security. So far, most of Africa's aquaculture is concentrated in Egypt and Nigeria.



Fish is an important animal protein for African populations. According to the [Food and Agriculture Organization of the United Nations](#) (FAO), fish consumption grew from 2.9 kilograms (kg) per person per year in 1961 to 14.7kg per person per year in 2017 in North Africa. Fish consumption has remained static or decreased in some countries in sub-Saharan Africa, varying from a maximum of about 12kg per capita in West Africa to 5kg per capita in East Africa.

By 2030, Africa's Blue Economy is estimated to grow to **US\$405 billion**, including US\$100 billion generated by coastal tourism, and will generate 57 million jobs. Sustainable management of the coastal-marine environment and responsible growth of current and future Blue Economy sectors have the potential to lift millions of people out of poverty.

Africa's coastal land and marine biodiversity is a unique treasure for the region, [with eight of the 36 global biodiversity spots, 439 marine key biodiversity areas, and 148 marine and coastal Ramsar sites](#). Africa's diverse and rich biodiversity provides critical ecosystem services and is at the core of the continent's Blue Economy.

Furthermore, coastal areas in Africa—like other regions of the world—tend to be more densely populated. The estimated annual growth of Africa's population in low-elevation coastal zones—defined as 10 meters (m) or less above sea level—is as high as **3.3 percent**. In some countries, the growth is even higher. In Senegal, the coastal population is projected to reach up to 50 percent by 2060. In Morocco, coastal areas are home to over **60 percent of its population and host 90 percent of its industries**.

The economic engines of coastal cities—from Cape Town to Lagos, and from Casablanca to Accra, and many more in the Mediterranean Sea and Indian Ocean—are fundamental for the growth and sustainable development of Africa. For all these reasons, the African Union's Agenda 2063 has identified the Blue Economy as a **key goal** towards achieving a prosperous Africa and recognized the key role the oceans play as catalysts for socioeconomic transformation.

The Challenge

Africa's Blue Economy faces a wide range of challenges and risks, from pollution and overexploitation of fisheries to coastal erosion and biodiversity losses. Climate change amplifies these risks.



Pollution

Globally, there is currently between, **75 million and 199 million tons of plastics** in the ocean, according to recent estimates. Without significant global action, plastics entering the ocean are expected to triple, from between 9 million and 14 million tons per year to between 23 million and 37 million tons per year.

Today, Africa is estimated to be the second-biggest ocean plastic polluter. Its growing urban population and poor waste management could result in the continent becoming the **largest contributor to global mismanaged plastic waste by 2060**. On average, marine plastic pollution in the Middle East and North Africa is 6kg of plastics per person per year. The equivalent number for Sub-Saharan Africa is **5kg per person per year**. In West Africa, regional plastic value chain analyses show that packaging is the main contributor to plastic pollution, indicating where a circular economy approach would be beneficial.

Marine plastic pollution impacts economic activities such as fisheries, aquaculture, tourism, and shipping. Globally, it cost between **US\$6 billion and US\$19 billion in 2018**. According to the [WWF](#), plastic pollution imposed a minimum lifecycle cost of close to US\$61 million on South Africa in 2019. The estimated cost of environmental degradation caused by waste and plastic pollution on the tourist island of Djerba, in Tunisia, was US\$85 million in 2014.

Due to the lack of access to wastewater collection and treatment infrastructure, untreated wastewater continues to be discharged into the marine environment, either directly or indirectly through freshwater ecosystems. These discharges have important impacts on marine ecosystems and human health, in addition to tourism and fisheries. The estimated cost of untreated domestic wastewater amounts to **US\$31 million in Senegal and US\$35 million in Côte d'Ivoire**.

Oil spills can have significant **detrimental impacts on marine and coastal ecosystems**, as well as health impacts through direct contact and ingestion. Oil spills further restrict economic activities such as **coastal tourism and other industries that rely on clean marine water**. In Nigeria, for example, **the cost of oil spills in the coastal Delta in 2018 was estimated at US\$66 million**, equivalent to 0.5 percent of its GDP.

All the above sources of marine pollution threaten the ocean's carbon-storing functioning by damaging ecosystems such as mangroves and salt marshes and ecosystem components such as seagrasses. The carbon storage of these ecosystems can be up to **1,000 tons of carbon dioxide per hectare**, much higher than most terrestrial ecosystems.



Illegal and unsustainable fishing

According to the FAO, the proportion of fish stocks that are within biologically sustainable levels has decreased significantly from 90 percent in 1974 to close to 66 percent in 2017. Illegal, unreported, and unregulated fishing is a major risk to the sustainability of Africa's fish stocks and poses a major obstacle to local communities' ability to tap into the economic and food security benefits from

catch fishing and related value chains. It is estimated that a staggering US\$8.3 billion of fish caught in the West Africa region was spoliated by illegal fishing, and Somalia loses about US\$300 million annually due to illegal and pirating fishing. Insufficient data, poorly designed regulations, and insufficient enforcement are at the core of these fish stock challenges.



Coastal erosion and environmental degradation

Coastal populations in Africa face a combination of environmental degradation factors leading to death (due to floods, air, and water pollution), the loss of assets (houses, infrastructure), and damages to critical ecosystems (mangroves, marine habitat). A [2019 World Bank study](#) showed that in Benin, Côte d'Ivoire, Senegal, and Togo, coastal environmental degradation affect about 1.4 million people, caused around 13,000 deaths a year, and had an estimated cost of about US\$3.8 billion, or 5.3 percent for the four countries' GDP. In these four countries, 56 percent of the coastline is subject to an average erosion rate of 1.8 meters per year.

movements throughout Africa—in some areas significantly. Climate change and flood risks exacerbate these trends.

A 2019 study showed that at least 13 large ports in Africa are facing severe erosion on beaches adjacent to them. Most of these ports are in West and North Africa. The port of Nouakchott, in Mauritania, is a primary example of this crisis, having faced more massive beach erosion of about 20 meters per year over the past 30 years. A [World Bank Call for Innovation in 2020](#) suggested solutions for port sustainability and sediment management, each of which require a significant commitment in governance, transparency, and international collaboration.

Human activities such as sand mining, mangrove removal, and the development of coastal infrastructure, ports, and river dams are disrupting the natural processes of coastal sand



Governance and fragility challenges

Weak governance—including inadequate regulatory frameworks, insufficient enforcement, and corruption—is behind most of the challenges faced by environmental commons, from fisheries to marine and terrestrial biodiversity losses. The challenges are combined and amplified in coastal areas suffering from fragility and conflict.

Climate change impacts on Africa's Blue Economy

The impacts of climate change exacerbate and amplify the damages caused by pollution, fisheries overexploitation, coastal erosion, and environmental degradation. The main impacts of climate change in Africa are sea-level rise, warming seas, heatwaves, and an increase in the frequency and intensity of floods and storms.

The Intergovernmental Panel on Climate Change's (IPCC's) [Sixth Assessment Report](#) presents the observed trends and modeled projections for Africa's changing climate. In coastal areas of Africa, climate change is projected to cause massive and, in some cases, irreversible damage. For example, African sea levels are currently rising slightly faster than the global average. They are projected to continue rising by between 0.4m and 0.5m by 2100 under low-warming scenarios, and between 0.8m and 0.9m under high-warming scenarios. This increase in sea level, combined with more intense and frequent rainstorms, implies that the current 1-in-100-years coastal flooding event will have a return period of between 10 and 20 years by 2050, and a return period of 5 years to annually by 2100, even under a moderate warming scenario.

Marine heat waves are expected to continue to increase in frequency and intensity, especially around the Horn of Africa. Climate change is leading to warming waters and acidification. Rising sea-water temperatures will have significant effects on marine biodiversity by negatively affecting primary production by phytoplankton, fish distribution, and fish abundance. Increasing water acidification will lead to coral reef bleaching, destroying the habitat of fish and other marine life. Globally, projections indicate that climate change will [reduce fish catches by 7.7 percent—and revenues from it by 10.4 percent—by 2050](#) under a high emissions scenario. West African countries will be some of the worst affected.

The coral reef, mangrove, and seagrass habitats that support small-scale fisheries are already under stress from climate change and other anthropogenic impacts. The projected increases in air temperature, turbidity from more extreme rainfall, sea-surface temperature, marine heatwaves, ocean acidification, sea level, and physical damage from more intense cyclones are expected to cause [further reductions in the extent and quality of coastal habitats](#).

The impacts of climate change on fisheries are increasing, but our understanding of how to model these impacts is full of complexities due to diverse underlying factors, ranging from ocean acidification to higher water temperatures, deoxygenation, and changes in ocean currents. For example, the impacts of acidification and their evolution are less understood and difficult to project but may have the most severe and widespread impacts. These impacts will be felt on [shell-forming species, invertebrates, and coral associated species](#).

Climate change does not only affect marine biodiversity and fisheries. They are also dragging down the economies, livelihoods, and job opportunities of coastal communities. [In Morocco](#), coastal erosion, coupled with plastic pollution, threaten productive jobs in blue tourism. The tourism industry and its connected value chains are a major source of employment and account for 10 percent or more of GDP in several of the region's economies, including [Morocco and Tunisia](#). In Togo, coastal erosion has resulted in rocky shorelines that prevent the local population landing their boats, thereby decreasing their fish catch and affecting their livelihoods. Coconut oil production also slows as coastal trees are taken by the sea. And in [Côte d'Ivoire](#), climate change is responsible for the displacement of river mouths, resulting in economic difficulties for coastal communities due to the disappearance of marine and plant biodiversity as well as social difficulties as aspects of local cultural heritage, such as cemeteries, are taken by the sea.

What is Needed

The sustainable development of blue economies in Africa needs focused and decisive action to make progress on four cross-cutting areas: institutional development and governance; spatial planning; data management and knowledge creation and dissemination; and financing. The long-term sustainable development benefits of a resilient Blue Economy will be substantial, not least of which for the people whose jobs and livelihoods depend on healthy ocean ecosystems.



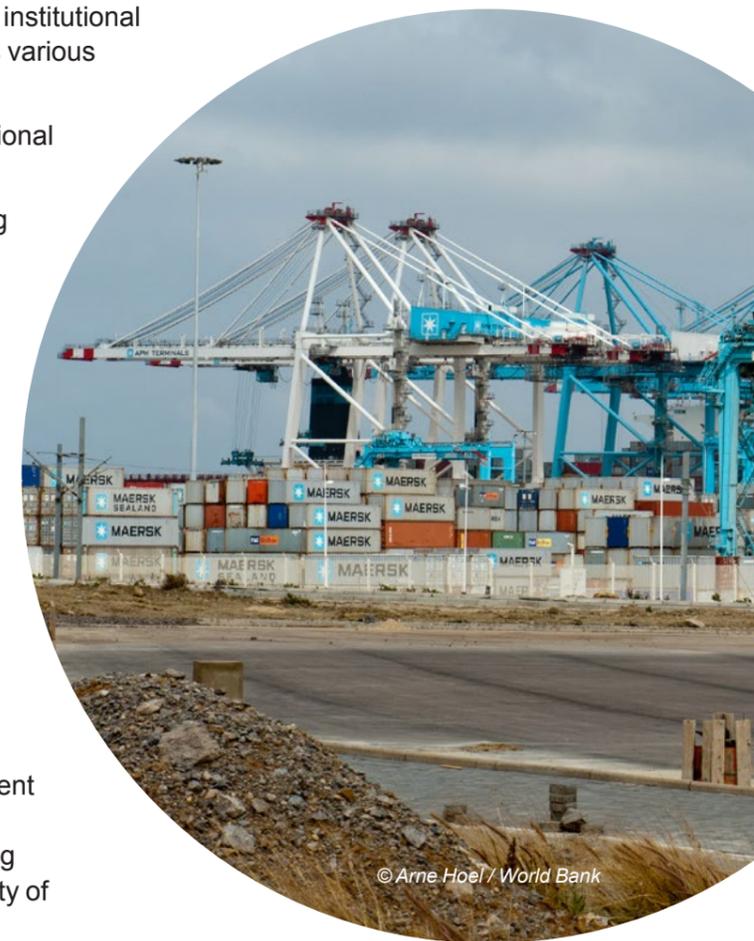
Institutional development, governance, and coordination

The complex challenges and risks—and the enormous development and livelihood opportunities—of the blue economies of Africa require a coordinated approach among a wide range of economic sectors. These sectors include fisheries and aquaculture, tourism, renewable energy,

marine biotechnology, transport, ports, logistics, wastewater, solid waste management, and environmental protection. Blue Economy activities and projects typically suffer from fragmented policies and budget planning, as well as from limited intersectoral cooperation.

To develop the resilient Blue Economy, the African continent needs coordinated institutions with the necessary skills and capacity, backed by clear mandates. Specifically, it needs to improve:

- **Horizontal coordination** by developing adequate institutional frameworks to guide planning and activities across various sectors, levels, and jurisdictional boundaries.
- **Vertical coordination** across national and subnational blue sector institutions.
- **Thematic coordination**, which involves identifying common development challenges that require coordinated action across agencies at the national and local level. Climate change adaptation, jobs, and livelihoods are important examples of such shared challenges.
- **Spatial coordination** of coastal territories to avoid compounding risks and to leverage development opportunities across sectors for multiple economic and livelihood benefits.
- **Coordination and integration of information systems** to strengthen data and knowledge creation and dissemination to support decision-making.
- **Coordination with the private sector** to bring small and large enterprises together with government institutions. Partnerships between the public and private sectors have shown to be useful in changing the growth trajectory and accelerating the prosperity of coastal and marine economies.



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In most cases, developing a strong institutional framework for the development of Africa's Blue Economy will require a coordination entity (such as an inter-ministerial commission and/or regional coordination mechanisms) that can oversee investments in blue sector activities. Institutional development and capacity building are indispensable for changing the growth trajectory of blue economies in Africa towards a more sustainable and resilient path.

Strengthened or new institutions and platforms are needed to achieve the multiple coordination dimensions described above. Morocco is one of the countries that is pioneering this approach to develop a climate resilient Blue Economy.

Capacity building in key areas—from monitoring and enforcement to engagement with the private sector to technical skills—also is needed.



Participatory marine spatial planning

Marine spatial planning (MSP) is a participatory process that brings together all key stakeholders to identify growth and job generation trajectories for coastal areas, together with investment needs, sustainability considerations, current and future risks, and mitigation options.

Given the centrality of climate change as an amplifier of current risks and pressures on coastal environments, climate-informed MSP considers current and future climate risks and opportunities during the design, planning, and implementation of programs.

MSP can help design coordinated coastal resilience programs at scale and identify possible low-carbon development and growth pathways. This type of spatial planning can integrate measures articulated in nationally determined contributions and other instruments, budget for those measures, and monitor their progress. Climate-informed spatial planning can help the private sector better understand climate risks and invest in mitigation and adaptation measures to reduce them while and improve profitability, while respecting the space required to maintain a healthy and productive coastal environment.



Data management and knowledge creation

The sustainable, climate-informed management of African coastal zones, their related catchments, and the exclusive economic zone areas requires comprehensive, multi-sectoral insights in a spatial context that are not possible with the current fragmented systems for data, knowledge, and analytics.

Today, a new range of technology-driven options can provide disruptive solutions for the sustainable challenges of Africa's Blue Economy, specifically in the way decisions are made, things are made, and how stakeholders interact with each other.

As a start, many disruptive technologies are ushering in a revolution in the way data is collected, processed, accessed, and visualized. A new range of Earth observation options (for example, satellite images) are complementing traditional in-situ observations, which have also been modernized through new sensors that are connected to the internet, benefiting from the "internet of things" concept. This data is increasingly

being processed in the Cloud, leveraging the power of new machine learning and other artificial intelligence tools. Equally important will be ensuring that the resulting data and knowledge are collated and available in the free, public domain for the benefit of a broad range of stakeholders.

To seize the opportunities inherent in these innovations, various stakeholder groups across Africa—governments, the private sector, academia, civil society organizations, financiers, and the general public—will need to work together to create an enabling environment. Creating an enabling environment for the rollout of new technologies would also help leverage the region's youth dividend.

The improved organization of—and access to—data and knowledge will help generate multi-sectoral, spatial, and sustainable development insights and attract more financing, including from the private sector and other development partners, at both the local and regional levels.



Innovative financing instruments

Fully implementing a Blue Economy approach in Africa and addressing the ocean crisis, which includes climate change, requires scaling up the financial resources available. This scaling up will require fostering sustainable private investment, providing an enabling environment for investors, and leveraging official development assistance and guarantee products to buy-down risk for private sectors to invest in the higher-risk Blue Economy sectors.

The sustainable development of Africa's blue economies requires that countries have access to a full value chain of finance that spans grants, debt, and equity. In addition, countries need to spend as effectively as possible the limited resources available to them by leveraging coordination and sustainability. Countries also need to identify innovative sources of financing such as blue bonds, new mechanisms, and platforms to crowd in the private sector, and a strategic deployment of concessional resources such as from the [International Development Association](#), [PROBLUE](#), or the [Global Environment Facility](#).

Africa's blue economies need more grant financing to develop the diagnostics, data platforms, and tools necessary to identify priority programs and the most effective policy reforms. Equally important is having a robust pipeline of bankable projects that are shovel-ready.

The process for accessing development finance can be complex. To help countries successfully navigate this territory, it is important to convene governments, technical partners, and donors so that they can establish trust and collaboratively develop a clear path towards achieving the Sustainable Development Goals by strengthening their blue economies.

The private sector also has an important role to play in developing Africa's Blue Economy. To attract private investors, African countries may need policy reforms to create an enabling environment and leverage official development assistance and guarantee products to buy-down risk for the private sector. Several financial instruments can also be pursued to encourage partnership with the private sector.



Fisheries

Africa's fisheries need stronger monitoring, governance, and protections to support the sustainable development of Africa's Blue Economy while strengthening resilience against climate change.

Coastal economies that depend significantly on fishery resources need to protect marine and coastal resources, build resilience to climate change, enhance the food security and nutritional benefits of fish protein, support the sustainable livelihoods of vulnerable fishing communities, and enhance the creation of more and better jobs within the fishery value chain.

A sustainable fisheries sector requires a strong and effective policy and regulatory framework, sufficient capacity for sustainable fisheries management, expanded marine protected areas and/or no-take zones, the support of fish-

farming communities to adopt climate-resilient aquaculture or mariculture to diversify their livelihoods, and climate adaptation programs at scale to strengthen the fishery value chain.

Finally, fisheries are a transboundary natural asset. Regional cooperation and coordination are needed to ensure the long-term health and resilience of the fishery resource and limit the negative externalities generated by national actions. A core element of such collaboration should focus on managing fishing capacity—the number and types of boats and vessels—and the areas where fishing is allowed through a transparent registration and licensing system. Local communities' access rights to fisheries are key to ensuring that poor coastal populations that depend on fish for their protein have what they need to meet their nutritional needs.





Pollution

There is no single solution to marine plastic pollution. Rather, a coordinated set of actions is needed to achieve systemic change that supports a circular economy. These actions need to take place upstream and downstream within value chains. Such solutions could include phasing out the use of unnecessary, avoidable, and problematic products and polymers; applying extended-producer responsibility schemes; and raising citizens' awareness to shift behavior and minimize single-use plastics. Fiscal instruments are also needed to promote a circular economy approach, to improve infrastructure and services in solid waste management, and strengthen monitoring of plastic waste to proactively prevent and remove pollution.

For wastewater, the use of practical, low-cost technologies that support circular economy approaches is gaining attention. Central to this approach is a shift away from

treating wastewater as waste and a move towards resource recovery. This includes the recovery of nutrients and organic matter for use as fertilizer, the generation of biogas through anaerobic digestion, and the use of sludge and sludge ash to manufacture bricks and other building materials.

Africa's coastal countries need to develop reliable systems to prepare for oil spills in the marine environment. Oil-spill prevention and preparedness depends on a clear regulatory framework and national response systems that include response protocols with contingency plans. Training and the enhancement of oil-spill detection and monitoring are crucial. Because oil pollution can have a transboundary impact, African states need to develop and maintain effective regional cooperation mechanisms for marine pollution emergencies.



Biodiversity and marine ecosystems

The protection of coastal and marine ecosystems is fundamental for the sustainable growth of industries such as tourism and fisheries. This protection needs action to:

- Improve governance. Coastal areas and territorial waters are under the jurisdiction of several agencies without sufficient coordination and incentives to improve the collaborative management of natural resources. Marine spatial planning is an important tool to improve such governance, often driving the creation of new marine protected areas and no-fishing zones to serve as grounds for the recovery of coral reefs and overfished species.
- Strengthen coastal and marine knowledge in the form of data collection and science-informed initiatives that would allow better understanding and management of populations of priority fisheries. Increasing climate resilience requires focused monitoring of the ocean's physical and biological changes.
- Build strong on-the-ground enforcement and monitoring systems. Countries along Africa's coastline desperately need to regain control over their exclusive economic zones through at-sea patrolling of their open waters. The development and nurturing of partnerships with all involved actors, including non-profit organizations, local associations, beach management units, and the private sector, will be essential.

How the World Bank Group Contributes to Solutions

This series of briefs proposes three key priorities for action at scale where the World Bank Group has a unique opportunity to provide support:

- **Reform institutional coordination platforms** to accelerate large-scale investments, enhance their sustainability and resilience, and support private-sector growth through innovative financing mechanisms.
- **Strengthen regulations, enforcement, and transparent data collection and sharing** for informed decision-making by government agencies, large and small private companies, and communities.
- **Investment in public goods financing and stakeholder capacity** to roll out various actions, including biodiversity conservation, fisheries management, and pollution and marine plastic reduction.

This section highlights a selection of World Bank projects, programs, studies, and policy advice that are providing scalable solutions to reduce coastal erosion and marine pollution while improving the continent's fisheries, biodiversity and ecosystem health, institutional capacity and coordination, supporting informed decision-making processes and the strategic use of innovative financial investments.



Fisheries

The World Bank Group's Country Climate and Development Reports include fishery diagnostics with climate resilience elements, so guiding investments that aim to secure ecosystem health and protect fishery sector assets. With World Bank support, the following diagnostics have been completed, with various related outcomes reported:

- **Morocco completed a Blue Economy diagnostic**, which contributed to the development of a national marine spatial plan (MSP) built around climate change considerations. The World Bank Group is now supporting Morocco's Department of Maritime Fisheries in piloting the MSP at the sub-national level along Agadir, on the 180km coastline of the Souss Massa region, to identify the best possible location for a marine protected area (MPA) that aims to promote the recovery of fish stocks and protect marine ecosystems. In the national context, the creation of new MPAs contributes towards Morocco's international commitments to form a network of protected areas covering at least 10 percent of the country's coastline. MPAs protect habitats and maintain the vital marine processes and fisheries and will provide climate resilience.



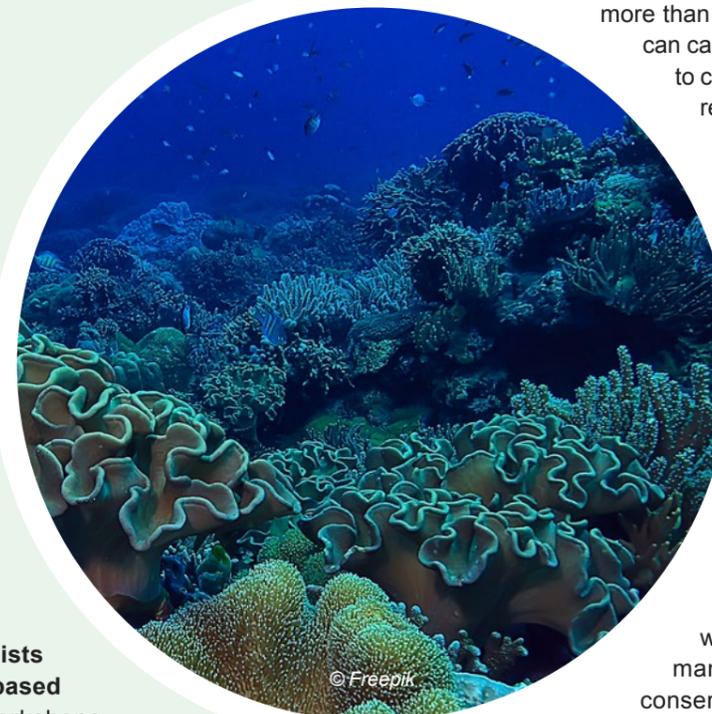
Biodiversity and marine ecosystems

- **Mozambique completed a Blue Economy diagnostic and developed a national MSP (POEMN) for its territorial waters, which came into effect in November 2021.** The MSP was developed under the World Bank's [First South West Indian Ocean Fisheries Governance and Shared Growth Project](#), which provided financial and technical support to the government of Mozambique for the development of the MSP. The POEMN also established a multisectoral mechanism that focuses on climate resilience in current uses, including fisheries and potential future uses of marine space.
- **The regional Program for Sustainable Fishery Development in the Red Sea and Gulf of Aden (SFISH) integrated climate resilient actions** into subnational fishery planning.
- **Mauritania developed an electronic fishery monitoring, control, and surveillance system** that reduces false reporting and provides real-time information to inform action, making it the first country to use such an electronic reporting system. Until recently, catch declarations from offshore and coastal vessels were submitted to authorities in paper logbooks.
- **Senegal is also replicating Mauritania's success** with electronic monitoring under the recently approved World Bank Group-financed Senegal Natural Resource Management Project.

Community-based co-management is the most practical solution for the majority of the world's fisheries. Under such a management system, responsibility for resources is shared between the government and users. The World Bank's West Africa Regional Fisheries Program has successfully implemented community-based co-management at 12 community management pilots in Senegal. With the program's support, these communities designed resource management measures, with one site reporting a 133 percent improvement in productivity after management measures were implemented. Eight of the pilot sites have also been granted management rights in legally recognized (gazetted) co-management areas.

Awareness-raising and dissemination of information about sustainable and climate-adapted fisheries is critical to create an enabling environment for accountability and build ownership of the local actions. To date, the following media education drives have been supported, among others:

- **In Senegal, the World Bank Group supported the production of weekly, hour-long videos** in which government and community representatives discussed (in French or the local language, Wolof) various topics relating to marine ecosystems and livelihoods, including marine plastic pollution, aquaculture, co-management, coastal erosion, and forced migration. The weekly shows, which are available on *La Voix du Littoral's* (the Voice of the Coast's) [YouTube](#) and [Facebook](#) pages, were initially supported by NDF and are now funded under the World Bank-managed [West Africa Coastal Areas Management Program](#).
- **In Ghana, African journalists received training on fact-based fisheries** reporting in workshops supported by the World Bank Group in partnership with the African Union Inter-African Bureau for Animal Resources, the United States Agency for International Development (USAID), and the West Africa Sub-Regional Fisheries Commission. Accurate reporting helps to build awareness about what is needed to secure the sustainable production of fishery resources, so creating an enabling environment for reforms.



The World Bank supports various country and regional initiatives that aim to increase the resilience and adaptation of Africa's coastal areas. A selection of World-Bank supported initiatives in Morocco, Gabon, Mozambique, Kenya, Tanzania, and Zanzibar are highlighted below.

The Government of **Morocco** receives support through the innovative Blue Economy Program for Results, which seeks to address the growing impacts of climate change and develop an inclusive and resilient Blue Economy. Morocco's coastal areas contribute 59 percent of GDP and provide 52 percent of jobs in the country. The fisheries sector alone contributes 1.5 percent of GDP and provides 700,000 direct and indirect jobs. However, coastal erosion threatens more than half of Morocco's shoreline, which can cause economic loss through damage to coastal communities and lost tourism revenues. Low-income, marginalized populations—especially women, youth, rural populations, and small enterprises along the coast—are vulnerable as they often lack resources to adapt to intensifying weather events such as floods, landslides, droughts, and heat waves.

The program supports investments for enhancing coastal resilience through tree planting, fencing, eradication of invasive species, soil protection in pristine coastal forests, and stabilizing sand dune areas. It will also implement participatory management plans for biodiversity conservation and valorization in seven sites of biological and ecological interest; protect Agadir from flooding through watershed management of coastal areas; and develop sustainable fish stock management plans through community participation through establishing three MPAs for fisheries management.

With World Bank support, **Gabon** is conserving biodiversity in parks, buffer zones, and coastal wetlands. Wetland ecosystems provide critical habitats for biodiversity and drinking water for urban centers. They also sustain local fisheries production and reduce vulnerability to climate change effects. The [Sustainable Management of Critical Wetland Ecosystems project](#)

focused on conserving coastal, estuarine, and freshwater ecosystems in three important Ramsar-classified sites while supporting income-generating activities such as aquaculture, ecotourism, and small-scale fisheries for the benefit of local communities, which number about 70,000 people.

Over the past decade, the World Bank has partnered with the Government of **Mozambique** in the development of a multisector integrated blue program to tackle coastal and marine challenges. This program has supported transformational policies and regulations, while facilitating on-the-ground investments to support socioeconomic development, biodiversity conservation, and climate resilience.

One of the key outcomes of the program to date is the creation of the Maputo Environmental Protection Area (MEPA), a sustainable-use land and seascape around Maputo National Park that effectively increases the country's marine conservation area sixfold. The creation of the MEPA also effectively creates southern Africa's first transboundary marine corridor with South Africa's iSimangaliso Wetland Park, a World Heritage Site.

The World Bank is helping the Government of **Kenya** protect its coastal and marine ecosystems to harness the full economic opportunities of the country's blue capital. In addition to restoring mangroves under the World Bank-supported Kenya Marine Fisheries and Socio-Economic Development project, the World Bank is helping Kenya engage in marine spatial planning to protect the country's fish stocks by more effectively implementing and enforcing fishing regulations.

With the assistance of the World Bank-supported South-West Indian Ocean Fisheries Governance and Shared Growth Project (SWIOFish), the Government of **Tanzania** has strengthened monitoring, control, and surveillance of fishing activities along its coastline. This has resulted in a [dramatic decrease in blast fishing since 2016](#). To further manage protected areas coral reef habitat, the project has also supported the establishment of the coral reef benthic monitoring system, and the gathered data informs ongoing marine protected areas management.

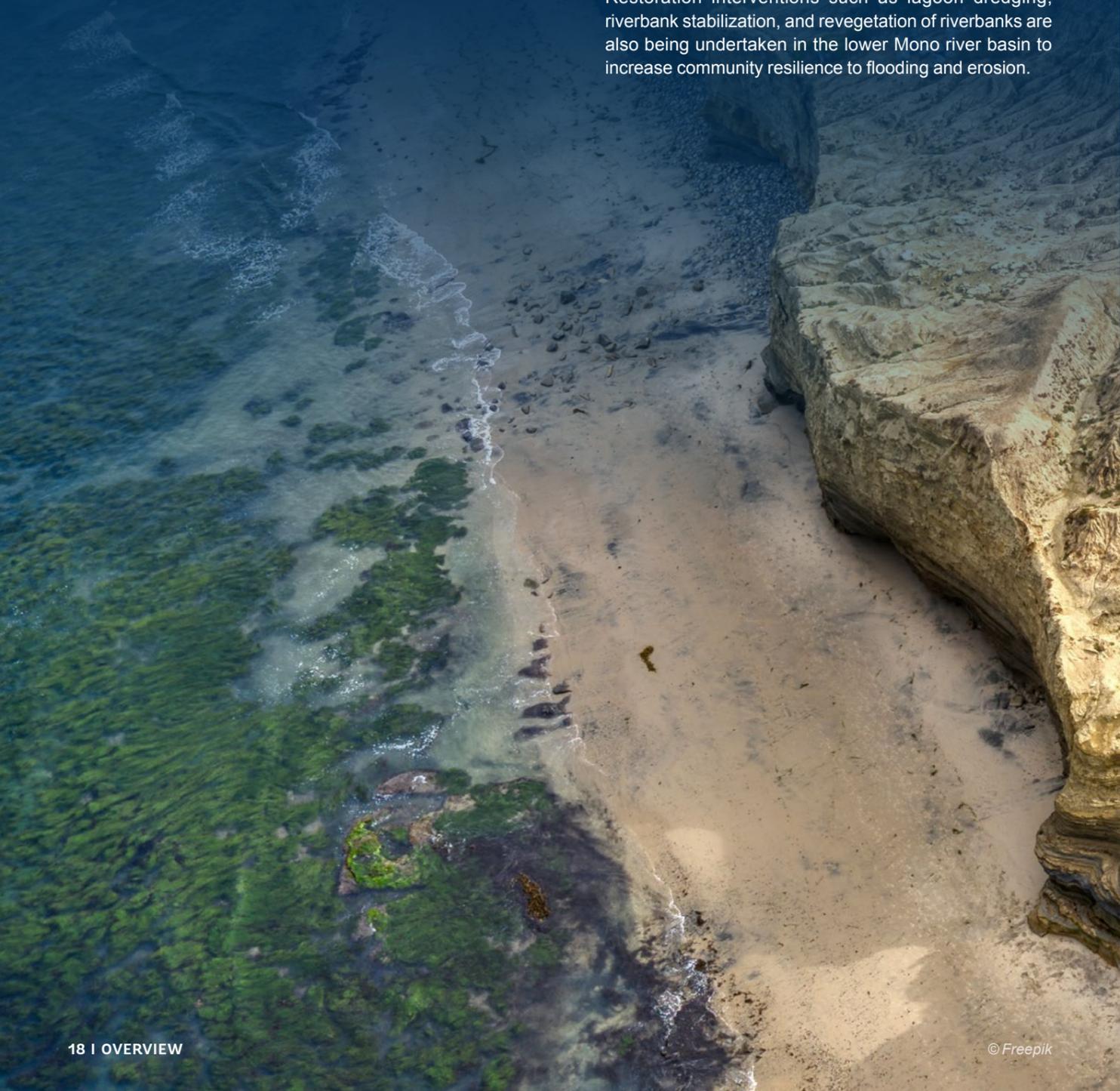
And in **Zanzibar**, SWIOFish has is supporting seaweed farmers. Seaweed farming is currently the most practiced mariculture activity in Zanzibar, providing employment to close to 16,000 farmers, 74 percent of which are women.



Coastal erosion

The West Africa Coastal Areas (WACA) Management Program, launched in November 2018, was developed in partnership with West African countries. The program supports regional institutions and countries' efforts to improve the management of their shared coastal resources and reduce the natural and man-made risks affecting coastal communities. The WACA Regional Support Office for the Implementation of Coastal Resilience Investment Projects in West Africa (ResIP1) project has supported interventions in several countries, including:

- **Mauritania**, where the ResIP1 project is financing the reinforcement of coastal dunes protecting Nouakchott through biological and mechanical fixation, as well as the filling of priority breaches. The dune of Nouakchott is the capital city's main protection against marine submersion. Most of the city is between 0m and 4m above mean sea level, and any overtopping of the dunes by the sea would result in entire districts being flooded.
- **Benin and Togo**, where the ResIP1 project is financing the construction of coastal erosion protection measures in the transboundary site between Agbodrafo and Grand-Popo, which is strongly affected by flooding and coastal erosion. The protection measures used include the building of groynes (shore-protection structures built perpendicularly to the shoreline) and a large-scale beach nourishment operation inspired by the [Dutch sand motor](#). Restoration interventions such as lagoon dredging, riverbank stabilization, and revegetation of riverbanks are also being undertaken in the lower Mono river basin to increase community resilience to flooding and erosion.



Marine pollution and plastics

The World Bank provides analytical support and investments tailored to Africa's regional and national contexts and the various pollution challenges. With the World Bank's technical and analytical support:

- **Morocco** has prepared a [national strategy and an action plan](#) for plastic-free coastlines based on [analytical work](#) under the [MENA BLUE program](#).
- **Tanzania** used [drone images to assess marine plastic pollution](#) at 11 coastal hotspots in the first such assessment in the country. The drone footage was supplemented by on-site hand-sorting.
- **Ghana** is developing an extended plastic producer responsibility policy for plastic packaging, including an e-registration system, under the framework of the [Greater Accra Resilient and Integrated Development Project](#). This project is improving flood risk management and solid waste management in the Odaw River Basin while also improving access to basic infrastructure and services to targeted communities.
- **Mozambique** analyzed plastic leakage to the marine environment, consumer behavior, institutional and legal frameworks, factors to reduce marine litter, and [circular economy opportunities](#) linked to marine litter under the Mozambique PROBLUE program (MozAzul). The World Bank also supported the [Plastics Social Innovation Process](#).
- **Nigeria** is conducting a series of analyses that includes an assessment of solid waste management and marine plastic pollution; value-chain diagnostics; and an assessment of health care facilities' plastic waste management under COVID-19.
- **Tunisia** conducted an [assessment of the status of marine plastic pollution](#) under the [MENA BLUE](#) program. Based on the assessment results and the analyses of policy actions,

the government is starting to prepare a "coastline free from plastic" strategy and a corresponding action plan. Also in Tunisia, the Tunisia Northern Tunis Wastewater Project seeks to improve the discharge of treated wastewater in the Mediterranean Sea by, among other actions, strengthening water-quality monitoring and promoting the reuse of treated wastewater for agriculture.

- **Senegal** embarked on its [Municipal Solid Waste Management Project](#), an initiative designed to help waste-pickers with social, entrepreneurial, and skills development. The project is also funding a recycling facility to improve management of the recycling process.
- **Egypt** is improving the management of all waste streams (municipal solid waste, health care waste, electronic waste, and plastic waste) by applying circular economy and extended producer responsibility concepts under the Egypt Greater Cairo Air Pollution Management and Climate Change Project, a US\$200 million project supported by the Global Environmental Facility (US\$10 million) and PROBLUE (US\$0.485 million). A project to develop a regional oil spill contingency plan has also resulted in the establishment of a regional marine emergency mutual aid center in Egypt.
- **Benin** is conducting underwater and surface inspections of abandoned oil platform facilities in Sèmè-Podji with the aim of updating feasibility studies to decommission the facilities and implement an environmental monitoring plan to reduce pollution risks at the sites.





Data management, knowledge creation, and financial instruments

With the World Bank Group's support, various African governments and regional entities are modernizing their institutions and leveraging new technologies to strengthen their base of coastal and marine data and knowledge. This, in turn, supports informed policy-making and the design of Blue Economy investment programs.

The World Bank has helped several countries draw on cutting-edge technologies to develop tools that meet their data gathering and knowledge management needs. Among other initiatives to date, Guinea and Morocco have developed online data visualization and management tools, Tanzania has drawn on Earth observation technologies using drones to monitor plastic pollution, and Kenya has developed an online electronic database that will be used to support future spatial planning and fisheries management.

In addition to supporting technological innovation at the country level, the World Bank has supported data and knowledge projects through the [West Africa Coastal Areas Management Program](#) (WACA), the South West Indian Ocean Fisheries Governance and Shared Growth Project (SWIOFish), and various other regional bodies.

Through WACA, a regional *Observatoire regional des littoraux d'Afrique de l'Ouest* (West African Regional Coastal Observatory, or ORLOA) was developed for monitoring the coastline. The observatory is hosted by the *Centre de Suivi Ecologique* (Center for Ecological Monitoring) in Senegal. As part of this effort, the 2020 [State of the Coast Report](#) tracks changing conditions in 12 coastal countries and makes recommendations that will inform decision-making and policy formulation.

A partnership between WACA and the European Space Agency is also providing the region with Earth observation services and [capacity building](#) to better monitor marine pollution, [oil spills](#), and shoreline conditions. France has also provided Benin, Togo, and Senegal with [historical data](#)—including sea charts, bathymetric surveys, and aerial photos—to help the countries better understand the evolution of coastal erosion processes over several decades.

Recently, WACA published an e-book to disseminate the results of its [call for innovation](#) to tackle coastal erosion and flooding associated with large commercial ports in West Africa. A similar book on plastic pollution is being developed.

The World Bank Group offers a wide range of financial instruments to support the public and private sectors. These instruments include: loans and credits to finance investments, capacity building, and technical assistance; loans and credits to support policy reforms; grants for technical assistance and global public goods; loans and equity investment to the private sector; guarantees to governments to mobilize private financing; and guarantees to support private investments.

The October 2018 issuance of the world's first sovereign blue bond in the Seychelles highlights the World Bank's role at the forefront of financial innovation for the Blue Economy. At the time, the Seychelles had issued a sovereign blue bond with a ceiling value of US\$15 million, and a maturity of 10 years. The blue bond, as well as the program of marine and ocean-related activities that it supports, were prepared with the assistance of the World Bank and the Global Environment Facility (GEF). This support included a partial World Bank guarantee (\$5 million) and a concessional loan from the GEF (\$5 million), which will partially subsidize the payment of the bond coupons. These credit-enhancement instruments allowed for a lower price of the bond by partially de-risking the investment for impact investors, but also by reducing the effective interest rate for the Seychelles.

[PROBLUE](#) is a multi-donor trust fund that was created to bring transformation impact to client countries. The World Bank has raised resources to bring about transformative change by raising more than US\$200 million for PROBLUE. PROBLUE is supported by 14 donors in 11 countries and the European Union. Since 2018, it has provided more than US\$86 million grant financing across 53 countries, which in turn has unlocked US\$4 billion finance from the World Bank, which has made a difference in building sustainable blue economies across countries from West Africa to East Asia and many small island developing states in between.



Institutional development and coordination

The US\$350 million Blue Economy Program for Results in Morocco was approved on May 23, 2022, and promotes sustainable and resilient development of the Blue Economy. The program serves as an implementation measure for the country's updated 2021 nationally determined contribution and supports key investments in adaptation measures to build coastal resilience. It promotes the inclusion of women and the youth, especially in coastal tourism and aquaculture, while using the Blue Economy as a vehicle to recover from the COVID-19 pandemic.

Partnership and collaboration are heart of this program. The program takes a multi-disciplinary approach to promote vertical and horizontal cooperation between blue sector actors. Led by Morocco's Ministry of Economy and Finance, the program involves nine governmental entities; in fact, collaboration and coordination are the center of the program and what it has been specifically designed for. The program will promote a new collaborative operational

model spearheaded by the inter-ministerial commission on the Blue Economy to coordinate and break sectoral silos. The commission will lead and coordinate the development of a Blue Economy strategy, addressing trade-offs, analyzing synergies, and setting a shared vision and objectives across sectors. The program will also use behavioral science insights to foster collaborative leadership within the blue sectors.

The Program for Results is innovative in its design to create a transformational change for the government to work collaboratively across the blue sectors under the leadership of the commission. The commission will use budget programming to support effective planning of the Blue Economy. This operation is a "step forward" given the fact that Morocco's Ministry of Economy and Finance is taking the lead to develop the Blue Economy through the optimization of budget programming on the blue activities in close collaboration with the sectors and the regions.



