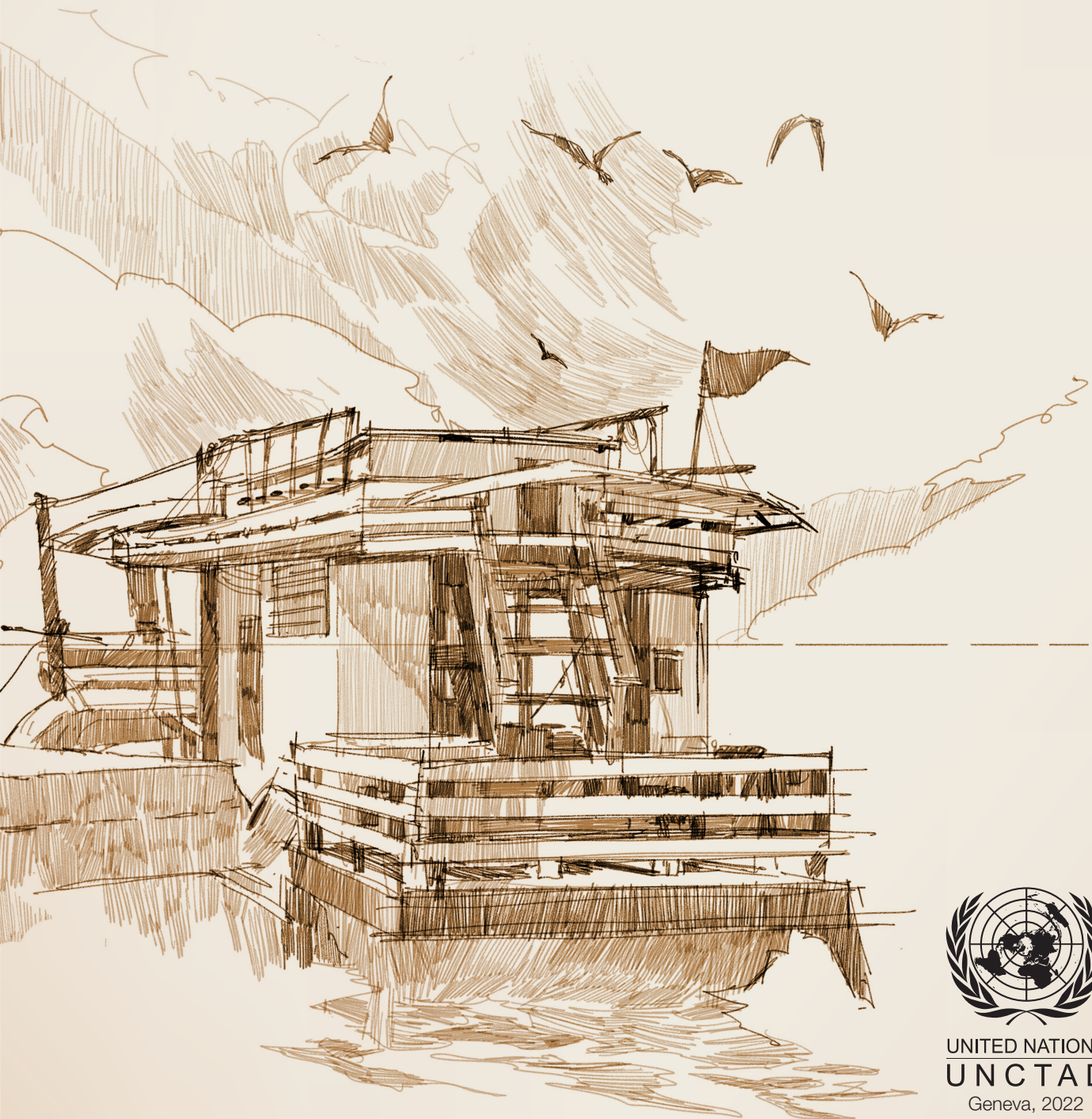


UNITED NATIONS CONFERENCE ON TRADE AND DEVELOPMENT

UNCTAD



HARNESSING FISHERY RESOURCES FOR SOCIOECONOMIC DEVELOPMENT **LESSONS FOR ANGOLA AND HAITI**



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The present publication supplements earlier findings and conclusions by examining the potential, opportunities and challenges facing Angola and Haiti in maximizing their fisheries and aquaculture resources. The two countries possess large coastal areas, Exclusive Economic Zones, and freshwater resources with huge potential for fisheries and aquaculture development. However, these sectors in the two countries remain underdeveloped and dominated by artisanal and/or traditional fishing activities. The publication particularly draws operational and policy lessons from the successful experience of Chile in developing an industrial-scale salmon sector, and provides policy recommendations for action in Angola and Haiti on how to develop their respective fisheries and aquaculture sectors.

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ACRONYMS

ACP	African, Caribbean and Pacific Group of States
AECID	Spanish Agency for International Cooperation
AfDB	African Development Bank
AIPEX	Agency for Private Investment and Promotion of Exports (Angola)
ATLAFCO	Ministerial Conference on Fisheries Cooperation between African States Bordering the Atlantic Ocean
BCC	Benguela Current Commission
BCLME	Benguela Current Large Marine Ecosystem
CCRF	Code of Conduct for Responsible Fisheries
CDS	Catch Documentation Schemes
CEFOPESCAS	Polytechnic Institute of Fisheries (Angola)
CITES	Convention on International Trade of Endangered Species
CRFM	Caribbean Regional Fisheries Mechanism
DFA	Directorate of Fisheries and Aquaculture (Haiti)
EEZ	Exclusive Economic Zone
EU	European Union
FAD	Fish aggregating device
FAO	Food and Agriculture Organization of the United Nations
GCFI	Gulf and Caribbean Fisheries Institute
GDP	Gross domestic product
GNI	Gross national income
ICCAT	International Commission for the Conservation of Atlantic Tunas
ICRI	International Coral Reef Initiative
IDB	Inter-American Development Bank
IFAD	International Fund for Agricultural Development
INAPEM	National Support Institute for Micro, Small and Medium Enterprises (Angola)
IUU	Illegal, unreported and unregulated fishing
LDC	Least developed country
MANRRD	Ministry of Agriculture Natural Resources and Rural Development (Haiti)
MASFAMU	Ministry for Social Action, Family and Women's Promotion (Angola)

MCI	Ministry of Commerce and Industry (Haiti)
MCTA	Ministry of Culture, Tourism and Environment (Angola)
MDE	Ministry of Environment (Haiti)
MEF	Ministry of the Economy and Finance (Haiti)
MINAGRIP	Ministry of Agriculture and Fisheries (Angola)
MINDCOM	Ministry of Industry and Commerce (Angola)
MINFIN	Ministry of Finance (Angola)
MINTRANS	Ministry of Transportation (Angola)
MIREX	Ministry for Foreign Affairs (Angola)
MPCE	Ministry of Planning and External Cooperation (Haiti)
MTPTC	Ministry of Public Works, Transport, Communication and Energy (Haiti)
NGO	Nongovernmental organization
Norad	Norwegian Agency for Development Cooperation
NTM	Non-tariff measure
OECD-DAC	Organization for Economic Cooperation and Development/Development Assistance Committee
PAFPF	Pan African Fisheries and Aquaculture Policy Framework
PSMA	Agreement on Port State Measures
R&D	Research and development
SADC	South African Development Commission
SDA	Sustainable Development Agenda
SDGs	Sustainable Development Goals
SEAFO	South East Atlantic Fisheries Organization
SIDS	Small island developing states
SPS	Sanitary and phytosanitary measures
SSTC	South-South Triangular Cooperation
SWOT	Strengths, weaknesses, opportunities and threats
UNCTAD	United Nations Conference on Trade and Development
UNDP	United Nations Development Programme
UNIDO	United Nations Industrial Development Organization
WECAFC	Western Central Atlantic Fishery Commission

EXECUTIVE SUMMARY

The fisheries and aquaculture sector holds significant potential in least developed countries (LDCs) for poverty reduction, employment generation, export diversification and structural transformation. Unfortunately, the sector remains underdeveloped and dominated by artisanal and/or traditional activities. This study examines the fisheries and aquaculture sector in two LDCs, Angola and Haiti, and the challenges and opportunities facing these countries in harnessing their fishery resources as drivers of growth and export diversification. The underdevelopment of the fisheries sector in Angola and Haiti and its less-than-optimal role in industrialization and structural transformation are due to well-known and deep-rooted structural constraints facing their economies. These include (but are not limited to) weak productive capacity, which undermines the scope of socioeconomic transformation; uncoordinated policies and institutions; the inability to meet international food safety and quality standards; and both private and public environmental standards that are inadequate.

Despite these constraints, as well as the lack of sound policy and institutional frameworks (including efficient management and governance of fishery resources), there is considerable scope for LDCs like Angola and Haiti to join successful developing countries such as Chile, Mauritius and Viet Nam in effectively and sustainably harnessing the potential of fishery resources for socioeconomic development. In this context, this study provides useful insights and lessons from the development of the salmon industry in Chile. The study further argues that there are dynamic gains for LDCs from technological upgrading, quality control, and marketing networks and connections, particularly in the fisheries and aquaculture sector. While industrial policies originally focused largely on the manufacturing sector, this study argues that agriculture and fisheries also provide opportunities for greater value addition and technological upgrading. As a result, the potential of the fisheries and aquaculture sector deserves attention from policymakers in LDCs and other developing countries. This study offers fresh insights and policy conclusions aimed at fostering resource-based industrialization and export diversification, and it proposes a series of measures in the form of an Action Matrix for short-, medium-, and long-term interventions by policymakers and their development partners in the two case study countries.

Chapter 1

STRATEGIC APPROACH TO THE DEVELOPMENT OF THE FISHERIES AND AQUACULTURE SECTOR: RE-EXAMINING THE ROLE OF INDUSTRIAL POLICY

1.1 Introduction and objectives of the study

The fisheries and aquaculture sector holds great potential for poverty reduction, employment, export diversification and structural transformation. UNCTAD has identified the sector as one of the most important economic activities that generate dynamic gains for least developed countries (LDCs) such as Angola and Haiti.¹ As coastal countries, both Angola and Haiti have important comparative advantages for value addition and export promotion.

Fish accounts for nearly 17 per cent of all animal protein consumed worldwide, and 26 per cent of this is consumed in LDCs, landlocked developing countries, and small island developing states (SIDS). Globally, the fishing industry directly employs around 60 million people and generates approximately 200 million jobs, both direct and ancillary (FAO, 2020a). Fish is one of the most traded food commodities worldwide, and 54 per cent of such trade originates from developing countries, generating more income than most other food commodities combined. The sustainability of fisheries thus becomes fundamental to the livelihoods of people in coastal communities around the world, especially in poor countries. However, in recent years, fish stocks have been overexploited, endangering the future of some fish species, although the rate of exploitation may have slowed since the outbreak of COVID-19.

Indeed, the COVID-19 pandemic has exposed the vulnerability of key activities in the fishery supply chain, including fishing, processing, transport of inputs, distribution, and wholesale and retail marketing. Given the interconnectedness of these activities, there has been a cascading chain of decline since the outbreak of COVID-19 and disruptions in fishing, marketing and exports (FAO, 2020d). Commercial fishing activity had fallen globally by about 6.5 per cent as of April 2020 due to COVID-19-related restrictions and closures, according to Global Fishing Watch. The Food and Agriculture

Organization (FAO) of the United Nations estimates that the sector is likely to struggle to sustain its activity and maintain planned production cycles as long as the current disruption in markets, supplies of production inputs (e.g. seeds and feeds), and access to credit continues. For aquaculture operators, low demand is the main concern as they struggle with burgeoning live fish stocks that they cannot sell, but that still must be fed for an undetermined period. Whether COVID-19 will have an “accidental positive” impact on the replenishment of fish stocks, preservation of endangered species, and a reduction in water pollution remains to be seen.

For LDCs, recovery from the COVID-19 shock will require a multi-dimensional approach to the development of the fisheries and aquaculture sector that focuses both on demand-side constraints (such as lack of compliance with food quality and safety standards of importing countries) and supply-side constraints. The latter include deficient transportation and storage facilities; poor energy infrastructure and high electricity costs; low investment, finance or credit for small operators; overfishing and depletion of fish resources; water pollution; water supply and quality and a lack of common fishery policies among countries that share water resources. Recovery from the current crisis also presents an opportunity to rethink the strategy for economic diversification and structural transformation and the role that the fisheries and aquaculture sector can play in these processes. In the LDCs, there is an urgent need for product diversification and for meeting quality and safety standards in the short term, and for product sophistication and value addition in the long term.

This study explores some of these issues and will identify the opportunities and challenges in transforming the fisheries and aquaculture sector into a major driver of economic diversification and structural transformation. In short, the objectives of this study are to:

- Review the strategic context of the fisheries and aquaculture sector as a driver of economic diversification and structural transformation
- Examine key binding constraints facing the fisheries and aquaculture sector of Angola and Haiti on both the supply and demand side
- Assess existing policy, governance and institutional frameworks for managing the fisheries and aquaculture sector in Angola and Haiti focusing mainly on:
 - o Supply-side constraints, particularly infrastructure (landing and cold storage facilities, transport, inputs

¹ Countries are categorized by the General Assembly of the United Nations as LDCs on the basis of low gross national income (GNI) per capita, low Human Assets Index scores, and high Economic Vulnerability Index scores.

- o such as feed and seeds for aquaculture, food safety and quality support laboratories and services, etc.)
- o Demand-side constraints, particularly the challenges posed by international standards for market access and export promotion
- Assess the policy actions required to upgrade technical knowledge, expertise and practices and to overcome the challenges facing the fisheries and aquaculture sector in Angola and Haiti
- Recommend policies and strategies, including by drawing lessons from international best-practice countries, to upgrade the capacity of Angola and Haiti to comply with international standards, increase their exports in fishery products, and transform the sector into a major driver of poverty reduction, job creation, economic diversification, and structural transformation.

This study is policy-oriented, with a focus on economic and export diversification, and specific attention given to the social and environmental sustainability of fisheries and aquaculture in Angola and Haiti. Both countries have large coastal areas and ample freshwaters to harness the potential of fisheries and aquaculture for their socioeconomic development, including job creation, poverty reduction, food security and export diversification. However, the sectors in the two countries remain underdeveloped, characterized by the dominance of artisanal and traditional fishing activities. The study takes into account the interest expressed by the governments of the two countries in promoting fisheries and aquaculture for poverty alleviation and food and nutrition security, on the one hand, and the potential the sectors hold for socioeconomic development (including export diversification), on the other. Therefore, the study is aligned with and builds on the different initiatives undertaken in the two countries, with a focus on the acquisition of know-how for better aquaculture development, post-harvest processing, value addition, international market access and trade promotion. It draws on policy lessons, successful experiences and best practices of other countries on the African continent and in other developing regions.

The study aims to serve dual purposes. First, it is hoped that the findings and policy recommendations will help the governments of Angola and Haiti upgrade the capability of their fisheries and aquaculture sector. Second, it is hoped that the findings will assist in the development of technical assistance projects for value addition and trade promotion that are tailored to the specific needs and circumstance of fisheries and aquaculture in Angola

and Haiti. The study is expected to contribute to UNCTAD's programme to enhance the technical knowledge and capacity of LDCs, including through hands-on training to improve fish production and export as well as national food safety and sanitary standards. The objective of the training programme is to harness the potential of the fisheries and aquaculture sector to foster socioeconomic development and structural transformation in LDCs. This is to be achieved by significantly relieving the binding constraints in the sector, and by upgrading national capacity for compliance with international sanitary measures and regulations and other relevant market standards.

1.2 Why economic diversification and structural transformation matter for least developed countries: The role of industrial policy

A typical characteristic of LDCs, and what distinguishes them from other developing countries, is the limited development of their productive capacity (UNCTAD, 2006a, 2016a) and their failure to achieve structural transformation toward more modern and higher-productivity activities and sectors. Generally, these economies suffer from structural constraints, lack of economic diversification, and dependency on commodities for production and exports. This largely explains the root causes of LDCs' vulnerabilities, their failure to generate productive and decent jobs, and the dominance of low-value and low-productivity production systems. It is estimated that over 70 per cent of LDCs, particularly those on the African continent, depend on commodities for over half of their export earnings, and that some 800 million people in LDCs are at the lowest income level and depend on commodity-related jobs for their livelihood (UNCTAD, 2019). Consequently, LDC exports are highly concentrated on commodities and low-value-added products. Commodities account for nearly 60 per cent of LDCs' total merchandise exports. The positive economic growth performance experienced by the LDCs since the early 2000s has not resulted in economic diversification or in the upgrading of their export baskets.

Economic diversification and structural transformation are key elements of economic development, since they suggest a shift toward more differentiated production and trade structures as well as higher-value and higher-productivity sectors or economic activities. A lack of economic diversification is often associated with increased vulnerability to external shocks that can undermine prospects for

longer-term economic growth. LDCs tend to have the most concentrated economic structures, despite resource endowments and opportunities to diversify their economies and export structure.

Industrial policy is an important policy instrument to identify dynamic sectors, target investment, develop competitive enterprises, upgrade technological capabilities and promote exports. However, pursuing successful industrial policies requires ensuring that they are part of a cohesive whole and are not at cross-purposes with other equally important policies such as those for trade and investment, innovation, macroeconomics, the environment, etc. As will be explained in the next section, after many years of shying away from industrial policy, the world has come to appreciate its important role in redirecting investment into growth sectors and lifting countries out of economic crisis. In many ways, the 2008 global financial crisis was the turning point in the debate over the role of industrial policy and whether it is still relevant for developing countries, especially low-income economies that are still dependent on subsistence agriculture and commodity exports. Since the global financial crisis, the debate on industrial policy has shifted from whether or not to have it to what types of industrial policy, and what objectives and scope, are most effective and appropriate to each country's conditions (Salazar-Xirinachs et al., 2014). "New-generation" industrial policy is no longer only about manufacturing, but also about the development of other sectors that enable countries to achieve structural transformation by shifting capital and labour from low-value, low-technology and low-productivity sectors to more dynamic, high-value and high-productivity sectors.

1.3 The relevance of a new-generation industrial policy for least developed countries

1.3.1 The industrial policy debate in perspective

Since World War II, the dialogue on industrial policy has gone through several stages influenced by different economic schools of thought and models. The 1950 and 1960s saw the popularity of industrial policies associated with import-substitution strategies to promote post-war industrialization and kick-start industrial development in countries emerging from colonial rule. During this period, industrial policies consisted mainly of encouraging the development of domestic production capacity through infant-industry protection (with import-substitution and trade protectionism policies), and "picking winners" to

which to provide support. These policies were implemented mostly through centralized planning process and the direct involvement of the state in both economic activities and the management of rules and regulations governing the market. By the mid-1970s, it was evident that the cost of state-led and inward-looking industrial policy was high, as evidenced by the consistent decline in economic growth of countries pursuing import-substitution industrialization strategies. Such strategies led to excessive external debt, development of uncompetitive industries, proliferation of rent-seeking domestic firms, misallocation of resources, and inefficient consumption of goods (Krueger, 1974; Lin, 2010). In short, these policies ultimately led to disappointing results, as income levels in developing countries stagnated, the gap with developed countries widened, and many developing countries failed to achieve structural transformation (Lin, 2010).

Consequently, the 1980s and 1990s were marked by liberalization in most developing countries covering a wide range of policies, particularly those for trade, investment and industry. The aim was to promote exports by attracting efficiency-seeking foreign direct investment and deepening integration into the international trading system. Well into 1990s, the liberalization process accelerated further with the introduction of structural adjustment programmes by international financial institutions, the reduction of the role of the state in the economy, and the removal of planning as an economic policy tool. The so-called "Washington Consensus," which advocated a market-led growth process and the removal of industrial policy, which was viewed as interventionist, became the dominant model of economic development and was imposed on developing countries as a precondition for continued support from international institutions.

In more successful developing countries, structural transformation was associated with improvement in aggregate labour productivity and a shift in capital and labour from labour-intensive sectors toward more productive and skill-intensive sectors (Lin 2010, 2012; Lin and Monga, 2014; Ocampo et al., 2009). The improvement in aggregate labour productivity is generally the outcome of two processes: (1) reallocation of labour from low-productive sectors to higher-productive ones (generally manufacturing); and (2) productivity increases within sectors due to improvements in firms' capabilities resulting from better means of production, improved managerial and technological capabilities, etc. (McMillan and Rodrik, 2011; Kucera and Roncolato, 2016).

The improvements in firms' capabilities might also be due to a process of "creative destruction" in which low-productive firms are forced to exit the sector and are replaced by newly established and high-productivity firms.

To make a long story short, the debate on growth and economic development over the last five decades has concentrated on the search for a balance between the role of the state and the role of the market in creating a policy environment conducive for private sector development and growth. The dialogue was dominated primarily by two main schools of thought: the aforementioned Washington Consensus, and the structuralist development school.

The Washington Consensus, based on the neo-classical (neo-liberal) model, argues that governments are intrinsically weak when it comes to "getting the market price right," picking winners, and allocating resources efficiently and cost-effectively. Thus, it is argued, active intervention by the government in an economy will lead to distortions in the market, including misallocation of resources and price distortions (Lin, 2010). Therefore, according to the Washington Consensus, the state's role should be confined to improving the business environment and adopting "horizontal" policies.

In contrast, the structuralist development school recognizes that as countries grow and develop, their economies become larger and inevitably the structure of their economies changes. Thus, structural change is regarded as a central feature of a development process and indicates an evolution in the relative importance of different sectors in a national economy. For example, in the initial stages of development, the weight of the primary sector (e.g. agriculture) in gross domestic product (GDP) is generally greater than other sectors such as manufacturing and services. But as the country gradually develops, the importance of the primary sector decreases while the shares of the secondary and tertiary (services) sectors increase. Thus, as a country develops, the process of its economic development is intertwined with economic structural change.

However, this form of structural change is not always sustainable, since it takes place without necessarily generating significant improvements in labour productivity or in the movement into production of higher-value products in different sectors or areas of economic activities. The latter represents "structural transformation," which Rodrik (2014) defines as the shift in labour and capital from low-value and low-productivity sectors to high-value and high-technology

sectors or activities. This process signifies that the country's production structure is moving progressively up the value and productivity ladders and beginning to generate skilled and well-paying jobs and create the conditions for increased prosperity and access to essential services that countries need to build productive capacity. It is also a sign of evolution towards a more complex economic system with a higher degree of processing and production of final goods (Ocampo et al., 2009).

The structuralist school believes that successful development should be based on structural transformation, which requires active intervention by the state to address the market failures that might become a binding constraint to growth and structural transformation (Lin 2010, 2012; Lin and Monga, 2014). Thus, for the structuralist development school, industrial policies play a major role in ensuring sustainable growth and fostering structural transformation. Interestingly, the successful structural transformation of East Asian countries, particularly the Republic of Korea, Singapore, Taiwan Province of China and, more recently, China and Viet Nam, has shed new light on the role that the state can play in economic diversification and structural transformation through the implementation of well-designed and orchestrated industrial policies (Lin, 2010).

The successful transformation of East Asia is attributable to the state's active role in targeting dynamic sectors, influencing investment flows within the economy and creating a business and incentive environment conducive to growth and industrial development. The success of East Asian economies is also attributed to the quality of institutions and governance structure, including the quality of collaboration between the public and private sectors. Chang (1997) indicates that industrial policies in East Asian countries were more successful than in other countries due to better networks and well-implemented collaboration with the private sector that facilitated information flows.

1.3.2 Key features of new-generation industrial policies

Following the Asian experience, there has been a renewal of interest in industrial policies in developing countries. Indeed, the policy responses to the 2008 global financial crisis also helped to revive interest in industrial policies. New-generation industrial policies, also called "modern industrial policies" in the literature, include lessons from earlier experiments in industrial policy, particularly the notion that learning takes place not only among enterprises but also by governments that can learn from policy errors.

For example, Rodrik (2004) highlights that it is not only markets that can fail; governments can fail as well. On the flip side of that, it is not only governments that lack information and misallocate resources; the private sector can do so as well. Therefore, industrial policies should not focus on outcomes but rather on the process, and they should be based on mutual learning in which public and private actors learn from each other and find solutions together.

In redefining industrial policies, the targeting of sectors comes out as a critical question: should countries, especially LDCs and other low-income countries, continue to focus on manufacturing or expand to high-growth sectors in services? As already noted, industrial policies aim to support the structural transformation of an economy and the development of high-productive sectors. Traditionally, structural transformation has been associated with the shift of production systems from agriculture, which tends to be dominated by low-productivity and low-value farming activities, toward the industrial sector, particularly manufacturing.

The appeal of manufacturing as an important driver of structural transformation is related to three factors. First, manufacturing has a propensity to induce continuous upgrading of productive capacity, leading to productivity gains through entry into new areas of economic activity. Second, it has a propensity to create better-paying jobs (at least compared to agriculture), prompt the application of more advanced technologies, and allow the production of higher-value goods that can be exported through international value chains. Third, the expansion of manufacturing creates demand for agricultural inputs, thus supporting an increase of agriculture productivity, and creates a need for certain supportive activities in the services sector, such as financial services, logistics, business development, real estate, etc.

However, while it is evident that manufacturing has features that are conducive to continuous productivity improvements and value addition, these characteristics are not confined to the manufacturing sector. Broad economic sectors such as agriculture, fisheries, mining and services also have large differences in terms of productivity between specific activities within each sector. This has encouraged some economists to advocate for industrial policies that focus on a broader range of sectors, including agriculture, manufacturing and services. In fact, Stiglitz and Greenwald (2015: 207) define modern industrial

policies as “any policy redirecting an economy’s sectoral allocation (or other production decisions, such as the choice of technique or the nature of innovation) where market incentives, as shaped by rules and regulations, are misaligned with public objectives.” Others have argued that since the global economy is increasingly turning to services, industrial policies would need to focus on developing modern economic activities more broadly rather than only on manufacturing (Aiginger and Rodrik, 2020). There is even a suggestion to rename “industrial policy” as “structural transformation policy.”

The new thinking on industrial policy is highly relevant for LDCs such as Angola and Haiti, which are still at an early stage of development and need to diversify their economies and achieve structural transformation through investment in new sectors or economic activities. Typically, the focus of LDCs’ industrial policy is on the development of the manufacturing sector and value addition in labour-intensive manufactured products for export. However, LDCs need to reassess the scope and focus of their industrial policy and the choice sectors for investment and technological upgrading. Moreover, the central focus of their industrial policy should be to achieve structural transformation by identifying and developing new sectors based on their comparative advantages, and where moving up the value and technology ladder is possible through improvements in labour productivity. In this context, developing countries, and particularly LDCs such as Angola and Haiti, need to continue improving micro and macroeconomic policies and strategies to address structural economic weaknesses, underdevelopment, and overdependence on the export of a single commodity or a handful of commodities. They also need to enhance coherence and complementarity between their trade, industrial and other sectoral policies and strategies. The primary objective of these countries is to foster productive capacity and to structurally transform their economies with a focus on sectors where they have comparative advantages. The aim is to address their multiple trade and development challenges and to gradually put their economies on the path of inclusive and sustainable growth and development.

One such sector that can be the subject of such a focus is fisheries and aquaculture, which has the potential to enable Angola and Haiti to diversify their economies and exports, create decent jobs, and promote structural transformation. This is in line with an earlier study by UNTAD (2008b) that argues that there are potentially dynamic gains for LDCs from technological upgrading, quality control, marketing

networks, and market connections in sectors such as horticulture, fisheries and tourism. The same study further argues that despite the many complex obstacles, there is considerable scope for many LDCs to join the group of successful exporters in the identified sectors.

However, developing a more dynamic and modern fisheries and aquaculture sector requires not only a modern industrial policy but also an effective governance structure, a regulatory framework, and the capacity to produce goods at international standards. This study will review the state of fisheries and aquaculture governance in Angola and Haiti. Before that, however, it is important to examine the current understanding of governance and management as well as the implications of non-tariff measures (NTMs) in the context of international trade and market access. Indeed, international market requirements for legal, sustainable, safe and high-quality fish and seafood have become the most important components of sourcing policies of fish and seafood importers, traders and retailers. The aim of NTMs is to guarantee the safety and quality of the products, sustainability of the resources harvested, and application

of methods that are legal. The goal is so to ensure that fishing does not negatively impact the aquatic ecosystem and complies with an evidence-based and effective management system (UNCTAD, 2020).

Lessons from international best practices suggest that developing a dynamic fisheries and aquaculture sector requires the following key factors:

1. Proactive and policy-driven sectoral governance and management
2. Having the capability to meet international standards in food safety, environmental sustainability, social standards and NTMs
3. Tackling Illegal, unreported, and unregulated fishing
4. Developing value chains at the national and international levels
5. Participating in international and regional cooperation agreements
6. Building the local capacity to harvest offshore fisheries
7. National environmental assessments, including freshwater considerations for aquaculture development.

Chapter 2

THE MULTIPLE DIMENSIONS OF GOVERNANCE AND MANAGEMENT OF THE FISHERIES AND AQUACULTURE SECTOR

2.1 Sectoral governance and management

Fisheries and aquaculture governance is the exercise of economic, political and administrative authority to manage living aquatic resources.² It encompasses setting up guiding principles and goals, institutions and policy instruments, mobilizing ways and means (including finances), identifying the main stakeholders and delineating of their roles and responsibilities, and enacting policies, regulations, plans and measures to achieve the ultimate goals. Through establishment of the sector's overriding principles and objectives and development of the policy and regulatory frameworks, governance defines and balances stakeholders' interaction, enforces decisions and regulations, and maintains coherence across jurisdictional, space and time scales. Overall, it conditions the allocation of decision-making power, resources and benefits and maintains the capacity of the governance system to learn and improve.

The governance and management of the fisheries and aquaculture sector has international, regional, national and local dimensions. It includes legally binding rules, such as national policies, legislation, regulations and norms, and regional or international treaties, as well as customary social arrangements. It is multiscale, covering long-term strategic planning and short-term operational management over local fisheries or entire aquatic ecosystems. It has public, private and public-private partnership components that interact to ensure proper management of the living aquatic resources/ecosystems and their exploitation.

Fisheries and aquaculture management consists of a wide-ranging set of tasks that collectively aim to achieve sustained and optimal benefits from living aquatic resources. It involves an integrated process of information gathering, analysis, planning, consultation, decision-making and allocation of resources. It also includes the formulation and implementation – with the necessary enforcement mechanism – of legislation, regulations and rules that govern fisheries and aquaculture activities in order to ensure

the continued productivity of living aquatic resources and the accomplishment of other fisheries and aquaculture objectives.³

The process of fisheries management is guided by the overarching goals of the policies under which the fisheries and aquaculture sector operates. These goals are often adopted into national policy instruments, typically expressed as strategies and sectoral plans, laws, regulations and norms based on international policy instruments that aim to enforce the sustainable development of fisheries and aquaculture by balancing ecological, biological, social and economic aspects.

One of the first tasks of good governance and management is to translate the high-level policy goals into operational objectives that can be achieved by applying specific management measures. As a result, fisheries and aquaculture management plans represent the interface between the policy objectives and the activities of the stakeholders exploiting living aquatic resources (including fishermen and women, fish farmers, processors, traders, consumers, etc.).

Based on the experiences of many countries, both developed and developing, water bodies and spaces can become a matter of dispute between various users. Fisheries, aquaculture, tourism, agriculture, forestry, urban and industrial development, navigation, oil and gas exploitation, and seabed mining are all examples of economic activities that can directly and indirectly affect the status of aquatic resources and compete with each other for the use of the aquatic space. In situations where multiple users compete for aquatic resources and space, and where rules regulating access to and use of these resources and spaces are not well established and enforced, social conflicts can degenerate to a point of confrontation, tension and social unrest (UNCTAD, 2020). Some devastating civil wars have occurred as a result of disputes over aquatic resources and spaces, and, unfortunately, such disputes will likely continue to be sources of conflict in the future.

Participation of resource users and stakeholders in fisheries and aquaculture management and governance structures is highly desirable. Such participation can take many forms, ranging from consultation by government with stakeholders, to stakeholders having full responsibility for a fishery, and to establishment of an aquaculture development zone or management area. Other forms of participation include the organization of fisheries and aquaculture advisory bodies with representation from various subsectors, and

2 FAO, "Fisheries and aquaculture governance," available at <http://www.fao.org/fishery/governance/en> (accessed 12 September 2021).

3 FAO (2000). *Fisheries Management. FAO Technical Guidelines for Responsible Fisheries*. Available at <http://www.fao.org/3/a-w4230e.pdf> (accessed 15 October 2021).

cooperation in planning and enforcement at the community level. As we will see in Chapter 4, fishery associations in Haiti are the main players in the governance and management of the fisheries and aquaculture sector. In co-managed fisheries and aquaculture, there is an effective sharing of decision-making power and responsibility between the state and the groups of resource users.

Typical measures and tools that are often used for management of fisheries and aquaculture include regulation of fishing gear and fishing methods, input and output controls, area and time restrictions, rights-based fisheries management, ecosystem-based measures, incentive mechanisms, and monitoring, control and surveillance. In the case of aquaculture, management measures and tools include advanced assessment of the effects of aquaculture development on genetic diversity and ecosystem integrity based on the best available scientific information; regulation and monitoring of aquaculture activity to minimize adverse environmental and socioeconomic consequences resulting from water extraction, land use, discharge of effluents, and use of drugs and chemicals; and enforcement of effective farming practices and fish health management practices (FAO, 1995).

Naturally, management measures and regulations are effective only if they are enforced. They should have their basis in international law such as the United Nations Convention on the Law of the Sea (United Nations, 1982), the FAO Compliance Agreement (FAO, 1993), the FAO Code of Conduct for Responsible Fisheries (CCRF) (FAO, 1995), and the FAO Port State Measures Agreement (PSMA) (FAO, 2009). For example, the Marine Stewardship Council involves three different tasks:

- **Monitoring:** A continuous requirement for the measurement of fishing effort and resource yields
- **Control:** Regulatory conditions under which the exploitation of the resource may be conducted
- **Surveillance:** The degree and types of observations required to maintain compliance with regulatory controls imposed on fishing.

2.2 Complying with international standards and non-tariff measures

2.2.1 Fish trade and non-tariff measures

Fish and seafood remain some of the most traded food commodities in the world. In 2018, over 67 million tons, or 38 per cent of total fish production, were traded

internationally. A total of 221 states and territories reported some fish trading activity, exposing about 78 per cent of fish and seafood production to competition from international trade. The European Union (EU) was the largest fish importer (34 per cent in value), followed by the United States (14 per cent) and Japan (9 per cent). Oceania, the developing countries of Asia, and the Latin America and the Caribbean region remain solid net fish exporters. Europe and North America are characterized by a fish trade deficit. Africa is a net importer in volume terms, but a net exporter in terms of value. African fish imports, mainly affordable small pelagic and tilapia, represent an important source of nutrition, especially for populations that are otherwise dependent on a narrow range of staple foods (FAO, 2020d).

The significant development in international fish trade has been facilitated by favourable measures for market access (tariffs) that are not particularly high and have been gradually decreasing since 2011. Data suggest that applied tariffs were globally about 4.8 per cent on average for raw fish and fish fillets in 2014, dropping from 6.7 per cent in 2009 (UNCTAD, 2016b). However, tariff escalation is commonly found on tariff lines that cover processed fish products. For example, EU tariffs for processed fish and fish products are subject to tariff peaks of 25 per cent for processed tuna, 20 per cent for processed shrimp, and 12 per cent for canned sardines. It is worth noting that fishery products from the African, Caribbean and Pacific Group of States (ACP) benefit from the EU General Scheme of Preferences.⁴ LDCs such as Angola and Haiti benefit from zero tariffs under the Everything But Arms Agreement. After graduation from LDC status, the aim for African LDCs such as Angola is to benefit under the Economic Partnership Agreement between the EU and the African continent.

As tariffs (and thus tariff preferences) fall in major fish markets, NTMs, particularly public and private standards for social, environmental and consumer protection, have become the main barriers to overcome to enter regional and international fish markets. Complying with NTMs is very difficult for small and medium-sized enterprises and fiscally squeezed states that are less able to spread the costs of investment required to comply with such measures. Consumers are very influential in this respect. NTMs result from the increasing awareness and demand of consumers for safe, high-quality and socially and environmentally

⁴ European Commission, "Do you want to export to the EU," Expert Helpdesk Tool, available at https://trade.ec.europa.eu/doclib/docs/2013/may/tradoc_151173.pdf (accessed 12 September 2021).

responsible food. Consumers expect their fish and seafood to:

- Be safe and of acceptable quality regardless of how and where it is produced, processed or ultimately sold
- Come from sustainably managed fisheries and aquaculture operations
- Be legally fished, farmed and processed, in full compliance with social responsibility and environmental protection requirements.

2.2.2 Sanitary and phytosanitary measures

A range of national and international sanitary and phytosanitary (SPS) measures, consisting of food control and certification systems across national borders, along with private standards, are implemented to ensure consumer protection, which remains the most important requirement for market entry. Modern fish and seafood safety and quality systems to meet international SPS measures require the implementation of best hygienic practices during harvesting, landing, processing and distribution. Depending on the fish species, the key SPS measures that need to be implemented include:

- Monitoring the harvesting areas to prevent and control their pollution by chemical and biological agents originating from land or water-based activities (urban, human, agriculture, industry)
- Implementing Good Aquaculture Practices, Good Hygienic Practices and Good Manufacturing Practices during production and post-harvest stages
- Enforcing food safety and quality regulations and management systems.

Typically, these are the types of standards and food safety measures – and the associated skills and technical know-how – that must be developed and met if LDCs wish to successfully export fish-related products. Normally, government authorities are responsible for monitoring the harvesting grounds and certifying that good practices are adhered to during fishing, in hatcheries and fish farms, and during post-harvest processing and distribution. The industry has the primary responsibility for implementing good practices during harvesting and the post-harvest stages, under the supervision and control of government authorities responsible for certifying that good practices are adhered to along the fish and seafood value chain.

International guidelines for food safety and quality, promoted by the *Codex Alimentarius*, provide advice to national

authorities on strategies to strengthen food control systems to protect public health, prevent fraud and deception, avoid food adulteration, and facilitate trade. They assign the following objectives to national food control systems:

- Protect public and consumer health by reducing the risk of foodborne illness
- Protect consumers from unsanitary, unwholesome, mislabelled or adulterated food
- Contribute to economic development by maintaining consumer confidence in the food system and providing a sound regulatory foundation for domestic and international trade in food.

Four building blocks are needed to implement robust national fish and seafood control systems:

- Food laws and regulations
- Food control management
- Inspection services
- Information, education, communication and training.

2.2.3 Environmental and social standards

While food safety and quality remain the primary concern of consumers, increasingly consumers are also concerned about the social and environmental impact of the food they eat. This is partly due to media coverage and conservation activism by nongovernmental organizations (NGOs) and social welfare civil society organizations. For fish and seafood, this means that more and more consumers are demanding that wild fish stocks be managed sustainably, that aquatic ecosystems and related plant and animal life be protected, that aquaculture be environmentally sustainable, and that social responsibility be exercised throughout the fish and seafood value chain, from production through to distribution (UNCTAD, 2020).

In addition to the range of public sanitary measures, a whole range of private standards have also been introduced by producers, importers, traders and retailers, again largely driven by NGOs and civil society organizations. These voluntary standards have become key to entry into lucrative markets. Unfortunately, and despite some noticeable success stories, most exporting developing countries currently supply market segments that occupy the lower end of the international market, and these have been largely unaffected by voluntary private standards, although public sanitary measures remain mandatory.

Public and private standards in fish and seafood trade are usually underpinned by certification schemes.

Public standards are certified through equivalence and recognition arrangements between sanitary authorities of the trading countries. Private standards related to food safety and quality are typically business-to-business (B2B) arrangements, whereas those related to sustainability or environmental protection, or directed to other niche markets such as organics or fair trade, typically follow a business-to-consumer (B2C) model. Conservation NGOs play an important role through their eco-labelling and certification schemes. Their actions are designed to influence consumers and their choices of food purchase. They operate according to four basic modes:

- Red listing overfished or endangered fish species and encouraging consumers to avoid their consumption⁵
- Reporting on the environmental performance of retailers and informing the public accordingly⁶
- Organizing a “Name and Shame Campaign,” in the presence of media, to denounce a retailer, a company or even a country for practices considered harmful to the environment or socially irresponsible
- Engaging key market players to adopt eco-labels and certification schemes (e.g. MSC, Friends of the Sea, Naturland, Global Good Agricultural Practices, Global Agricultural Alliance).

2.3 Measures to combat illegal, unreported and unregulated fishing

A key issue for fisheries is the wide spread of Illegal, unreported and unregulated (IUU) fishing that takes place in the Exclusive Economic Zones (EEZs) of several developing countries that do not have the capacity to monitor and control their waters. IUU involves fishing activities that violate the conservation and management measures applicable in the area concerned. This includes, *inter alia*, fishing without a valid license, fishing in a closed area, fishing beyond a closed depth or during a closed season, using prohibited gear, failing to fulfil reporting obligations, falsifying the catch identity, or obstructing the work of inspectors.

IUU fishing represents a serious threat to the sustainable exploitation of living aquatic resources and a major hazard to the marine environment and biodiversity. IUU fishing has escalated in the past 20 years, especially in high seas fisheries, and products derived from IUU fishing continue to

find their way into international markets. The highly mobile and clandestine nature of IUU fishing prevents a reliable estimate of its impact. Rough calculations indicate that IUU fishing across the world’s oceans is worth between 11 million and 26 million tons of fish per year at a value between US\$10 billion and US\$23 billion.

Several instruments have been developed in recent years to combat IUU fishing. These can be divided into measures for port states, flag states or market states. In 2009, the international community adopted the FAO’s PSMA to prevent, deter and eliminate IUU fishing.⁷ The PSMA, which entered into force in 2016, aims to prevent vessels engaged in IUU fishing from using ports to land their catches, thereby reducing the incentive for such vessels to continue to operate and blocking fishery products derived from IUU fishing from reaching national and international markets. The agreement also covers the role of flag states and regional fisheries management organizations in the implementation of port state measures.

In addition to the PSMA, the FAO Voluntary Guidelines for Flag State Performance were adopted in 2014,⁸ and the Voluntary Guidelines on Catch Documentation Schemes (CDS) were adopted in 2017.⁹ The CDS are used as a reference to establish systems that can trace fish from their point of capture through the entire supply chain to stop IUU fish from entering markets. CDS offer a means to restrict trade in IUU fish by requiring that shipments of fish be certified by national authorities as being caught legally and in compliance with best practices, with hard-copy documentation accompanying the fish as they are processed and marketed nationally or internationally. Only fish with valid documentation can be exported or traded to markets with a CDS requirement.

These international instruments have been translated into the national regulations of major fish-importing countries. For example, the EU, the world’s largest market for fish and seafood, adopted a regulation in 2010 to prevent IUU fish from accessing the EU single market. The EU regulation applies to all landings and transshipments of EU and third-country fishing vessels in European ports, and all trade of fish and seafood to and from the EU.¹⁰

5 Greenpeace, “Red list fish,” available at <https://www.greenpeace.org/usa/oceans/sustainable-seafood/red-list-fish/> (accessed 12 September 2021).

6 Greenpeace, “2018 Supermarket seafood ranking,” available at <https://www.greenpeace.org/usa/2018-supermarket-seafood-ranking/> (accessed 12 September 2021).

7 The agreement is available at <http://www.fao.org/port-state-measures/en/> (accessed 12 September 2021).

8 The guidelines are available at <http://www.fao.org/iuu-fishing/international-framework/voluntary-guidelines-for-flag-state-performance/en/> (accessed 12 September 2021).

9 *Ibid.*

10 See Eur-Lex, “Access to European Union law,” available at <https://eur-lex.europa.eu/eli/reg/2008/1005/oj> (accessed 12 September 2021).

The regulation requires flag states to certify the origin and legality of the fish, thereby ensuring the full traceability of the products traded from and into the EU. The system thus ensures that countries comply with their own conservation and management rules as well as with internationally agreed-upon rules.

Importers, traders and retailers are also anxious to ensure that they source fish and seafood only from legally harvested areas. The most used source for countries and private companies involved in international fish trade is the IUU Fishing Index.¹¹ This index provides a measure of the degree to which a country is exposed to and effectively combats IUU fishing. For all coastal states, the index provides an IUU fishing score of between 1 (the best) and 5 (the worst). The index assesses countries for their vulnerability, IUU prevalence, and response to IUU fishing. The index is comprised of 40 indicators, for which data are derived from both secondary sources and expert opinion. The indicators used relate to the flag, coastal, port and general responsibility of the state. Coastal responsibilities relate to a state's management of its EEZ. Flag state responsibilities are measures that states should implement to manage vessels they flag. Port responsibilities relate to control of fishing boats when in ports. General indicators, mainly by state markets, relate to regulatory measures implemented by market states to prevent IUU fish from entering their markets.

2.4 Value chains in the fisheries and aquaculture sector¹²

A value chain describes the range of activities, actors and services required to bring a product from the initial stage through the various subsequent stages of production and processing and to its final market destination. The production and processing stages involve a combination of physical transformations and the participation of various actors and services (FAO, 2014; UNIDO, 2009; UNCTAD, 2020b).

As the name suggests, incremental value is added to the product in the successive nodes of a value chain either by value addition or value creation. Value addition can result from processing to convert raw fish into an

elaborated or semi-elaborated product that has more value in the marketplace. Value creation results from differentiating product attributes such as geographical location (e.g. Mediterranean tuna, Alaskan salmon, Thailand black tiger shrimp, Khmer fish sauce, etc.); environmental labelling (e.g. eco-labelling, organic fish); and food quality labelling (e.g. label rouge in France or Thai quality shrimp) (FAO, 2014). Value addition or creation can include economic gains (higher price, greater competitiveness, longer shelf life, expanded market, etc.), but also social gains (e.g. more employment, secured access rights to natural resources, gender equality, better nutrition) or environmental gains (e.g. reduced post-harvest losses and pressure on the resources, reduced pollution and carbon footprint, etc.) (EU, 2018).

The development of value chains in fisheries and aquaculture can have a positive impact on employment, value addition and creation, and market access opportunities for smallholders, and will help create business linkages for small and medium-sized enterprises. However, it requires adequate policies, laws, regulations and standards, as well as support activities such as research and innovation, human resource development, market information systems and management and other support services. Value chains can serve as a very useful tool to understand trends in sectoral reorganization and identify key agents of change and leverage nodes for policy, investment and technical interventions and incentives.

It is critical to conduct value-chain analysis in order to understand the position of a country in national and global value chains and to enable policymakers to identify investment, export and value-addition opportunities. Such analysis helps to explain interactions and synergies among and between actors and the business and policy environment, as well as how entry barriers are created and gains and risks distributed. Value-chain analysis can help actors develop a shared vision of how the chain performs and identify collaborative relationships that can lead to improvements in chain performance. For policymakers, value-chain analysis is a means of identifying investment and capacity-building opportunities, incentives, and monitoring and corrective measures. Therefore, value chains can be viewed as empowering the various but often fragmented stakeholders as they recognize innovative opportunities to contribute to and increase the value of their product.

However, for LDCs, participating in regional and global value chains and benefiting from the fragmented production and

¹¹ The index, which was developed by Poseidon Aquatic Resource Management Ltd., a global fisheries and aquaculture consultancy company, and the Global Initiative Against Transnational Organized Crime, an NGO network, is available at <https://iuufishingindex.net> (accessed 12 September 2021).

¹² For a typical value chain in the fisheries sector, see figure 4.5 ("Value chain and examples of distribution of costs and benefits during fishing and secondary processing") in the UNCTAD (2020b) Training Manual UNCTAD/ALDC/MISC/2020/4.

supply networks is neither automatic nor straightforward. It requires an array of policies and institutional measures to enhance LDCs' beneficial integration in regional or global value chains in sectors where they have comparative advantages. As consistently argued by UNCTAD, the key for LDCs to take full advantage of regional and global value chains is to build requisite productive capacity and the capacity to transform productive resources from low- to high-productivity sectors and from low-value-added to high-value-added exports.

2.5 Participation in international and regional cooperation agreements

Until 50 years ago, the wealth of living aquatic resources was considered an unlimited gift of nature. However, with increased scientific knowledge, this myth has faded as we have realized that aquatic resources, although renewable, are not infinite and need to be properly managed. Over the years, international, regional and national governance frameworks gave coastal states rights and responsibilities for the management and use of fishery resources within their EEZs, which embrace some 90 per cent of the world's marine fisheries. Concurrently and for over 25 years, world fisheries and aquaculture have become a market-driven, dynamically developing sector of the food industry, and coastal states have striven to take advantage of their opportunities by investing in fishing fleets, infrastructure and services in response to growing international demand for fish and seafood.

Unfortunately, it became clear in the late 1980s that fisheries resources could no longer sustain such rapid and often uncontrolled exploitation. An urgent need emerged for new approaches to fisheries, aquaculture and post-harvest management that embrace conservation and environmental considerations. International instruments, International Plans of Action, resolutions and commitments for healthier oceans were put in place over the years. Concurrently, UNCTAD streamlined the sustainability of living aquatic resources in its trade and development programmes and partnered with other organizations to support and enable coastal developing countries, in particular the LDCs and SIDS, to help them achieve greater benefits from sustainable fish and seafood trade while addressing illegal trade and unfair competition.

Despite notable improvements achieved in some areas, real progress in addressing the key threats of living aquatic resources has not been substantive. Implementation has

been uneven in many countries, and success in meeting the targets set for addressing the key drivers of deterioration in ocean health have remained elusive – at great cost to the global economy and particularly to coastal and island developing countries. Yet, meeting the commitments the world has made for healthier oceans is do-able. The causes for the decline of the health of the oceans are fairly known. The challenge to be solved by the global community does not lie in the establishment of a new treaty or agreement for ocean health, but rather in accelerating efforts to implement those successive commitments to reverse the decline in the health of oceans.

A new opportunity for fisheries and aquaculture arose in September 2015 with the adoption of the 2030 Agenda for Sustainable Development by the 193 member states of the United Nations. The 2030 Agenda consists of 17 Sustainable Development Goals (SDGs), supported by 169 targets adopted to guide development actions of governments, international organizations, civil society and other institutions over 2016–2030.¹³ It calls on countries to express their priorities and commitments, formulate strategies and policies, and adopt plans, programmes and partnerships to achieve their national goals and targets.

Although fisheries and aquaculture contribute to several SDGs, the 2030 Agenda for the first time adopted a Global Goal on Oceans and Seas. SDG 14 is exclusively dedicated to “conserve and sustainably use the oceans, seas and marine resources for sustainable development.” It includes 10 targets relating to marine pollution, protecting marine and coastal ecosystems, minimizing ocean acidification, sustainably managing fisheries and ending harmful fisheries subsidies, conserving coastal and marine areas, and increasing economic benefits to SIDS and LDCs.

These international agreements place obligations on countries such as Angola and Haiti but also create opportunities for cooperation and for longer-term sustainability of the sector. In developing their policies and strategies for fisheries and aquaculture, both Angola and Haiti have enacted fisheries legislation and policies in line with the FAO'S CCRF and related instruments. Nevertheless, as will be discussed in Chapters 3 and 4, both Angola and Haiti still need to develop their capabilities to meet some of the international obligations beyond just supporting achievement of the 2030 Agenda and the relevant SDGs, in particular SDGs 1, 2, 9, and 14.

¹³ See the United Nations SDG website at <https://www.un.org/sustainabledevelopment/sustainable-development-goals/> (accessed 12 September 2021).

Chapter 3

THE FISHERIES AND AQUACULTURE SECTOR IN ANGOLA: OPPORTUNITIES AND CHALLENGES

3.1 Angola's fisheries and aquaculture sector in historical perspective

The Republic of Angola is located in the southwestern part of Africa. It has a coastline of 1,650 km on the Atlantic Ocean and an Exclusive Economic Zone of 497,800 km², offering great potential for fisheries and marine aquaculture. Along the coastline, the cold Benguela current from the south meets the warmer Angola current from the north causing an upwelling that creates a productive and diversified marine ecosystem. In addition, the rivers flowing through Angola contain several freshwater species such as tilapia, catfish, and freshwater prawns, all in high demand in the local market (FAO, 2020a). As a result, fisheries have always been an important source of food and nutrition, employment, trade, culture and economic benefits in Angola.

Following Angola's independence in 1975, the fisheries sector became a key economic centre during the ensuing civil war that plagued the country for 27 years. The war destroyed infrastructure and productive assets and displaced large populations who sought refuge on the Angolan Atlantic coasts. The poor economic conditions and successive droughts limiting agricultural opportunities drove rural communities to the coasts, where fisheries were one of the few choices Angolans had for their livelihoods. Migration to seek a better life on the coast continued after the civil war, resulting in an increase in the number of those depending on fishing for livelihoods.

Since the end of the civil war in 2002, the country has invested heavily in rebuilding its economy, using resources generated from its rich oil and mineral sectors. As a result,

Angola became one of the fastest growing economies in the world, doubling its GDP between 2003 and 2015, before GDP stagnated or decreased as a result of the decline in oil prices. Since 2015, Angola is the third largest economy in sub-Saharan Africa, the second largest oil producer in Africa, and the fourth largest producer of diamonds in the world (World Bank, 2020a). Unfortunately, this wealth has not benefited the majority of Angolans. Indeed, despite the country's wealth and resource endowment, a third of the country's population lives under the poverty line.

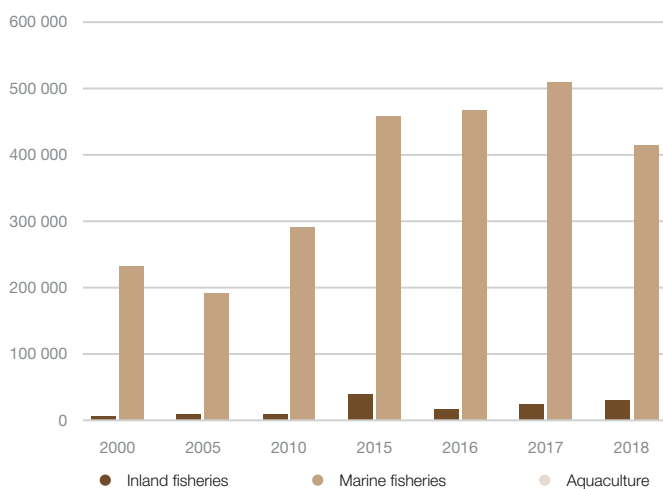
Moreover, Angola continues to face persistent development challenges, including excessive dependency on oil, an undiversified economy, poor infrastructure, a weak institutional and governance structure, mismanagement of resources, limited development of productive capacity, and a low level of human capital development and living conditions. Before the civil war, the fisheries sector was the third largest economic sector after oil and mining and a major source of employment and income for a large number of Angolans. In the last two decades, however, the relative importance of the fisheries sector has declined, although there is now a renewed interest in reviving it as a priority sector and a source of economic growth and export diversification. It is also targeted by the government as a key sector for poverty alleviation, food and nutrition security, and diversification of the national economy.

According to FAO (2020a), total fish production in Angola was estimated at 445,760 tons in 2018, mostly from marine fisheries (413,230 tons), in addition to over 30,000 tons from inland fisheries and 1,750 tons from aquaculture (table 3.1 and figure 3.1). Artisanal fisheries account for around half of marine fish production, with the industrial and semi-industrial fisheries sectors responsible for the remaining half. Most of the production (89 per cent) is used for domestic consumption, estimated at 19.8 kg/capita in 2018, close to the world average of 20.4 kg per capita per year, but greater than the World Health Organization recommendation

Table 3.1 Fish production in Angola, 2000–2018 (tons)

	2000	2005	2010	2015	2016	2017	2018
Marine fisheries	232 351	192 616	292 000	456 718	468 429	507 974	413 234
Inland fisheries	7 000	10 000	10 000	38 514	18 061	23 601	30 773
Total fisheries	239 351	202 616	312 000	495 232	486 490	531 575	444 007
Freshwater aquaculture	5	126	310	872	655	1 339	1 752
Total production	239 361	202 868	302 620	496 976	487 800	534 253	445 759

Source: FAO (2020a).

Figure 3.1 Fish production in Angola, 2000–2018 (tons)

Source: FAO (2020a).
 Note: Due to the scale, values for aquaculture can be read in table 3.1 below.

of 14 kg per capita per year and the average of 8.8 kg per capita in sub-Saharan Africa. Angola is a net food importer, but national fish production contributes on average 30 per cent of total animal protein consumption, reaching higher than 50 per cent in coastal communities (FAO, 2020a).

The fisheries and aquaculture sector provides significant employment, especially in the artisanal sector. An estimated 150,000 people earn a living from the sector. Around 45,000 people directly earn a living from marine fisheries and another 82,000 are employed in activities supporting fisheries and aquaculture. Inland fisheries employ approximately 20,000 people, of whom 8 per cent are women. In many coastal areas, around 50 per cent of the population relies directly or indirectly on fisheries for sustenance and livelihood. Over 90 per cent of employment is in small-scale fishing. Women account for up to 80 per cent of people involved in artisanal processing and marketing (El Ayoubi and Failler, 2014; AfDB, 2013; FAO, 2020b).

In 2008, fish exports were estimated at 50 822 tons, valued at US\$81.29 million, and fish imports were estimated at 89,898 tons, valued at nearly US\$198 million. In previous years, fish trade (both fish imports and exports) had been higher both in volume and value (table 3.1 and figure 3.1). While fish imports consist mainly of nutritious and low-priced small pelagics, fish exports are comprised largely of high-value frozen demersal fish and crustaceans, unfortunately with limited or no processing and value addition in Angola.

Like many other developing countries that are endowed with marine resources, Angola has the opportunity to

develop a dynamic fisheries and aquaculture sector and strengthen food and nutrition security, while promoting value addition, job creation and exports of high-value fish and seafood products to lucrative markets. However, as noted in Chapter 1, this requires active industrial policies that balance economic, social and environmental objectives. These policies can tap into the sector's comparative advantages in Angola for attracting investment and technical and managerial know-how in processing and value addition to strengthen exports to lucrative markets in Africa, Asia, Europe and the United States. Many countries from Europe and Asia have developed good business relations in Angola, including in fishing, processing and support services sectors. The United States has also expressed a keen interest in promoting business relations in Angolan fisheries and aquaculture.¹⁴ These business linkages can be leveraged to expand investment opportunities and transfer technology to the Angolan fisheries and aquaculture sector to promote value addition and diversify into fish and seafood export.

3.2 Overview of the fisheries and aquaculture sector in Angola

3.2.1 Marine Resources

There have been few surveys of fish off the Angolan coast, and those conducted early on were rarely published. This was the case of surveys in the 1950s and 1960s by Western European institutions, followed by surveys conducted by the former Soviet Union during the 1970s and 1980s. The FAO species identification sheets for the eastern central Atlantic provide identification material for commercial species. Since 2000, the FAO-Norwegian Agency for Development Cooperation (Norad) Project, using the RV Dr Fridtjof Nansen advanced research vessel, has conducted several surveys reported by the FAO for individual species and fish stocks, including stocks shared with Namibia (FAO, 2020b).¹⁵ The Benguela Current Commission (BCC) reported in 2007 and 2011 on the state of the Benguela Current Large Marine Ecosystem (BCLME) commercial fish stocks.¹⁶

Overall, the marine fisheries surveys in Angola estimate an exploitable biomass of around 700,000 tons per year, with Angolan fisheries described in general as being of

¹⁴ Privacy Shield Framework, "Angola - Marine technology (fisheries and sea ports)," available at <https://www.privacyshield.gov/article?id=Angola-Marine-Technology> (accessed 12 September 2021).

¹⁵ FAO, "EAF – Nansen Programme," available at <http://www.fao.org/in-action/eaf-nansen/en/> (accessed 12 September 2021).

¹⁶ BCC, "Current news," available at <https://www.benguelacc.org/index.php/en/> (accessed 12 September 2021).

moderate intensity with stocks generally declining. Most stocks of commercial interest, whether pelagic or demersal, including crustaceans, are reported fully or overly exploited (El Ayoubi and Failler, 2014; Córdia and Ferreira, 2018). Unfortunately, unreliable statistics and research data tend to indicate an underestimation of the landings (Belhabib and Divovitch, 2015). The acquisition of the *Baia Farta* research vessel in 2019 holds promising potential to support scientific research and targeted analysis in support of the sector.¹⁷

3.2.2 Fishing areas, fleet and techniques

Although fishing takes place all along the Angolan coast, fishing zones in Angola can be divided into three important areas (figure 3.2). The southern fishing zone, located in Namibe province, extends southward from Lobito to the mouth of the Cunene River, with species richness greatest at about 100 metres in depth. It is by far the most productive fishing zone, with an abundance of horse mackerel, sardines, tunas, and a range of demersal species including sea breams, hakes, groupers and croakers. The central fishing zone stretches from Luanda to Benguela and yields mainly sardinellas, horse mackerel and several demersal species (hakes, groupers and seabreams). The northern fishing zone extends from Luanda to Cabinda and includes large populations of horse mackerel and sardinellas and a smaller proportion of demersal species (FAO, 2020b).

In Angola, people fish for personal consumption, commercial purposes or recreation. According to the 2004 Law on Aquatic Biological Resources (FAO, 2020c),¹⁸ subsistence fishermen and women may catch up to 20 kg of fish per person per day without a license. Commercial fishing includes artisanal, semi-industrial and industrial activities. Artisanal fishermen and women use boats up to 14 metres in length, with outboard or inboard motors or various forms of sails. The law stipulates that a coastal zone of four nautical miles be exclusively reserved for artisanal, subsistence, recreational and research purposes.

Artisanal fishing activities take place along the entire coast, with over 100 regular landing sites identified. The greatest number of organized artisanal fishing communities is found in the northern provinces. Some 35,000 Angolans earn their living by fishing, working on board thousands

17 MACAUHUB, "Angola takes delivery of scientific research ship *Baia Farta*," 23 July. Available at <https://macauhup.com.mo/2019/07/23/pt-angola-recebe-navio-de-investigacao-cientifica-baia-farta/> (accessed 12 September 2021).

18 See also the FAOLEX database, "Angola," available at <http://www.fao.org/faolex/results/details/fr/c/LEX-FAOC050971/> (accessed 12 September 2021).

Figure 3.2 Map of Angola showing bordering countries, exclusive economic zones, and shelf water boundaries



Source: Kirkman SP and Nsengi KK (2019). Marine biodiversity of Angola: Biogeography and conservation. In *Biodiversity of Angola, Science and Conservation: A Modern Synthesis*, Huntley BJ, Fernanda Lages VR and Ferrand N, eds. Springer: 43–52. Reproduced without changes under the terms of the Creative Commons Attribution 4.0 International License (<http://creativecommons.org/licenses/by/4.0/>).

Note: EEZ: Exclusive Economic Zone; IBA: Important Bird and Biodiversity Area.

of small boats (FAO, 2020a, 2020b, 2020c) estimated to number 3,500 to 9,000, deploying traditional fishing gears. They use *chatas* (boats of five to seven metres in overall length, with a flat bottom and an outboard engine of about 25 horsepower), *catrongas* (7 to 14 metres in length with a central inboard engine of 40–100 horsepower), or wooden canoes (usually between 4 and 5.5 metres long, propelled by sails).¹⁹

Artisanal fishing methods include hand lines, beach seine, gillnets, seine nets and lift nets. The latter is a fishing method like gillnetting, more commonly used in southern Angola for capturing pelagic and demersal species. It deploys a net close to the coast for up to two days that is then retrieved by a winch or a tractor on the beach. Artisanal fishermen and women generally supply fish to local markets. Although it is men who go to sea to catch the fish, it is women who process, market and sell the catch.

The semi-industrial fleet is comprised of vessels between 14 and 20 metres in length, while the industrial fleet segment

19 Save Our Seas Foundation, "Assessing Angola's fisheries," available at <https://saveourseas.com/project/assessing-angolas-fisheries> (accessed 12 September 2021).

is comprised of vessels 21 metres in length and above. Semi-industrial and industrial vessels target pelagics such as horse mackerel sardinella and tunas, or demersal species such as shrimp, crab, lobster and other demersal fishes. Semi-industrial and industrial fishing is carried out mainly by foreign vessels leased to, or in joint venture with, Angolan enterprises. Under the 2004 law and related regulations, vessels owned by foreigners are not allowed to fish in Angolan waters. For this reason, leasing and joint ventures with Angolan nationals have become the custom. Foreign vessels known to fish in Angolan waters are from China, Japan, Republic of Korea, Nigeria, Russia, Spain and Namibia. In 2016, a total of 113 fishing vessels were licensed to harvest demersal species, of which 80 were for the industrial fleet and 33 for the semi-Industrial fleet. In the same year, for the pelagic species, 100 industrial fishing vessels and 57 semi-industrial fleet vessels were licensed (Córdia and Ferreira, 2018).

Purse-seining and trawling are the most common semi-industrial and industrial fishing techniques used. Demersal fish stocks are exploited over an area extending from southern to northern Angola, using a multispecies bottom trawl that exploits over 30 species of seabreams, croakers, groupers and hakes. Several of those stocks are targeted both by industrial and artisanal fisheries. There is also a rapidly growing recreational shore-fishery sector in southern Angola (Córdia and Ferreira, 2018).

In terms of inland fisheries and aquaculture, Angola has no major lakes, but it does have important rivers that contain several freshwater species in high demand on the local market. Tilapia species (locally known as *cacusso*) are among the most abundant freshwater fish caught and appreciated in Angola. Other species include catfish (locally known as *bagre*) and freshwater prawns of the species *Machrobrachium rosenbergii*, largely cultivated in Southeast Asia for the international market. Those fishing use dugout canoes made from tree trunks, small, planked boats and wooden canoes of 3 to 4.5 metres in length, operated either with oars or poles, with some powered with small engines. The dispersion of inland fishing communities makes it difficult to assess the state of inland fisheries resources. Although incomplete, available information on catches and landings seems to indicate clear signs of over-exploitation in many of the lagoons closer to major urban centres, with fishermen and women having to spend twice as much time to catch the same quantities as before. The introduction of management measures based on scientifically based total allowable catches has been identified as priority.

Aquaculture production in Angola is on a small scale and focused mainly in freshwater bodies by communities or by private operators, using earthen ponds or floating cages. In 2016, the country had three private, registered aquaculture production units, with an installed production capacity of 13 million fry per year.²⁰ The main constraint facing investment in aquaculture operations is still the high cost of imported fish feed, making fish expensive in the absence of a locally made cheap feed. In collaboration with projects by the International Fund for Agricultural Development (IFAD, 2105, 2018), Angola has targeted inland fisheries and freshwater aquaculture within the framework of the national development strategy for food security, poverty alleviation and employment, especially for rural youth and women.

Marine aquaculture is reported to have promising potential, with several projects estimating annual production at 39,660 tons, including 16,660 tons of marine fish, 7,500 tons of prawns, 14,500 tons of mussels and 1,000 tons of oysters. These projects would be distributed in the provinces of Namibe (four projects), Benguela (three), Bengo (three), Cuanza Sul (one) and Luanda (one). Seaweed production is being explored by the BCLME III Programme. A hatchery was launched in 2018 in Luanda province (Ramiro) projecting the use of biotechnologies for fish breeding and an estimated annual production of 200,000 fish larvae, 1 million mollusks and 10 million crustacean larvae.

In terms of landing sites and ports, industrial and semi-industrial fishing vessels use ports at Luanda, Kwanza Sul, Benguela and Namibe for landing the catch, maintenance of the boats and gears, and acquisition of fishing supplies. Generally, about 70 per cent of the fish catch of the semi-industrial and industrial fleet is landed in Luanda. For artisanal fishermen and women, over 184 landing sites have been identified along the coast of Angola, of which 65 localities in seven coastal provinces have been selected for statistics and data collection. Because artisanal fishermen and women and their communities follow the fish along the coast, and because most artisanal craft can be brought ashore anywhere on the sandy beaches of Angola, many of these fishermen and women do not have a fixed place for disembarking catches (Du Preez, 2009).

²⁰ Fry refers to the development stage of the fish seed. For further reference see Fish Seed Rearing Manual. (1993). "Nomenclature of Fish Seed". Food and Agriculture Organization of the United Nations (FAO). Available at <https://www.fao.org/3/AC381E/AC381E02.htm>.

Table 3.2 Main fish species produced in Angola, 2000–2018 (tons)

	2000	2005	2010	2015	2016	2017	2018
Inland fisheries	7 005	10 126	10 310	39 386	18 716	24 940	30 773
Marine fisheries	232 351	192 616	292 000	456 718	468 429	507 974	413 234
1. Crustaceans	3 554	2 750	2 410	4 726	2 563	2 746	3 413
2. Cods, hakes, haddocks	658	1 600	3 800	3 874	4 066	10 862	6 819
3. Flounders, halibuts, soles	592	8 800	4 600	1 570	6 000	24 694	332 32
4. Herrings, sardines, anchovies	108 211	46 000	83 700	211 008	149 540	199 922	137 885
5. Marine fishes not identified	30 788	20 119	47 755	52 862	95 670	46 148	84 207
6. Miscellaneous coastal fishes	29 473	65 000	95 210	34 659	64 476	92 868	36 815
7. Miscellaneous demersal fishes	2 205	3 300	1 150	12 186	15 190	6 780	12 800
8. Miscellaneous pelagic fishes	55 078	36 700	40 914	127 705	121 654	97 659	76 595
9. Sharks, rays, chimaeras	750	3 300	1 450	3 461	3 105	3 809	2 642
10. Tunas, bonitos, billfishes	600	3 847	9 511	3 828	5 169	18 876	14 858
11. Mollusks	442	1 200	1 500	839	996	3 610	3 968
Aquaculture	5	126	310	872	655	1 339	1 752
Total production	239 361	202 868	302 620	496 976	487 800	534 253	445 759

Source: FAO (2020a).

3.2.3 Fish production and utilization

Fish production in Angola has experienced major changes over the last 20 years. Production increased from 239,000 in 2000 to 445,700 tons in 2018, with production peaks in 2015 and 2017 estimated at 496,104 and 532,914 tons, respectively (table 3.1, figure 3.1). Other experts believe that these figures undervalue the volume by as much as 50 per cent because of IUU fishing. According to Belhabib and Divovitch (2015), total foreign catches within the Angolan EEZ averaged around 250,000 tons/year in the 2000s and these catches were not accounted for. Around 65 per cent of industrial catches are species that are also caught by artisanal fisheries. This overlap illustrates the importance of tackling the issue of underreporting and illegal fishing in Angolan waters.

In 2018, reported landings were mostly of marine fishes (413,000 tons), in addition to 30,000 tons from inland fisheries and 1,750 tons from freshwater aquaculture. Small pelagic fish, which are highly important for domestic consumption because of their low prices, use in traditional Angolan cuisine, and local eating habits, represent 40 per cent of total production. The rest of the marine catch is made up of demersal fish species (28 per cent), large pelagics (tuna, bonito, billfish, 3.5 per cent), and smaller quantities of crustaceans and cephalopods. Inland fisheries (6.7 per cent) yield mostly catfish and tilapia and aquaculture

produces small amounts (0.4 per cent) of tilapia and catfish in freshwater ponds (table 3.2).

Available data also show that over 89 per cent of fish harvested in Angola's EEZ stays in the country, with approximately 70 per cent being distributed as fresh or frozen, and 20 per cent as salted and dried. The rest (2 to 15 per cent) is exported (mainly demersal fish and shrimps shipped directly frozen on board to the EU and Asia). Unknown amounts are informally exported to neighbouring countries (Democratic Republic of Congo, Zambia and Namibia). The canning and fishmeal industry used to process large amounts of pelagics in the past, but the civil war destroyed infrastructure and caused a loss of expertise, so this industry is not currently operating.

3.3 Socioeconomic importance of fisheries and aquaculture in Angola

Fisheries is an important economic activity in Angola and accounts for 3–5 per cent of GDP, a relatively high contribution compared to the world average of 0.5–2.5 per cent. Considering that 90 per cent of GDP in Angola is dependent on oil, with highly fluctuating global prices and demand, the importance of fisheries goes beyond its modest contribution to national GDP (table 3.3). The sector offers significant opportunities for investment, technological innovation, value addition, job creation and

exports, particularly for young Angolan entrepreneurs and graduates. This is more so for demersal fish species and crustaceans, which are in high demand on the international market. As already noted, most of the fish produced in Angola is consumed locally. Average fish consumption per capita annually in Angola has increased steadily in recent decades, from 13 kg in 1995 to 19.8 kg in 2018 (table 3.3). This figure is well above the per capita annual fish supply in sub-Saharan Africa, which was estimated at 8.8 kg/per capita in 2018, ranking Angolans among the highest fish consumers in Africa. In a country that is a net food importer, national fish production contributes on average about 30 per cent of total animal protein consumption, reaching levels higher than 50 per cent in coastal communities.

An estimated 150,000 people earn a living from the sector, and around 45,000 people directly earn a living from marine fishing. Of these, around 35,000 artisanal fishermen and women operate between 6,600 and 9,000 artisanal fishing boats in Angolan coastal waters. Another 82,000 people are employed in supporting activities such as boat repair, supply and repair of gears, distribution, transport, etc. These numbers may even be underestimated by as much as 50 per cent according to Du Preez (2009), who reported that if beach seine operators are included, there could be an additional 130,000 to 140,000 people involved in activities related to artisanal fishing. Inland fisheries employ approximately 20,000 people, of whom 8 per cent are women. Over 90 per cent of employment in fisheries and aquaculture is in small-scale fishing. Women account for 50 to up to 80 per cent of people involved in post-harvest activities (El Ayoubi and Failler, 2014; AfDB, 2018; FAO, 2020b).

Domestic fish marketing occurs throughout the many landing sites for artisanal fishing along the coast of Angola.

At most of these sites, there is generally lively trade, and small processing units are in operation. The most common preservation methods are sun-drying and salting. However, distribution of fish inside the country is limited. A nationwide system for distribution of fish – especially fresh fish – has not yet been developed. Most of the fish harvested by artisanal fishermen and women is consumed in fishing communities or nearby. None of the artisanal catch is formally exported.

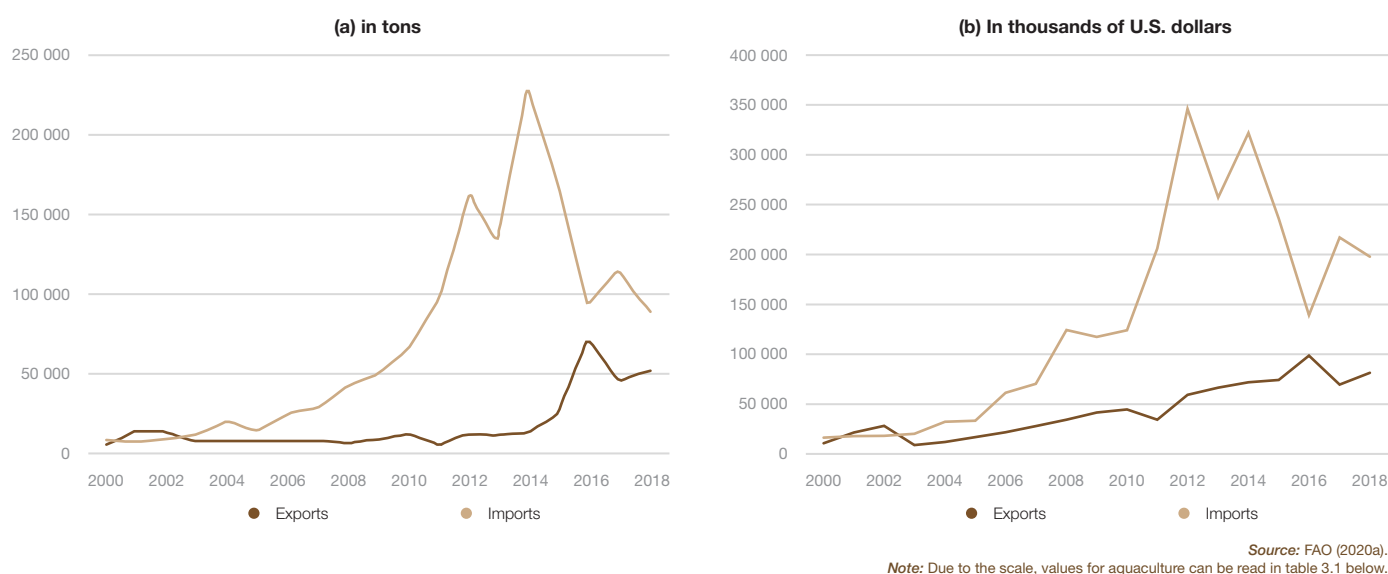
Fish at landing sites is sold by fishermen and women to wholesalers, usually women who buy small quantities and subsequently transport them to local fish markets and sell them fresh. Some also buy fish for processing by drying or salting, and also (rarely) for smoking. Processed fish is usually packed in bags and transported by pick-up trucks to fish markets in villages, or to larger towns and cities. In inland areas, bicycles are also used for transportation. Most fish markets are found in the more densely populated regions. Given the high demand, fish is also imported, especially small pelagics, mainly horse mackerel. Fish imports were estimated at 89,900 tons in 2018, with peaks of almost 172,000 and 11,000 tons in 2015 and 2017, respectively.

Angola was an important exporter of agricultural and fish products during the colonial era, and in 1990, fisheries products were still Angola's fourth major export (after oil, diamonds and coffee). For the reasons explained earlier, the country lost its fish trade capacity and expertise after independence. Trends in the last 10 years show an increase in both exports and imports, including exports of demersal species and crustaceans, and imports of small pelagic, in particular horse mackerel, mainly from Mauritania. Imported fish addresses the high domestic demand for pelagic fish. Table 3.3 and figure 3.3 show fish exports and imports, both in volume and value, over 2000–2018 (FAO, 2020a).

Table 3.3 Socioeconomic importance of fisheries and aquaculture in Angola, 2000–2018

	2000	2005	2010	2015	2016	2017	2018
Imports in tons	8 014	14 656	65 573	171 880	92 400	114 790	89 898
Imports in thousands of U.S. dollars	16 336	33 381	124 092	236 096	139 266	217 060	197 810
Exports in tons	5 427	7 531	12 035	24 723	70 971	45 305	50 822
Exports in thousands of U.S. dollars	10 839	16 840	44 764	74 159	98 739	69 597	81 289
Employment	39 400	51 000	95 600	104 500	125 442	130 000	127 000
Population (millions)	16.39	19.43	23.36	27.88	28.80	29.82	30.81
Apparent fish consumption (kg/capita)	12.10	12.60	14.70	15.58	17.66	20.20	18.9
Fish/animal proteins (per cent)	25.3	24.5	24.5	26	27	28	29.4

Source: FAO (2020a).

Figure 3.3 Fish imports and exports to and from Angola, 2000–2018

3.4 Governance and management of the fisheries and aquaculture sector in Angola

Angola is a good example of a coastal country that has failed to take advantage of its rich marine resources due largely to a weak governance and management structure and distortions in the economy created by the discovery of oil. Since independence, many Angolans have relied on fisheries for livelihoods and nutrition. The intensive reliance on marine resources, coupled with a weak or absent governance system during the 27 years of civil war, have increased the pressure on fisheries resources, leading to a decrease in productivity and diversity and overfishing of several stocks exceeding sustainable limits. Closely linked to fisheries development are also environmental governance and the governance of water resources. While Angola has huge potential for the development and export of aquaculture, the subsector remains relatively undeveloped. The country's relative abundance of fresh water and several rivers whose estuaries might be suitable sites for marine fish farms. Developing the aquaculture subsector in the long term would remove or reduce pressure on the natural catches by replenishing the fish stock in the country's waters. Fish ranching, which has been successfully used in Mauritius to replenish depleted stocks, could be the best avenue for Angola to regain its fishery stocks in both its marine and fresh waters.

An equally important problem for Angola's fisheries and aquaculture sector is the food safety and quality risks posed

by inadequate infrastructure and know-how that result in unhygienic post-harvest practices and limited exports of only on-board frozen fish and seafood, with no or very limited value addition. Furthermore, post-harvest losses remain very high, especially in the artisanal sector which lacks appropriate landing infrastructure, access to potable or clean water, electricity, ice and storage facilities, roads, and cold chain transport to lucrative markets.

To overcome the sector's highly complex and diverse obstacles, the government has introduced important reforms and adopted policies over the past 15 years to monitor the state of major marine fish stocks and improve fisheries governance and management systems, handling and processing practices, and food safety and quality control. The government has also promoted commercial aquaculture. These reforms have been consolidated into the rule of law since 2004, and more recently since the 2017/2018 election, the first-ever democratic election in Angola in modern times.

3.4.1 Legal and regulatory framework

Official information about Angola's legal and institutional frameworks is difficult to access on mainstream websites and, when available, is mostly in Portuguese, the country's official language. The FAO (2020c) provides summaries in English and links for accessing the policy, legal and regulatory frameworks of interest to agriculture, the environment, fisheries and aquaculture in its member countries. Box 3.1 for presents fisheries and aquaculture laws and decrees in Angola.

Box 3.1 Legal and regulatory system for fisheries and aquaculture in Angola***Laws relevant to the governance and management of fisheries and aquaculture***

1. Law No. 6-A/04 of 08/10/2004 on Aquatic Biological Resources (New Fishing Act).
2. Law No. 16/05 of 27/12/2005 amending Law No. 6-A/04 on Biological resources.

Presidential decrees governing fisheries and aquaculture

1. Presidential Decree No. 172/20 of 18/6 2020 approving the Agreement on the Protocol of Cooperation between the Government of the Republic of Angola and the Government of the Russian Federation on Fisheries and Aquaculture.
2. Presidential Decree No. 130/20 of 11/05/2020 on Management Measures for Marine Fisheries, Inland Fisheries, Aquaculture and Salt Production for 2020.
3. Presidential Decree No. 29/19 of 16/1/2019 approving the Fisheries and Aquaculture Management Plan (POPA) for 2018–2022.
4. Presidential Decree No. 93/19 of 25/02/2019 approving marine fisheries, inland fisheries and aquaculture management measures for 2019.
5. Presidential Decree No. 28/15 of 20/01/2015 approving management measures for marine and inland fisheries and aquaculture for 2015.
6. Presidential Decree No. 15/14 of 10/01/2014 approving management measures for marine fisheries, continental fishing and aquaculture for 2014.
7. Presidential Decree No. 4/13 of 03/01/2013 approving protection measures for the management of marine fishing and aquaculture in 2013.
8. Presidential Decree No. 139/13 of 24/09/2013 approving the Regulation on Continental Fisheries.
9. Presidential Decree No. 317/11 of 30/12/2011 approving management measures for marine fishing for continental fishing and aquaculture in 2012.

Executive decrees governing fisheries and aquaculture

1. Executive Decree No. 82/13 of 18/03/2013 approving the model form to request a sport and recreational fishing license.
2. Executive Decree No. 159/2006 regulating fishery practices, 26/12/2006.
3. Executive Decree No. 160/06 regulating fishing net mesh used by commercial vessels, 26/12/2006.
4. Executive Decree No. 109/05 approving the table of minimum size and weight for authorized aquatic animal species fishing, 25/11/2005.
5. Decree No. 41/05 establishing the General Regulation on Fisheries, 13/6/2005.
6. Fishing Act No. 20/92, 14/08/1992.
7. Decree No. 44.398 approving the regulation on trawl net fishing, 14/6/1962.
8. Decree No. 2/93 regulating sanctions and penalties applicable to fisheries, 02/02/1993.

Source: FAO (2020c).

The basic fisheries law in Angola is Law 6-A/04 on Aquatic Biological Resources (often referred to as the 2004 New Fishing Act, as opposed to the old Fisheries Law 20/92). Its Article 1 has been amended by Law No 16/05 to clarify the definition of an “Angolan company as a company based in Angola, with at least 51 per cent capital owned by Angolans who exercise effective control over the company.”

Fisheries Law 6-A/04 incorporates relevant provisions of international instruments such as the United Nations Convention on the Law of the Sea, which Angola has ratified, and accordingly defines the maritime boundaries for the control of fishing efforts and total allowable catch. The law is structured into six main titles that set the general guidelines and objectives for the use and exploitation of biological

aquatic resources, the fishery legal system, conservation rules, basic regulation on fishing vessels and ports, and rules for scientific research and monitoring activities. It defines clear rules for artisanal, industrial and semi-industrial fisheries.

Marine industrial and semi-industrial fisheries are managed by a rights-based approach in the form of individual vessel quotas, disaggregated from global total allowable catches, regulated by a set of management measures, and enforced by a monitoring, control and surveillance system. Total allowable catches are established yearly, after seeking technical advice from the relevant institutes and councils. The individual vessel quota concessions are for 20 years, and a tax in U.S dollars is levied per ton of fish harvested. Priority is given to Angola-national operators with land-based infrastructure (such as processing plants) and proven technical and managerial capabilities. Furthermore, the law establishes managing bodies and authorities as well as procedures for monitoring and control purposes, and defines the liability and sanctions for noncompliance with fishing, processing and distribution rules. In addition, the law regulates licensing procedures for aquaculture as well as for fish processing and marketing activities.

Law 6-A/04 is implemented through annual presidential and executive decrees that define total allowable catches and closed fishing seasons and areas, or that provide, for example, duty-free quotas for imports of horse mackerel, a shared resource between Angola and Namibia. The latest Presidential Decree, No. 130/20 of 15 May 2020, addresses management measures for marine fisheries, aquaculture and salt production for that year.

The mid-term fisheries policy is defined by Presidential Decree No. 29/19, which addresses the 2018–2022 Fisheries and Aquaculture Management Plan. Its overall objectives are to combat food insecurity and poverty and promote social and economic development. It aims to balance development of the sector at the national level with the country's competitive insertion in regional and international contexts through regulation and coordination of public and private actions in fisheries and aquaculture. The specific objectives of the policy aim to:

- Ensure sustainable exploitation of resources, including by fish-ranching marine and freshwater aquaculture development
- Develop systems, rules, regulations and institutions to improve fish safety and quality
- Reduce regional imbalances and support cohesion and national unity
- Promote entrepreneurship, economic efficiency, and competitiveness of fish companies
- Support and promote integrated, coordinated and sustainable development of fisheries and aquaculture, with a view to maximizing their overall contribution to social and economic development and minimizing the waste of resources and investments.

Regarding NTMs, the 2018–2022 management plan highlights the need to guarantee the hygiene and sanitary quality of fish and seafood consumed in Angola or exported. It aims to stabilize the contribution of inland fisheries and aquaculture to food security and economic stability in the interior of the country, especially for disadvantaged groups. Areas targeted for specific attention cover ship repair and building, industry for the manufacture of inputs, marine fishing, inland fishing, aquaculture, salt production, processing, marketing and distribution.

3.4.2 Institutional framework

At the highest political level, the fisheries and aquaculture sector has been the responsibility of either the Ministry of Fisheries, the Ministry of Fisheries and Environment or, since April 2020, the Ministry of Agriculture and Fisheries (following the merging of agriculture, forestry and fisheries). In all cases, the minister is assisted by a state secretary for fisheries and aquaculture and advised by four councils on, respectively, general matters and coordination, orientation, technical and scientific matters, and integrated management of living aquatic resources. The next layer of strategic and management support to the minister and the minister's cabinet is comprised of six offices to deal with general matters, legal matters, planning and statistics, control, coordination, information and documentation. These higher political and governance structures are enforced by four key directorates:

- The National Directorate for Fisheries Management and Conservation of Living Biological Resources, with a mandate to design, direct, monitor and implement fisheries policies and ensure the sustainability of fisheries resources
- The National Directorate for Fisheries Infrastructure and Industry, with a mandate to provide technical assistance to both artisanal and industrial fisheries
- The National Directorate for Surveillance and Control of Fishing Activities, in charge of licensing, inspection, control and surveillance of fishing activities to prevent and stop irresponsible practices
- The National Directorate for Aquaculture, in charge of the development of sustainable commercial aquaculture, both in freshwater and marine areas.

These directorates are supported by several public Institutions for research, technical support, safety and quality control, investment and training. These include but are not limited to institutes for fisheries research, development of artisanal fisheries and aquaculture, and fisheries industry and technology, as well as the Fisheries and Aquaculture University and the Fisheries Development Fund. These institutions are supported by the Office of Planning, Studies and Statistics, which conducts analyses and reviews, oversees the preparation of policy measures and overall strategy, and coordinates collection and analysis of fisheries statistics. At the provincial level, the ministry is represented by provincial directorates, delegations and field stations. The provincial directorates report to the National Directorate of Fisheries Management.

Artisanal fisheries in Angola have a long tradition of co-management through cooperatives that was formalized through government laws,²¹ as well as through national integrated plans.²² The first fisheries cooperative in the country was established in 1978 (Du Preez, 2009) as a voluntary “bottom-up” enterprise characterized by mutual self-help. Although the cooperative movement has been strengthened since then, it has been assimilated into Angola’s broader poverty reduction and food security strategy. All along the Angolan coast, over 185 communities of artisanal fishermen and women are registered, with the greatest number located in the Northern provinces. In many of these communities, fishermen and women are organized in cooperatives or associations that are reserved only for Angolan citizens. A cooperative is a group of 10 to 25 persons involved in fishing with equal rights and opportunities, whereas an association is a group of cooperatives having common objectives and interests.

A specific investment programme for the artisanal subsector was launched in 2000 and financed mainly with national funds. The programme consists of support for the organization of fishing communities in the form of cooperatives and small enterprises often financed with local microcredit schemes, combined with investments

21 Cooperatives in Angola are regulated through Law No. 23/15 of 31 August 2015 (*Lei das cooperativas*), which is applicable to all cooperatives operating in the country, irrespective of their socioeconomic objective (Article 2), and defines cooperatives as independent legal persons with varying capital and composition, functioning on the principle of democratic control.

22 With a view to enhancing the role of the cooperatives in response to the impact of Covid-19, the government of Angola, through a presidential decree, adopted an Integrated Plan for Accelerating Family Farming and Fishing 2020/2022 (*Plano Integrado de Aceleração da Agricultura e Pesca Familiar 2020/2022*) on 4 September 2020 (Presidential Decree No. 227/20). The objective of the plan is to mitigate the socioeconomic impact of Covid-19 and the dependency on oil, promote sustainable and inclusive economic growth, guarantee food and nutritional security, increase national production, and promote investments in value chains.

in infrastructure and training centred around new and rehabilitated fisheries-supporting centres. The Institute for the Development of Artisanal Fisheries and Aquaculture is mandated to promote artisanal fisheries through the development of cooperatives, training and community development, technical assistance projects, administration of subsidies and credit facilities, and monitoring. The institute is based in Luanda, with provincial delegations. Altogether, it employs more than 200 people, about a quarter of whom are based in the capital and the rest in the provinces (Du Preez, 2009). Further support of the government to fisheries cooperatives includes training (principally through Agroprodesi in collaboration with the FAO), handing out of kits, and establishment of dedicated Centres of Support to Artisanal Fishing.

3.5 International and regional cooperation framework

The fisheries sector is governed not only by national policies, rules and regulations, but also by international and regional agreements or cooperation arrangements covering a wide range of issues such as sustainability, combating illegal fishing, protecting the marine ecosystem, etc. In Angola, the strategy for regional cooperation in fisheries and aquaculture is underpinned by its political commitments in the African Union and the Southern African Development Community (SADC), and its recent policy to promote South-South Triangular Cooperation (SSTC). In addition, Angola is a member of several regional fisheries bodies and regional fisheries management organizations that work to ensure proper exploitation and utilization of shared living aquatic resources.

3.5.1 African Union and South-South cooperation

At the African Union level, the two overarching policies for national development of fisheries and aquaculture are the Comprehensive Africa Agriculture Development Programme adopted in 2003 and the Pan African Fisheries and Aquaculture Policy Framework (PAFPF) adopted at the Conference of African Ministers of Fisheries and Aquaculture in 2014. The PAFPF and its associated Reform Strategy identify seven policy objectives as critical to Africa’s fisheries and aquaculture development:

- Enhancing conservation and sustainable use of fisheries resources through the establishment of national and subnational governance and institutional arrangements to ensure that the societal contribution generated by

Africa's sectors has the greatest impact at the most appropriate level

- Developing sustainable small-scale fisheries by improving and strengthening the contribution of small-scale fisheries to poverty alleviation, food and nutrition security, and socioeconomic benefits of fishing communities and beyond
- Realizing the full potential of the aquaculture sector to generate wealth and social benefits and to contribute to the development of the African economy by jumpstarting market-led sustainable development strategies
- Promoting responsible and equitable fish trade and marketing by significantly harnessing the benefits of Africa's fisheries and aquaculture endowments through accelerated trade and marketing
- Strengthening South-South (bilateral and regional) cooperation and developing coordinated mechanisms among regional economic communities, regional fisheries bodies, and large marine ecosystem-based commissions to ensure the coherence of fisheries policies and aquaculture development and their adoption and adaptation
- Creating awareness about the potential and importance of the sector based on current and emerging trends, challenges and needs, and enhancing the capacity of governments and institutions to ensure sustainable development of the sector
- Increasing and consolidating the "African voice" in the governance and management of high seas fisheries in order to substantially enhance the benefits accruing to the member states associated with exploitation of high seas resources.

The PAFPF lays down the guiding principles for effecting appropriate reforms, while its Reform Strategy suggests action steps that could be applied in the sector. The PAFPF Reform Strategy requires countries to commit to reforming their fisheries and aquaculture sectors through appropriate fisheries exploitation arrangements and aquaculture development, with accompanied fiscal reforms that should result in the sustainable generation of benefits at the community level and in the creation of wealth throughout the value chain.

The SADC was established in 1992 through a legally binding treaty to replace the Southern African Development Coordinating Conference established in 1980.²³ The SADC's mission is to promote sustainable and equitable

²³ See the SADC website at <https://www.sadc.int/about-sadc/> (accessed 12 September 2021).

economic growth and socioeconomic development through efficient and productive systems, deeper cooperation and integration, good governance, and durable peace and security.

In the area of fisheries and aquaculture, SADC Heads of State endorsed the SADC Fisheries Protocol in 2001.²⁴ The protocol supports responsible and sustainable use of living aquatic resources and aquatic ecosystems of interest to state parties in order to:

- Promote and enhance food security and human health
- Safeguard the livelihood of fishing communities
- Generate economic opportunities for nationals in the region
- Ensure that future generations benefit from these renewable resources
- Alleviate poverty with the ultimate objective of its eradication.

The protocol is implemented through a strategy approved in 2010 by the ministers responsible for the environment and natural resources, and consists of five areas of focus: aquaculture, management of shared fisheries resources, combating IUU fishing, small-scale/artisanal fisheries, and fish trade.

In 2008, the SADC ministers responsible for marine fisheries signed a Statement of Commitment to combat IUU fishing that aims to:²⁵

- Improve regional and interregional cooperation to eradicate IUU fishing
- Strengthen fisheries governance and legal frameworks to eliminate IUU fishing
- Develop a regional plan of action with regard to IUU fishing
- Strengthen regional fisheries monitoring control and surveillance capacity.

Angola's government has expressed interest in expanding and strengthening SSTC in agriculture, fisheries and aquaculture with a number of SADC countries. These countries include Mozambique (artisanal fisheries and aquaculture), Zambia (sustainable and profitable cooperatives) and Zimbabwe (farmer-adapted mechanization). Angola has also expressed interest in cooperation with Brazil on knowledge management and

²⁴ The protocol is available at [SADC_Protocol_on_Fisheries.pdf](https://www.sadc.int/files/8314/7306/3262/SADC_Protocol_on_Fisheries.pdf) (accessed 12 September 2021).

²⁵ The statement is available at https://www.sadc.int/files/8314/7306/3262/SADC_Statement_of_Commitment_on_IUU.pdf (accessed 12 September 2021).

South-South research for sustainable family agriculture in Lusophone countries. Opportunities are being explored within the IFAD's SSTC facility to mobilize knowledge, expertise and resources from the Global South to accelerate rural transformation and promote investments among developing countries.

3.5.2 Regional fisheries bodies and management organizations

Angola has been actively engaged in a wide range of regional cooperation agreements to protect its fisheries and aquaculture sector. The marine ecosystem of Angola is influenced by two marine currents, the Angola current from the north and the Benguela current from the south (figure 3.2). As such, Angola shares similar concerns over marine resource conservation and use with its neighbouring maritime countries to the north and south. Consequently, Angola is an active member of regional fisheries bodies such as the Commission for East Central Atlantic Fisheries and the Ministerial Conference on Fisheries Cooperation between African States Bordering the Atlantic Ocean (ATLAFCO).²⁶ Angola is also an active member of regional fisheries management organizations, the International Commission for the Conservation of Atlantic Tunas (ICCAT), the BCC, and the South East Atlantic Fisheries Organization (SEAFO). It is worth clarifying that the decisions of regional fisheries management organizations are mandatory and must be implemented by the member states, whereas regional fisheries bodies have only an advisory role and their decisions are not binding.

Established in 2007, the BCC is comprised of Angola, Namibia and South Africa. It is mandated to work toward restoring, maintaining and conserving the biological integrity of the BCLME. The key focus of the BCC is on the management of shared fish stocks, environmental monitoring, biodiversity and ecosystem health, mitigation of pollution, and minimizing the impact of marine diamond mining and oil and gas extraction. The BCC has committed to implementing ecosystem-based management of the marine environment to address responsible use of its ocean resources and sustainable development.

To support ecosystem-based management, the BCC has developed an initiative to implement marine spatial planning in its member countries. A key element of the process is to identify a network of ecologically or biologically significant marine areas that are important for the services they provide

and for the healthy functioning of oceans, and to include these in marine spatial plans.

The SEAFO is a regional fisheries management organization responsible for ensuring the long-term conservation and sustainable use of fishery resources (excluding migratory fish stocks) in the high seas of the southeast Atlantic Ocean.²⁷ Its Convention Area is situated in the southeast Atlantic region, outside the EEZs of the coastal states of Angola, Namibia, South Africa and the United Kingdom's overseas territory of Saint Helena and its dependencies Tristan da Cunha and Ascension Island. It covers an area of about 16 million km².

The SEAFO was established in 1995 out of concern that certain commercially valuable straddling fish stocks required better protection to avoid having their potential compromised due to unsustainable fishing practices on the adjacent high seas. Other country/regional members/observers of the SEAFO are the EU, Iceland, Japan, Norway, Poland, Republic of Korea, the Russian Federation, Ukraine and the United States, all of which have a history of fishing or demonstrated real interest in the fisheries in the area.

The ICCAT is an inter-governmental fishery organization responsible for the conservation of tunas and tuna-like species in the Atlantic Ocean and its adjacent seas.²⁸ It is responsible for the conservation of tunas and tuna-like species in the Atlantic Ocean and its adjacent seas. The ICCAT compiles fishery statistics from its members and from all entities fishing for these species in the Atlantic Ocean, coordinates research (including stock assessment) on behalf of its members, and develops scientific-based management measures for contracting parties to discuss, adopt and implement.

3.5.3 Illegal, unreported and unregulated fishing

As stated earlier, Angola was subjected for many years during the civil war and the ensuing reconstruction period to IUU fishing practices by foreign vessels that took advantage of the country's insufficient surveillance capabilities. Belhabib and Divovitch (2015) estimate that total foreign catches within Angolan EEZ-equivalent waters averaged around 250,000 tons/year in the 2000s. Around 65 per cent of industrial catches are species that are also caught by artisanal fisheries, endangering the livelihoods and food security of a wide portion of the coastal communities of Angola.

²⁶ See the ATLAFCO website at <http://www.atlafco.org/> (accessed 12 September 2021).

²⁷ See the SEAFO website at <http://www.seafo.org/> (accessed 12 September 2021).

²⁸ See the ICCAT website at <https://www.iccat.int/en/> (accessed 12 September 2021).

In 2014, through Presidential Decree No. 284/14, Angola adopted a National Plan of Action to combat IUU fishing. Angola is also a signatory to the FAO Agreement on Port State Measures (PSMA), and it ratified the FAO Compliance Agreement in 2006. To date, Angola has not been yellow or red listed by the EU for IUU fishing. On the IUU Fishing Index,²⁹ Angola is ranked 52nd out of 152 countries in the world, 18th out of 38 countries in Africa, and 15th out of 41 East Atlantic countries, with an overall score of 2.37/5. It scores high (4 to 5) on 12 criteria but needs major improvements on 17 criteria where it scores lowest (1.0).

3.5.4 Sanitary and phytosanitary measures

In Angola, the legal basis for fish and seafood safety is presented in Decree 40/06 of 30 June 2006 entitled General Requirements for Food Safety on Fishery Products. It appoints the National Directorate for Infrastructure and Industry as the competent authority for the inspection of fish and seafood destined for international markets. It is supported by the National Institute of Industry and Technology, which carries out official inspection of processing establishments for export approval by checking, at least once a year, infrastructure, hygiene conditions, and application of Good Manufacturing Practices and Hazard Analysis Critical Control Point Plans. Freezer vessels are visited after every fishing cycle (60 to 80 days). If needed, product samples are taken for each consignment and subjected to chemical and microbiological tests before issuance of health certificates. Reksten et al. (2020) looked at the nutritional value and contamination by heavy metals (cadmium, mercury and lead) of major fish species caught and consumed in Angola and found that they were highly nutritious and very safe in relation to heavy metal residues, in line with *Codex Alimentarius* and international standards of major fish importing countries.

As noted above, Angola exports fish and seafood to various countries in Europe, Africa and Asia. These different countries have different requirements for the safety and quality of fish and seafood, with some countries conducting an in-country assessment of the inspection system of the country wishing to export in order to assess its sanitary measures and food safety system (Ryder et al., 2014). This is the case of the EU, which requires an in-country audit of the food safety systems before authorizing imports from that country and listing establishments from which fish imports are authorized.

²⁹ The index is available at <https://iuufishingindex.net/profile/angola> (accessed on 12 September 2021).

In this context, Angola has been subject to three official audits by the EU Food and Veterinary Office, in 2002, 2003 and 2007.³⁰ The audits assessed the legal system for fish and seafood safety and its performance and procedures (licensing establishments, sampling and analysis, laboratories, technical capabilities of the inspection services, etc.). Regarding border inspections, the EU Rapid Alert System for Food and Feeds has reported 19 notifications for Angola between 2000 and 2019, with 18 notifications caused by unacceptably high levels of sulphites in frozen crustaceans.³¹

Angola is still accredited for export to the EU, as its food safety record is considered acceptable given that most exported products are frozen on-board with little or no value addition onshore. However, as with many African countries, Angola cannot export its fisheries to high-end supermarket or hotel chains due to their high food safety and quality requirements and related private standards. Promotion of land-based processing and value addition would require stepping up current SPS measures and infrastructure to meet the requirements of international markets. Surveillance programs to assess and prevent biological and chemical pollution of the fishing areas should be developed and implemented. Staff of the National Directorate for Infrastructure and Industry need training on how to inspect and certify processing operations, practices and products. The abovementioned land-based processing and value addition initiatives, surveillance programs, and initiatives to meet high food safety and quality requirements, as well as private standards would also require investment, capacity-building and institutional support to meet the private social and environmental standards necessary for access in major markets abroad.

3.6 Harnessing Angola's aquatic resources to promote economic diversification and structural transformation: Opportunities and challenges

Angola has made significant progress in economic and political reforms since the end of the civil war in 2002. However, the country continues to face major developmental challenges because of its high dependency on oil and the structural impediments to economic diversification.

³⁰ The audits are available at https://ec.europa.eu/food/audits-analysis/audit_reports/index.cfm (accessed on 12 September 2021).

³¹ See the European Commission's Rapid Alert System for Food and Feed portal at <https://webgate.ec.europa.eu/rasff-window/portal/?event=searchResultList> (accessed on 12 September 2021).

Priorities for a future development strategy, including in the context of the COVID-19 recovery plan, are to shift the focus and dependence of the economy away from oil, rebuild infrastructure, and improve institutional capacity, governance, public financial management systems, human capital, and the living conditions of the population. At a time of pressing social challenges, and particularly when the number of unemployed young people is growing, it is more critical than ever to harness economic growth for sustainable and inclusive development by identifying potential growth sectors or economic activities. Collective efforts are required at the national, regional and international levels to create an environment that is favourable and supports Angola's Vision 2025 (*Visão 2025*), which aims to achieve four overarching goals:

- Promote and accelerate growth and competitiveness through economic diversification
- Reduce poverty through human capital development and targeted interventions, specifically private sector job creation
- Promote balanced growth and harmonized development alongside natural resource protection
- Put in place efficient and accountable government, with an emphasis on institutional strengthening and human capacity development.

3.6.1 Opportunities to develop the fisheries and aquaculture sector

Financial institutions such as the World Bank and African Development Bank (AfDB), international development organizations (FAO, IFAD, UNCTAD), and other development partners (including the EU, United States, China, Russia, Japan, Republic of Korea, and Spain) have shown a keen interest in helping Angola restructure its economy and reform its fiscal, trade and investment policies. Donor activity in Angola has shifted in recent years to an increased presence in cross-cutting areas such as the environment, decentralization, private sector development, and regional integration. The focus is also on health, agriculture/rural development, water, Infrastructure, civil society, fishery research, agro-industry and value chains. The AfDB's 2018 Country Strategy Paper for Angola aims to achieve economic diversification and growth through the non-oil private sector, and to create employment and promote poverty reduction. The Country Strategy Paper articulates the AfDB's engagement across two pillars: stimulus to the competitiveness of the economy and support for infrastructure development.

In areas related to trade, investment and technology, UNCTAD has helped Angola develop a Trade Policy Framework (UNCTAD 2016c) and conduct an investment Policy Review (UNCTAD 2020), Science, Technology and Innovation Policy Review (UNCTAD 2008a), and National Green Export Review (UNCTAD 2018a). In addition, UNCTAD has provided support to Angola in other diverse areas such as the gender perspective of trade liberalization (UNCTAD 2013), training for trade,³² and capacity-building in the fisheries and aquaculture sector,³³ as well as in agriculture and forestry (coffee, honey, timber) (UNCTAD 2018b).

All of Angola's development partners agree that fisheries and aquaculture have real potential to enhance the country's competitiveness in international markets, promote value addition, create jobs, and increase exports of high-value fish and seafood to lucrative international markets. Angola also receives official development assistance targeted at the fisheries sector from its partners. For instance, according to the Organization for Economic Development and Cooperation's Development Assistance Committee (OECD-DAC) database,³⁴ Angola received US\$4.75 million from the AfDB's Fund for a Fisheries Support Project in 2019, as well as additional financing from Norway as part of their bilateral agreement on the fisheries sector. Such support is critically important for developing the sector, which often remains underfunded, hindering its socioeconomic significance. Nevertheless, the fisheries and aquaculture sector is potentially important for achieving Angola's agenda on economic diversification and structural transformation. A strengths, weaknesses, opportunities and threats (SWOT) analysis of the sector (table 3.4) confirms this potential and identifies policy measures necessary to unlock binding constraints, take advantage of the potential for fish exports, and strengthen the role the sector can play in national food and nutrition security and poverty alleviation. This will require innovative policies that balance social, economic and environmental objectives, building on the national policy for economic development, and are strategically aligned with the 2030 SDA and the African Union Policy Framework for fisheries and

32 EU-UNCTAD Joint Programme for Angola: Train for Trade I, available at <https://unctad.org/project/eu-unctad-joint-programme-angola-train-trade-ii> (accessed 12 September 2021).

33 UNCTAD, "Centres of Excellence in the African and Asian regions," available at <https://unctad.org/topic/vulnerable-economies/least-developed-countries/centers-of-excellence> (accessed 12 September 2021).

34 See OECD, "DRC and CRS code lists," available at <https://www.oecd.org/dac/financing-sustainable-development/development-finance-standards/dacandcrscodelist.htm> (accessed 12 September 2021).

Table 3.4 Strengths, weaknesses, opportunities and threats analysis of marine fisheries in Angola

Strengths	Opportunities
<ul style="list-style-type: none"> • Long and rich coastline and Exclusive Economic Zone • Conducive fisheries governance and management framework • Potential for marine fish processing and value addition • Good regional and international collaboration and networking • Good trading relationships and networks with major importers in Europe and Asia • Recognition of sanitary and phytosanitary competent authority by the European Union Food and Veterinary Office • Important recent investment in research, training, sanitary and phytosanitary infrastructure and capacity 	<ul style="list-style-type: none"> • High international demand for fish and seafood • High interest from national and foreign investors in marine fisheries in Angola • Real opportunities for competitive value addition in Angola before export • Availability of labour, in particular female labour for fish and seafood post-harvest processing • Real opportunities to reduce post-harvest losses in artisanal fisheries
Weaknesses	Threats
<ul style="list-style-type: none"> • Strong dependency on primary product exports • Deficient landing and post-harvest handling infrastructure • Lengthy and complex bureaucracy • Lack/insufficiency of qualified workers and managers • Lack of fish and seafood value chain, investment opportunities and market studies 	<ul style="list-style-type: none"> • Corruption and bureaucracy • Overfishing and deficient fisheries management • High turnover of staff in the decision-making institutions of the country

Source: Prepared by the authors.

aquaculture (PAFPF Regional Strategy). Both the SDA and the framework guide international and regional efforts to promote sustainable use and conservation of aquatic biological resources.

As Angola is already estimated to be at its sustainable production limits for marine fisheries, efforts to further harness the potential of the fisheries sector for the country's socioeconomic transformation should focus on developing the aquaculture subsector, increasing value addition, and meeting export requirements. Angola should also control IUU fishing and effectively manage industrial-scale fishing activities, particularly through fish license agreements that allow international fishing fleets unfettered access to its natural catches.³⁵ Angola and other LDCs with significant fishery resources should endeavour to negotiate fish license agreements that are environmentally sustainable and economically viable to the development needs of their respective countries.

Angola can learn from the experience of countries within Africa (table 3.5) such as Mauritius, Ghana, Senegal and Namibia, and outside Africa, such as Chile and Viet Nam, which have developed their potential for value addition

³⁵ According to the FAO, in 2018, 70 per cent of total allowable catches and 80 per cent of shrimp harvests came from industrial and semi-industrial fishing activities, undertaken through fish license agreements signed between Angola and countries and /or regions owning international transboundary fishing fleets.

and job creation through improved processing and exports of high-value fish and seafood. Data presented in table 3.5 show that production volumes in African countries with aquatic ecosystems similar to Angola were between 400,000 and 480,000 tons in 2018 (except for South Africa, which produced around 619,000 tons). But the data also show important differences in export volumes and values, with a value/ton ratio that varies between US\$1,600 for Angola, US\$2,834 for Ghana, US\$1,916 for Namibia, US\$1,938 for Senegal, US\$3,700 for South Africa and US\$3,925 for the United Republic of Tanzania.

Some of these differences reflect differences in the species of the export basket of each country, particularly for the United Republic of Tanzania. However, differences in the export volumes and the value/ton ratios indicate significant processing value addition in Senegal and Namibia as compared to Angola, reflecting higher employment opportunities on land. At the same time, these countries guarantee the availability of fish for domestic consumption and national food security. In fact, Ghana and Senegal have the highest domestic fish supply in Africa at 26.3 and 23.9 kg/per capita in 2018, respectively, above the world average of 20.4 kg/per capita and the sub-Saharan African average of 8.8 kg/per capita.

Table 3.5 Production and trade in fish and seafood of selected African countries, 2010–2018

Country		2010	2015	2016	2017	2018
Angola	Production in tons	310 310	496 104	487 145	532 914	444 007
	Exports in tons	12 035	24 723	70 971	45 305	50 822
	Exports in thousands of U.S. dollars	44 764	74 159	98 739	69 597	81 289
	Imports in tons	65 573	171 880	92 400	114 790	89 898
	Imports in thousands of U.S. dollars	124 092	236 096	139 266	217 060	197 810
Ghana	Production (tons)	358 289	392 231	385 115	438 506	453 397
	Exports in tons	24 536	34 148	43 342	69 241	80 053
	Exports in thousands of U.S. dollars	64 392	107 260	133 152	209 776	226 858
	Imports in tons	216 702	299 753	370 794	361 309	357 813
	Imports in thousands of U.S. dollars	146 384	257 222	323 623	278 177	285 956
Namibia	Production in tons	430 401	547 546	537 508	512 703	511 041
	Exports in tons	327 775	433 338	404 151	468 198	402 963
	Exports in thousands of U.S. dollars	783 413	620 159	643 843	747 738	772 015
	Imports in tons	31 948	24 441	27 150	26 793	32 147
	Imports in thousands of U.S. dollars	51 604	41 524	59 227	48 909	57 497
Senegal	Production in tons	409 795	426 650	476 241	535 879	485 858
	Exports in tons	99 688	208 866	221 295	239 055	257 085
	Exports in thousands of U.S. dollars	240 235	352 903	377 692	408 330	498 289
	Imports in tons	6 614	19 384	18 631	31 109	28 393
	Imports in thousands of U.S. dollars	5 800	20 039	22 552	36 929	38 547
South Africa	Production in tons	693 071	638 680	668 137	600 301	619 354
	Exports in tons	179 803	154 993	205 840	182 775	193 696
	Exports in thousands of U.S. dollars	567 178	518 708	624 126	601 300	716 641
	Imports in tons	99 330	1648 95	193 079	214 601	276 770
	Imports in thousands of U.S. dollars	243 644	325 655	364 274	427 851	509 992
United Republic of Tanzania	Production in tons	359 331	387 486	384 994	409 918	393 898
	Exports in tons	54 881	45 968	44 469	48 779	54 308
	Exports in thousands of U.S. dollars	154 121	161 718	142 622	187 368	213 131
	Imports in tons	5 946	19 644	25 033	17 302	12 110
	Imports in thousands of U.S. dollars	4 607	17 337	21 780	14 608	10 423

Source: FAO (2020a).

The recent introduction of policy investments and technical support by development partners to improve fisheries research, management, infrastructure, processing and quality control in Angola are very encouraging. The AfDB (2018) is supporting Angola's efforts to organize and modernize the artisanal, semi-industrial and industrial fishing fleet and fish processing through investments in fishery infrastructure and sustainable management of the resource. Similarly, the IFAD is assisting Angola in developing inland fisheries and small-scale freshwater aquaculture.

3.6.2 Ongoing projects in fisheries and aquaculture

In 2020, Angola acquired a 74 metre-long research vessel (the Baia Farta) at a cost of US\$80 million and inaugurated the Polytechnic Institute of Fisheries (CEFOPESCAS) of Angola, funded by Spain, at a cost of 98 million euros. The research vessel has scientific and technological capabilities to operate along the entire Angolan seacoast. CEFOPESCAS is set up on a five hectare tract and has the capacity to accommodate up to 1,800 students. It will train medium-level staff as coastal master fishermen and machine technicians and as specialists in marine engines, naval

installations, aquaculture, fish technology, marine biology and fisheries resources. It will also teach basic courses for fishermen and women, foreman skills, and technical skills in naval electricity, refrigeration and cold storage, fish processing, handling and conservation.

Other important activities undertaken by Angola over the last two years include organizing the third edition of

the International Fisheries and Aquaculture Fair in 2019, conducting the first census after independence to collect essential indicators on agriculture, livestock and fisheries, creating the National Fisheries Observers Agency, and signing the charter establishing the SADC Regional Fisheries Monitoring Control Surveillance Coordination Centre in Maputo, Mozambique.

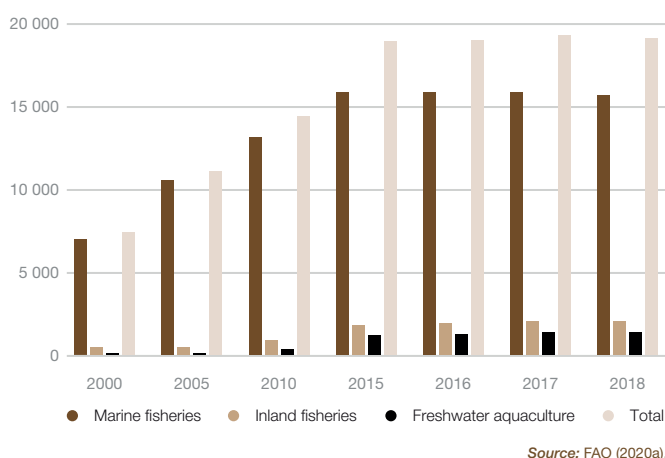
Chapter 4 THE FISHERIES AND AQUACULTURE SECTOR IN HAITI: OPPORTUNITIES AND CHALLENGES

4.1 Haiti's fisheries and aquaculture sector in historical perspective

The Republic of Haiti is an Island surrounded by the Caribbean Sea to the south and the west, the Atlantic Ocean to the north, and the Dominican Republic to the east. It is part of the Greater Antilles, which also include Cuba, Jamaica, Puerto Rico and the Dominican Republic. Haiti has an area of 27,750 km², with an Exclusive Economic Zone of about 112,025 km² and a coastline of nearly 1,700 km, offering a diversified marine ecosystem. Rivers and lakes cover some 22,000 hectares in Haiti and offer possibilities for inland fishing and aquaculture. As a result, fisheries have always been an important source of food and nutrition, employment and economic benefits in Haiti. Freshwater aquaculture has gained interest steadily over the years. Several marine aquaculture farms have been in operation, but the potential, sites and species are not fully known.

Haiti is the only LDC in the Western Hemisphere, with a GNI per capita of US\$797. In 2019, Haiti ranked 169th out of 189 countries on the United Nations Development Programme (UNDP) Human Development Index (World Bank, 2020b). Haiti remains highly vulnerable to natural hazards such as hurricanes, floods and earthquakes, to which most of the population is exposed.³⁶

Figure 4.1 Fish production in Haiti, 2000–2018 (tons)



³⁶ ACAPS, "Haiti," available at <https://www.acaps.org/country/haiti/crisis/complex-crisis> (accessed 12 September 2021).

For example, the devastating earthquake of 2010 killed over 250,000 people and injured as many, displaced over 1.5 million people, and caused damage estimated at US\$14 billion (Cavallo et al., 2010). Hurricane Matthew, which hit the country in 2016, caused losses and damage estimated at over 32 per cent of GDP and significantly set back rebuilding efforts undertaken after the 2010 earthquake. The country was again hit by a devastating earthquake in 2021.

Climate change is expected to increase the frequency, intensity, and impacts of extreme weather events in the country. As with all weak and vulnerable economies, Haiti was severely affected by the 2008–2009 global economic crisis and has suffered significantly from the negative consequences of the COVID-19 pandemic.

On the political governance side, Haiti has unfortunately also experienced continuous political instability and governance-related challenges. On occasion this has led to a total political breakdown and instability, requiring the deployment of a UN peacekeeping mission from 2004 to 2017. To make matters worse, Haiti has experienced some of the most severe natural disasters, including, as noted above, devastating earthquakes in 2010 and 2021, a cholera outbreak in 2010–2011 and a severe hurricane in 2016. The extreme poverty of most Haitians struggling for survival amid political unrest and natural disasters has also led to severe environmental degradation, from deforestation to mangrove destruction, overfishing and marine pollution. Deforestation in Haiti has caused severe landslides and sediment deposition in the aquatic environment, negatively impacting living aquatic resources, coral reefs and algae production (CRFM, 2010; Starbuck and Uiterwik, 2016).

As a result, Haiti has been dependent on assistance from international and regional institutions, NGOs, philanthropic foundations and church organizations for decades to build peace, political stability, and economic and social development, and for environmental restoration and conservation. To address the complex task of managing the large number of actors in the development field, the government of Haiti assigned the Ministry of Coordination and Foreign Cooperation (MCFC) the responsibility to coordinate international aid and align it with national policies and priorities. This was to be achieved within the framework of the national plan for coordination of foreign aid and development assistance, developed in 2010 and updated every three years into an investment plan agreed to by all stakeholders (Lahens, 2014).

Table 4.1 Fish production in Haiti, 2000–2018 (tons)

	2000	2005	2010	2015	2016	2017	2018
Marine fisheries	6 990	10 610	13 210	15 910	15 910	15 910	15 750
Inland fisheries	432	432	860	1 820	1 890	2 000	2 000
Total fisheries	7 422	11 042	14 070	17 730	17 800	17 910	17 750
Freshwater aquaculture	12	32	360	1 220	1 290	1 400	1 400
Total production	7 434	11 074	14 430	18 950	19 090	19 310	19 150

Source: FAO (2020a).

These are the socioeconomic and political contexts in which the fisheries and aquaculture sector is considered highly strategic by the government and international development institutions to combat poverty, eliminate food and nutrition insecurity, create employment opportunities, and promote export as well as economic diversification. According to FAO (2020a), total fish production was estimated at 19,150 tons in 2018, mostly from marine fisheries (15,750 tons), in addition to 2,000 tons from inland fisheries and 1,400 tons from aquaculture (figure 4.1, table 4.1). As noted above, artisanal marine fisheries account for over 82 per cent of total fish production. The introduction of motorized boats and fish aggregating devices (FADs) for fishing offshore resources during recent decades has led to important increases in marine catches.

The continental shelf around Haiti is relatively narrow and easily accessible to those who fish. Its width does not exceed one kilometre from the shore in many places of the coastline. Consequently, coastal demersal fish resources are limited, and pelagic resources are only present seasonally, with limited and uncertain catches. At the same time, over 52,000 Haitians earn a living from marine fishing on the easily accessible continental shelf. Inland fisheries and aquaculture employ another 1,500 people, and an additional 60,000 are employed in activities supporting fisheries and aquaculture (FAO, 2020b; MANRRD, 2010a). Most production (98.5 per cent), complemented by significant fish imports, is for domestic consumption, estimated at 5.3 kg/per capita in 2018. Although this consumption amount represents only 20 per cent of the world average of 20.4 kg/per capita/per year, fish remains the main source of animal proteins in most coastal areas of Haiti, where it can reach over 50 per cent.

Fish exports were estimated in 2018 at 269 tons, valued at US\$10.6 million, and imports represented 25,340 tons, valued at US\$54 million. Fish exports to the United States and Europe have been banned since 2004 because

of noncompliance with sanitary measures. As a result, exports are mostly informal and directed mainly to the neighbouring Dominican Republic, with a peak of 486 tons in 2015. Whereas imports are comprised exclusively of pelagic fish and a small amount (less than 0.5 per cent) of crustaceans, exports are comprised mainly of high-value fish, crustaceans, mollusks, and shellfish.

Like many SIDS, LDCs and Caribbean countries, fisheries and aquaculture in Haiti present real opportunities to support national food and nutrition security and to improve employment and exports of high-value fish and seafood to lucrative markets. In fact, there is recognized potential for Haiti to substitute imports through the development of aquaculture and the reduction of post-harvest losses, creating value and employment opportunities. At the same time, Haiti could improve its exports of high-value species to close-by markets, in particular Caribbean tourism resorts and the United States. This would require an improved fisheries and aquaculture governance and management system, adequate infrastructure, development of capabilities to catch, handle and process fish at high standards, and creation of the sanitary facilities needed to meet market access requirements in lucrative markets, particularly the NTM for fish and fishery products.

4.2 Overview of the fisheries and aquaculture sector in Haiti

4.2.1 Marine resources

Unfortunately, Haiti is one of the few countries where reliable information on fish stocks and fishery resources is not available, largely due to limited research capacity and lack of data on landings and fishing activities. This is exacerbated by the de facto open-access nature of marine fisheries in Haiti. The Caribbean Research Fisheries Mechanism (CRFM, 2018) reports regularly on available data on the fish stocks of commercial interests shared by the countries

exploiting the Caribbean Sea. Likewise, the Western Central Atlantic Fishery Commission (WECAFC) reports regularly on the state of scientific knowledge regarding fish stocks exploited by its members (FAO, 2017). Catches of large pelagic species in the Atlantic are officially monitored by the ICCAT. Marine species are also exploited in the mangrove forests, where people mainly catch crabs, shrimp, fish and shellfish (Ramdeen et al., 2012).

Based on available reports, field observations and ad hoc surveys, the potential of marine fisheries resources in Haiti can be estimated at 25,000 tons per year. Most demersal resources of the continental shelf are fully or overly exploited because of the open-access nature of marine fisheries, which represent the last resort for many Haitians to earn a living. Overfishing of these resources is likely to continue, with limited possibilities of maintaining present production levels in the absence of management measures to reduce overfishing and protect juveniles and spawning areas and seasons.

Large pelagic resources occur seasonally within a few miles off the coast, where they have been increasingly exploited using FADs. Small coastal pelagic resources have been referred to in various reports, but experts consider it unlikely that these represent a sizeable resource that can support a targeted commercial fishery (Roest, 2002; JICA, 2011). Other special studies targeting specific fisheries have been conducted sporadically. The fishing companies in the Caribbean funded a study in 2001 to survey the potential of the sea cucumber harvest on the Haitian coast. The study, conducted by Cuban scientists, estimated a possible harvest of about 7,200 tons of sea cucumbers from the nine fishing regions of Haiti (CRFM, 2010). Ornamental fishes have been harvested for decades, in fresh and brackish waters, by privately owned establishments mainly in the North-East and Grand Anse departments.

4.2.2 Fishing areas, fleet and techniques

Fishing is carried out all along the coasts of Haiti for personal consumption, commercial purposes or recreation. Fishing takes place in over 420 coastal fishing communities, scattered across some 42 fishing villages in 16 fishing subregions but mostly in the near-shore waters of the West, Grand Anse and South-East departments (Felix, 2012; MPCE, 2015). On average, a fishing community is comprised of 126 fishermen and women with a range of 66 in the South-West to 500 in the North East.

Marine fishing in Haiti is mostly artisanal, using over 26,000 boats, of which only 1,200 are powered by motor.

The majority (60 per cent) are dugout wooden canoes that are 3.3 to 4 metres in length or flat-bottom wooden dories (30 per cent) that range in length from 3.3 to 5 metres and are all powered either by paddle or sail. Rowboats and fiberglass boats (15 per cent) have operated since 2004, starting in the Southeast Region. They are equipped with outboard engines of 15-25 horsepower, with lengths up to 6 metres, and operated by 3,000 to 5,000 fishermen and women (MANRRD, 2010a).

Those who fish in Haiti deploy over 20 different types of fishing gear, and many fish on foot directly from the coast. Artisanal fishermen and women use rudimentary hooks, lines, bamboo traps, and fishing spears. The traps are used to catch lobsters and queen conch, which are also hand-harvested by divers using spear guns who also target sharks. Fishing lines are used to capture various pelagic fish such as sea bream, tuna and wahoo. Fishing with nets uses gillnets or trammel nets that catch ground fish, and beach seines to catch mostly sardines, mullet and snapper. Fixed gillnets are set in the evening and left in place for 12 to 18 hours before being hauled to the beach. Trawls made of twisted nylon line are also commonly used. Artisanal fishermen and women set pelagic longlines at 20 to 50 metre depths and each fisherman uses 10 lines at a time. Longlines set on the shelf/deep slope areas have 10 to 18 hooks that are set one metre apart for approximately 200 metres in length. These lines are anchored on the sea floor by stones or allowed to drift. They are used to catch valuable coastal pelagics. Hook-and-line fishing is also sometimes done by immersing a light bulb of 25 to 30 watts in the water to attract the fish when there is no moon.

Since 2004, the introduction of outboard motors and FADs has enabled fishermen and women to go offshore and catch demersal and migratory species. FADs are anchored floating platforms assembled offshore to attract small fish, which in turn serve as bait for large fish, making the location and capture of the fish more efficient. Over the past three decades, there has been rapid development of small-scale artisanal FAD fishery in some Caribbean states, including Haiti. Valles (2016) surveyed FAD fishing trips at selected localities along 610 km of coastline in the south of Haiti – an area with about 21,700 fishermen and women. He reported a total of 21 FADs being used across locations by about 10 per cent of the fishing population (and fishing vessels). Most fishing vessels were small (up to seven metres long) and equipped with small outboard engines (15 horsepower). The main fishing techniques were drift lines with live bait and trolling. The main species landed were yellowfin tuna,

blue marlin, blackfin tuna and dolphin, with important landings (all species combined) in some localities (more than 13.6 tons per year). FAD data collection systems were weak, except where those fishing were supported by external aid.

Overall, the FAD fishery in south Haiti contributes to food security and helps support the livelihoods of those who fish. However, there is an urgent need to develop national fishery management plans and improve fishery monitoring systems to ensure profitable and biologically sustainable FAD fishing and facilitate Haiti's integration into key regional fishery management organizations. An estimated 120 FADs were in activity in 2019 in the Caribbean off the shores of Haiti (Schwartz, 2019). As a result, marine fish catches have more than doubled since 2005, reaching 15,170 tons in 2018 (table 4.1 and figure 4.1). Whereas artisanal fishing is mostly done by an autonomous or single-owner enterprise that involves one to three people, fishing offshore is organized around the association of three to five men who use the association-owned or subsidized boat, motor and gear to catch fish of the association-owned FAD. Fishing using the seine requires team effort. The fishing operation involves a team of 8 to 30 men, coordinated by a captain. It requires important investments in a dory and seine (owned by the investor or the association), vigilance looking out for schools of fish, timing to get the team, boats and seine into the water before the fish escape, and coordination to put the seine into the water, surround the fish, and then haul them to shore or into the boat.

In Haiti, inland fishing is practiced in over 22,700 hectares of lakes and rivers, with important social and economic impacts on food security of rural communities. Such fishing accounts for more than 10 per cent of national fish production and provides employment to about 1,000 fishermen and women. Back in 1951, a five-year project supported by the FAO introduced common carp from Alabama in the United States and tilapia from Jamaica into Haiti's stock rivers, lakes and irrigation canals. The programme was revived in 1990 in the major lakes of Haiti, in particular Azuei, Peligre and Miragoane, and in more than 30 small rivers and dams on the Artibonite in the Centre and North East of the country. From 1997 to 1999, eight fish stocking operations were conducted in the major lake of Azuei (11,700 hectares) for a total of 400,000 small fish. Unfortunately, these operations were discontinued after 2002, reducing the lake production by half.

Following early attempts in the 1950s and 1960s, fish farming in Haiti languished in the 1970s and all but

disappeared until the early 2000s when there was a resurgence through projects implemented by the FAO/UNDP, church groups, NGOs and intergovernmental organizations (MANRRD, 2010b; ACP, 2012). A range of small- and medium-scale projects were implemented, with some resulting in important outputs. Several hatcheries and commercial tilapia farms were built. Since the 2010 earthquake, there has been a renewed commitment by the government and NGOs to pursue aquaculture promotion, with particular attention to small-scale aquaculture (Gordon et al., 2017).

Haiti's coastal regions have numerous bays and sites that offer a protected environment for marine aquaculture. Studies were carried out as early as 1987 to assess the possibility for saltwater cage culture tilapia in North Western Haiti. Since then, several studies have reported on the installation of marine tilapia cage culture and marine shrimp farming in the North and North Central regions, respectively. The possibilities for marine culture of seaweeds, spirulina, eels and shellfish raised interest and prospects. Shellfish culture was integrated into a mangrove replanting program for creation of alternative livelihoods and habitat replenishment. However, most of the studies have not attracted investors due to the absence of established experience in the country and a lack of national know-how. It is also likely that the risk of conflicts with artisanal marine fisheries, in the absence of strong governance, has discouraged many undertakings (ACP, 2012; MANRRD, 2010b).

4.2.3 Fish production and utilization

There have been significant increases in fish production in Haiti over the last 15 years, especially since the introduction of motorized fishing boats and FADs that have enabled fishermen to exploit fisheries offshore beyond the continental shelf. Production has more than doubled since 2000, increasing from 7,430 tons in 2000 to 19,740 tons in 2018 (table 4.1, figure 4.1). Several reports consider these figures undervalued. Felix (2012) reported production of queen conch, lobsters, shrimp and crabs three times higher than the data reported officially to the FAO (table 4.2). Likewise, Ramdeen et al. (2012) worked on the reconstruction of the total catch for Haiti and Navassa Island for 1950–2010. They reported data that were approximately three times higher than FAO statistics. According to these authors, a large part of this discrepancy was due to an unreported subsistence catch and improved accounting of artisanal catches of crustaceans.

In 2018, reported fish harvests in Haiti were comprised mostly of marine fishes (15,140 tons), in addition

Table 4.2 Main fish species produced in Haiti, 2000–2018 (tons)

	2000	2005	2010	2015	2016	2017	2018
Inland fisheries	432	432	860	1 820	1 890	2 000	2 000
Marine fisheries	6 980	10 600	13 200	15 880	15 880	15 880	15 730
1. Crabs, sea-spiders	150	250	100	200	200	200	200
2. Lobsters, spiny-rock lobsters	900	800	400	250	250	250	250
3. Shrimps, prawns	530	550	50	100	100	100	100
4. Marine fishes	5 100	8 700	12 500	15 130	15 130	15 130	15 130
5. Abalones, winkles, conchs	300	300	150	200	200	200	50
Aquaculture	12	32	360	1 220	1 290	1 400	1 400
Total production	7 434	11 074	14 430	18 950	19 090	19 310	19 150

Source: FAO (2020a).

to 2,000 tons from inland fisheries and 1,400 tons from aquaculture. Marine fishes represented most (82.2 per cent) of the total production. The rest of the marine catch was comprised of crustaceans, shellfish and a small quantity of ornamental fishes. Inland fisheries (10.4 per cent) yielded mostly tilapia and catfish, and aquaculture produced around 1,400 tons (7.3 per cent) of tilapia, carp and catfish cultured in freshwater ponds (table 4.2).

Marine fish caught in Haiti consist of pelagics from the families *Clupeidae* (herrings and sardines), *Scombridae* (tuna, bonitos) and *Carangidae* (mackerel, scads, pompanos). The demersal fishes consist of the families *Sphyrnidae* (barracuda, snappers), *Serranidae* (groupers) and *Sparidae* such as the seabreams. Crustaceans include mainly crabs, lobsters, shrimp and prawns. Although captured in small amounts, the shellfish queen conch (meat and shell) and ornamental fish are of great interest for export.

4.3 Socioeconomic importance of fisheries and aquaculture in Haiti

Despite its low contribution to national GDP (2.5 per cent), the fisheries and aquaculture sector is considered highly strategic for the Haitian economy as a whole and, more specifically, for the social and economic development of coastal and rural communities. These communities are home to among the most marginalized and poorest people in Haiti, and fishing is a last resort for them to earn a living and feed their families. Despite clear evidence of deterioration in fishery resources, the number of people fishing has been rising constantly in parallel with the country's levels of poverty and unemployment and the lack of human and technical capacity to control illegal fishing and enforce fisheries

regulations. As a result, pressure has been increasingly building on marine resources, particularly on the continental shelf, where most artisanal fishermen and women operate.

An estimated 52,000 men are engaged in fishing and over 20,000 women clean, process and sell the fish (see Table 4.3). Ambulant market women are the primary purchasers of the fish, providing livelihoods for over 416,000 people. The women gut, clean, salt or dry the fish and then haul them on foot, mules, motorcycles, boat or bus to inland markets. Other people involved in fisheries include craftsmen who fix boats and nets and make traps, and sellers of hooks, nylon string for nets and other fishing gear. Their number varies from a few thousand to over 20,000, depending on the reports. This also indicates the highly unstable and volatile nature of these jobs (MANRRD, 2010a; MPCE, 2016; FAO, 2020b).

Although mostly artisanal, many young people are full-time fishermen and women, while others farm part-time and fish part-time. A minority of those who fish are owners of boats and fishing gear. Boats and fishing equipment such as nets and compressors are typically owned by men. The few women who purchase nets and traps are invariably wives or mothers of fishermen. The most expensive and prized assets are outboard motors, fiberglass boats and 100 to 200 metre-long seines. FADs are typically underwritten by NGOs or multilateral or bilateral donors and owned by fishing associations, although some are increasingly owned by private entrepreneurs (MANRRD, 2010a; MPCE, 2016). Over 98 per cent of the fish produced in Haiti is consumed locally. Average annual fish consumption per capita is low, at around 5.3 kg/capita in 2018, of which more than half is imported. However, there are large differences between the interior of the country and the coast, where fish represent

Table 4.3 Socioeconomic importance of fisheries and aquaculture in Haiti, 2000–2018

	2000	2005	2010	2015	2016	2017	2018
Total production (tons)	7 434	11 074	14 430	18 950	19 090	19 310	19 150
Imports (tons)	9 054	9 432	12 507	22 128	17 645	26 926	25 340
Exports (tons)	361	327	367	486	344	346	269
Population (millions)	8.47	9.20	9.95	10.67	10.84	10.98	11.12
Employment	37 600	43 000	48 840	52 000	80 000	80 000	87 000
Apparent fish consumption (kg/capita)	2.3	3.1	3.9	5.8	n.a.	n.a.	5.3

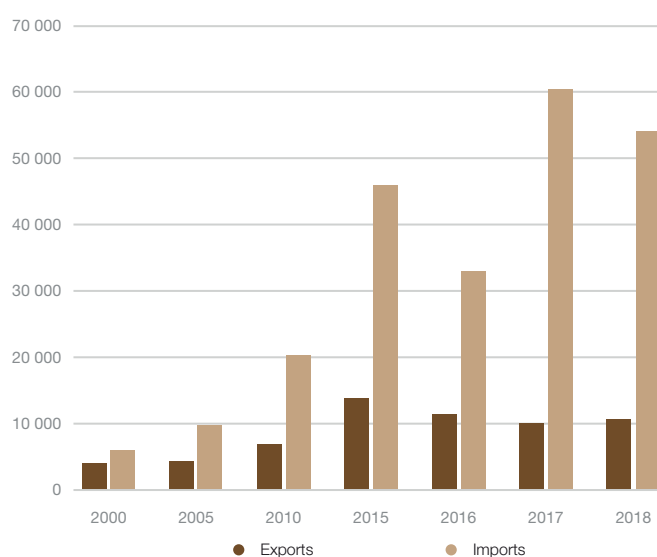
Source: FAO (2020a).
Note: n.a.: not available.

the major source of animal protein. Several coastal regions have limited possibilities for farming and agriculture, making fish the main source of animal protein.

Fish are sold at the many landing sites for artisanal fishing along the coasts of Haiti. After the fish have been caught, they are classified into sale categories, referred to by colour. *Pwason woz* (pink fish) is the most desirable, *pwason blan* (white fish) is less desirable or second-grade, and *Karabela* (blue fish, sometimes called black fish), is the least desirable category, comprised of small fish, juveniles and by-catch from the other categories. The categories do not strictly correspond to the colour of the fish; they are related to a combination of market criteria, mainly size and species. Over 12,000 local women and 7,000 female traders (known as “Madame Saras”) market the second-category fish and the dried and salted products. First-category fish is sold through pyramidal networks of agencies (over 100 networks and 1,600 buyers) to metropolitan markets and for export, mainly to the Dominican Republic. The Ministry of Agriculture’s Directorate of Fisheries and Aquaculture (DFA) estimates these traders to number 20,000 agents and some 12 exporting firms based in the capital of Port-au-Prince (MANRRD, 2010a). In 2010, the first sale value of the catch was estimated at 3 billion Haitian gourdes (US\$74 million), and a value addition of 2 billion gourdes (US\$49 million) (MANRRD, 2010a).

Even though offshore fishing yields much larger and more valuable fish, fishermen do not fully exploit the opportunities because of a lack of affordable ice, storage facilities and refrigerated transport. Fish not sold fresh are processed by women mainly by salting and sun drying. They are then stored on the rafters in their homes in polyethylene or sometimes burlap sacks until there is enough fish for a voyage to market to be profitable, the conditioning factor being the cost of transportation.

Judging from official data (FAO, 2020a; MANRRD, 2010a), the quantity of fish and seafood exported from Haiti has always been small, less than 500 tons a year, with a value estimated at US\$10million in 2018 (figure 4.2). Many marine fish and crustaceans and the large pelagic species caught in Haiti are in high demand in neighbouring Caribbean countries, the United States and Europe. In the early 2000s, some eight private processing plants were operating in the country, but with no official control from the MANRRD, DFA or other competent authority. As a result, Haiti was banned from exporting fish products to the EU and North American markets until quality and sanitary measures can be implemented by a designated competent authority (MANRRD, 2010a). The sanitary issues are further complicated for high-value reef fish species or shellfish, which can present risks of ciguatera or biotoxins, respectively, in the absence of proper sanitary

Figure 4.2 Fish exports from and imports to Haiti, 2000–2018 (thousands of U.S. dollars)


Source: FAO (2020a).

measures (Ryder et al., 2014). In addition, Haiti has been blacklisted for noncompliance with the rules of the Convention on International Trade of Endangered Species (CITES) concerning the harvest of queen conch.

The fisheries and aquaculture sector in Haiti offers real opportunities for investment, improved post-harvest processing, value addition and job creation, particularly for women and the young. Nearby Caribbean resorts, the U.S. market and the many cruise ships taking tourists around the Caribbean have a high demand for demersal fish species, crustaceans and large pelagics. However, restoring consistent exports of fish from Haiti to these markets requires adequate infrastructure, improved practices and food safety facilities to implement sanitary and conservation measures to meet the NTMs of international markets.

4.4 Governance and management of the fisheries and aquaculture sector in Haiti

4.4.1 Legal and regulatory framework

The legal and regulatory framework for fisheries and aquaculture in Haiti is relatively weak and outdated. The FAO database on national legal and regulatory texts for agriculture, fisheries and forestry identifies only six legislative texts for fisheries and aquaculture dating back to before 1980, including two under “Fisheries” and four under “Sea.”³⁷ Higher-level policy texts include fisheries and aquaculture under the overarching theme of agriculture, natural resources and rural development. As a way of comparison, neighbouring Cuba and Jamaica have enacted 93 and 32 fisheries and aquaculture texts, respectively, to align with the FAO’s CCRF and other post-1990 international instruments. Legal texts on environmental protection in Haiti are more recent, particularly in relation to marine protected areas.

A 1977 decree established the boundary of Haiti’s territorial waters at 12 nautical miles and that of its EEZ at 200 nautical miles. With this decree, the government declared that the administration, management and exploitation of the EEZ are within the exclusive and sovereign competence of Haitian authorities and that the EEZ expands to 200 nautical miles from the baseline from which the territorial sea is measured. The basic fisheries law in Haiti is a 1978 decree that governs the practice of fishing activities, licensing,

fishing equipment and fisheries management, with specific articles on the closing periods for lobster and queen conch fishing and the legal mesh size for fishing nets. The 147 articles of the decree also address the organization of cooperatives, inland fisheries, water pollution, preservation of certain species, and penalties to apply in the case of noncompliant fishermen and women.

The DFA is directly responsible for enforcing the provisions of the 1978 decree. Its mission is to gather and analyse statistical data and assess and manage living aquatic resources in marine, brackish and fresh waters, including aquaculture. It is also responsible for providing institutional support to the sector, monitoring, strengthening and regulating fishing activities, controlling post-harvest and processing operations, and ensuring safety and quality. Unfortunately, the DFA is very constrained by a lack of human and financial resources, made more difficult because it does not have its own budget.

Regarding conservation, the Presidential Decree of 2013 has created – in the South West of the South Peninsula – a protected area and managed natural resources of Port-Salut/Aquin to legally protect and maintain its natural systems and biodiversity in the long term, while responding to the needs of communities dependent on these systems. This large protected area covers over 34,500 hectares and combines protected national parks, habitat, species, wetland and marine areas.

4.4.2 Institutional framework

The Ministry of Agriculture, Natural Resources and Rural Development (MANRRD) is the main public institution responsible for defining the government’s economic policy in agriculture, animal husbandry, rural development and renewable natural resources. As such, the MANRRD is responsible for developing the fisheries and aquaculture policy and enforcing the sector’s governance and management system. The MANRRD is mandated to establish guidance for the sector, pilot public investments, coordinate the action of the different players and implement required basic services such as the collection of data, provision of information, technical assistance, and extension.

In terms of organizational structure, the ministry is comprised of several General Directorates that supervise 14 Technical Directorates – including one for planning, monitoring and evaluation and another for administrative matters. One of the 14 directorates is the DFA, which supervises all matters and activities linked to

37 FAOLEX database, “Haiti – Country Profiles,” available at <http://www.fao.org/faolex/country-profiles/general-profile/en/?iso3=HTI> (accessed on 12 September 2021).

this sector. The DFA, formerly known as Bureau of Fisheries and Coastal Resources or the Fisheries and Fish Farming Service, initially operated under the Directorate of Natural Resources before becoming a separate directorate.

At the regional and provincial levels, 10 Departmental Directorates act as local delegations of the MANRRD to supervise Communal Bureaus of Agriculture in charge of providing community services to farmers. All 14 technical directorates are in theory represented within each Departmental Directorate. However, due to a lack of financial and human resources, the DFA is often underrepresented.

In addition to the DFA, the Ministry of Environment is in charge of national environmental protection policy, including protection of the marine environment and biodiversity. In collaboration with several NGOs, intergovernmental organizations and fishing communities, the Ministry of Environment's National Agency of Protected Areas has implemented several projects for marine protected areas.^{38, 39} Likewise, the College of Agronomy and Veterinary Medicine of Haiti's Kiskeya University occasionally undertakes research work in fisheries and aquaculture and can be asked to carry out fisheries research if funding sources exist.

A point worth noting is that in Haiti the dominance of artisanal fishing has led to a long tradition of co-management through cooperatives and associations. Many field studies (MANRRD, 2010a) highlight the individualistic nature of artisanal fishermen and women and the insufficient cohesion of fishing communities in Haiti, with innovators and daring entrepreneurs often viewed with suspicion. This is not specific to Haiti, as artisanal fishermen and women exploiting shared resources in many developing countries tend to compete with each other, particularly when fishing is a matter of survival and in the absence of institutional governance to regulate access. The open-access nature of marine fisheries in Haiti, coupled with insufficient oversight by the MANRRD and the insufficient capacity of the DFA, has led to the emergence of cooperatives and associations of fishermen and women at a rate unprecedented in the Caribbean. In 2000, the number of these organizations was conservatively estimated at 140 (MANRRD, 2010b). As a result, the void created by inadequate government policy, lack of enforcement and support services, and poor institutional coordination has been effectively occupied

by NGOs and intergovernmental organizations that have taken on the task of mobilizing fishermen and women and encouraging the formation of marketing cooperatives and associations and marine protected area communities.⁴⁰

Fishermen and women have responded positively, first in order to reduce the role of middlemen who controlled fish prices, but also to take advantage of external financial and technical assistance. The marketing cooperatives and associations that have been established negotiate prices and conditions of purchases of supplies, equipment and harvested fish, develop avenues for creating loans for members, and are often willing to play an effective role and influence decision-making in fisheries management. Some have developed further into supply cooperatives that store and sell equipment, fishing gear and spare parts to their members at reasonable prices and expose them to training, education and awareness-building programs. Given the difficulties and obstacles the DFA faces in implementing proper management rules, experiments with community management have been successful in several fishing areas, particularly in the South-East department. However, sustainability of these community management schemes remains highly dependent on international financial and technical assistance.

4.5 International and regional cooperation framework

As alluded to above, Haiti's fisheries sector is governed not only by national policies, rules and regulations, but also by international and regional commitments or cooperation arrangements covering a wide range of issues such as sustainability, combating illegal fishing, protecting the marine ecosystem, etc. Haiti has been exposed to the scrutiny of the international community and media for a long time because of its particular history and geography. Haiti was once a rich French colony before becoming the first independent nation of Latin America and the Caribbean in 1804, the second republic in the Americas, the first country to abolish slavery, and the only country in modern history established by a successful slave revolt. Haiti is also a founding member of the United Nations, Organization of American States, Association of Caribbean States, and International Francophonie Organization. Regionally, it is a member of the Caribbean Community and the Community of Latin America and Caribbean States. Thus, in Haiti, the obligations on fisheries and aquaculture are underpinned

38 See the agency website at <https://www.anap.gouv.ht/> (accessed 12 September 2021).

39 Fondation pour la Protection de la Biodiversité Marine, available at <https://www.foprobim.org/> (accessed 12 September 2021).

40 Ibid.

by its commitments to various international and regional agreements and the specific requirements governed by regional fisheries bodies.

4.5.1 Regional fisheries bodies and management organizations

Haiti is a member of two regional fisheries bodies, namely the Western Central Atlantic Fisheries Commission (WECAFC), operating under the auspices of the FAO, and the Caribbean Regional Fisheries Mechanism (CRFM). The aims of the WCAFC are to promote effective conservation, management and development of living marine resources within its area of competence and to address common problems of fisheries management and development faced by commission members.⁴¹ In so doing, the WCAFC aims to promote the application of the FAO's CCRF and its related instruments, ensure adequate attention to small-scale, artisanal and subsistence fisheries, and coordinate and closely cooperate with other international organizations on matters of common interest.

The CRFM is an inter-governmental organization created in 2003 to promote and facilitate responsible utilization of fisheries and other aquatic resources by its 15 Caribbean members.⁴² The CRFM consist of three bodies – the Ministerial Council, Caribbean Fisheries Forum, and CRFM Secretariat. The Ministerial Council is the highest decision-making body responsible for formulating the mechanism's policy. It is comprised of the ministers responsible for fisheries in each member state. The Caribbean Fisheries Forum is made up of one representative from each associate member and observer. The forum is responsible for reviewing and recommending proposals for approval by the Ministerial Council, reviewing the CRFM work plan and budget and other arrangements for sustainable fisheries management and development in member states, promoting the protection and rehabilitation of fisheries habitats, and encouraging adoption of post-harvest practices that maintain the nutritional value and quality of fish and fishery products.

Other institutions of interest to fisheries and aquaculture in Haiti are the Gulf and Caribbean Fisheries Institute (GCFI) and the International Coral Reef Initiative (ICRI). The GCFI was founded in 1947 to promote the exchange of current information on the use and management of marine resources in the Gulf of Mexico and Caribbean region by

involving scientific, governmental, and commercial sectors to provide a broad perspective on relevant issues, and by encouraging dialogue among groups that often operate in relative isolation from one another.⁴³

After 37 years of operating under the sponsorship of the University of Miami, in 1985 the GCFI became an independent not-for profit organization governed by a Board of Directors elected by and from its membership. GCFI annual meetings are devoted to technical presentations and workshops on current issues relevant to the use and management of marine resources in the Gulf of Mexico and Caribbean region. These activities are documented in the GCFI'S Annual Proceedings document, which is disseminated in more than 80 countries. Annual meetings are hosted by government, academic, or private sector sponsors in countries throughout the region.

The ICRI is an informal partnership between nations and organizations working to preserve coral reefs and related ecosystems around the world.⁴⁴ Although the initiative is an informal group whose decisions are not binding on its members, its actions can be significant for highlighting the importance of coral reefs and related ecosystems for environmental sustainability, food security and social and cultural wellbeing.

4.5.2 Illegal, unreported and unregulated fishing

Regarding illegal, unregulated and unreported fishing, Haiti has obsolete fisheries law, and implementation regulations are basically nonexistent. Data collection systems on landings and fishing activities are very weak, and enforcement of 1978 fisheries law provisions is nonexistent. As a result, fish catches are sufficiently regulated or well reported. However, surprisingly, Haiti scores 2.48/5 on the IUU Fishing Index.⁴⁵ Although the score is low, it is slightly better than the average for the Caribbean and Central American region (2.24/5) or for neighbouring Cuba (2.26) and the Dominican Republic (2.30). Jamaica has a slightly higher score at 2.57/5. The European Commission reports on IUU fishing in the Caribbean and has yellow- or red-carded countries like Belize, Panama, Curaçao, Saint Kitts and Nevis, and Saint Vincent and the Grenadines in the past.⁴⁶

41 See the WECAFC website at <http://www.fao.org/fishery/rfb/wecafc/en> (accessed 12 September 2021); see also WECAFC (2017).

42 See the CRFM website at <https://www.crfm.int/> (accessed 12 September 2021).

43 See the GCFI website at <https://www.gulfbase.org/organization/gulf-and-caribbean-fisheries-institute> (accessed 12 September 2021).

44 See the ICRI website at <https://www.icriforum.org/> (accessed 12 September 2021).

45 The index is available at <http://iuufishingindex.net/profile/haiti>.

46 European Commission, "Illegal Fishing," available at [Illegal-fishing-overview-of-existing-procedures-third-countries_en.pdf](https://ec.europa.eu/euipo/illegal-fishing-overview-of-existing-procedures-third-countries_en.pdf) (europa.eu) (accessed 12 September 2021).

A UNEP (2013) study on transboundary environmental issues between Haiti and the Dominican Republic identifies major issues of concern in agriculture, forestry, coastal and marine resources, freshwater resources and flooding, and environmental problems with industry and trade. The study reports that coastal and marine resources create clashes and tensions between communities on both sides of the border, as well as between Haitian fishermen and women and Dominican authorities. At the same time, these issues represent an opportunity for cooperation, following the example of cooperation between fishermen and women associations in Pedernales (Dominican Republic) and Anse-à-Pitre (Haiti) in the South. The UNEP study identified five main issues: illegal transboundary fishing and overfishing, mangrove cutting for wood and creation of salt pans, marine protected areas and biodiversity, transboundary trade in marine species, and contamination of estuaries, coastal lagoons and the sea. The study also identified trends and causes and proposed a way forward, including a plan to implement and finance its recommendations.

4.6 Harnessing Haiti's aquatic resources to promote economic diversification and structural transformation: Opportunities and challenges

Successive political crises and natural disasters in Haiti have caused rampant poverty, driving many Haitians to seek opportunities for livelihoods and food security on the coast. Small-scale fishing has a history of serving as a social safety net, absorbing many underemployed and unemployed Haitians. Given the weak governance of the sector in Haiti, a de facto situation of open access to the resource has prevailed for many decades, putting a large amount of pressure on coastal resources and leading to fish harvests of several stocks exceeding sustainable limits by far and for many years.

The introduction of motorized fishing boats and the deployment of FADs during the last two decades have opened offshore fishing opportunities, increasing the harvest both in quantity and value. Equally worrying is the significant post-harvest losses in the sector because of inadequate landing infrastructure, and lack of access to potable or clean water, electricity, ice and storage facilities, roads, and cold chain transport to markets.

These infrastructure and capacity constraints are also hindering the development of inland fisheries. While

aquaculture operations have been deployed in marine, brackish and fresh waters to produce tilapia, carps, shrimp, eels and shellfish, the subsector has not attracted investors in the absence of established sustainable experience and know-how in the country. Also, the assumption that freshwater aquaculture operations can be deployed on over 22,000 hectares of land not suitable for agriculture has proven to be a mistake and a waste of resources (ACP, 2012). In fact, it is likely that the risk of conflicts between land and fish farmers, on the one hand, and between marine aquaculture and artisanal marine fishermen and women, on the other, will discourage many aquaculture initiatives, especially in the absence of effective governance, support services and know-how (ACP, 2012; MANRRD, 2010b). Furthermore, the necessity to streamline climate change adaptation and mitigation strategies into any development action in the fisheries sector is greater for Haiti because it is one of the world's most exposed countries to the impact of climate change (Cheung et al., 2019; Boyd and Ryan, 2019).

4.6.1 Opportunities to develop the fisheries and aquaculture sector

Currently, it is difficult to foresee a significant increase in production from marine fisheries. However, the fisheries and aquaculture sector offers some opportunities to increase production and improve food security in rural areas, provided that issues of access to land, water and markets are resolved, and that long-term solutions are found to access seed and feed at an affordable cost, finance, support services and know-how. Likewise, reducing post-harvest losses could increase the availability of fish for local consumption and export.

Post-harvest processing and marketing offers good opportunities for investment, technological innovations, value addition and job creation, particularly for women and young Haitians, who currently represent a large proportion of the population. The proximity of Caribbean tourism resorts and the U.S. market, where there is high demand for demersal fish species, crustaceans and large pelagics, is a real advantage for Haiti. However, achieving consistent exports of fish to these and other markets requires adequate infrastructure, improved practices and sanitary facilities to meet international market standards. NTMs that hamper exports from Haiti relate to sustainability, legality, consumer protection and CITES rules.

In 2004, the sanitary and phytosanitary rules and their implementation by the DFA were considered insufficient by

the EU Food and Veterinary Office and the U.S. Food and Drug Administration, bringing a halt to imports of fish and seafood from Haiti by these markets (MANRRD, 2010a). In addition, Haiti has been blacklisted for noncompliance with CITES rules concerning exploitation of queen conch. Currently, most of exports are informally directed through the Dominican Republic, which limits volumes, species and earnings.

Queen conch has been listed in Appendix II of CITES since 1992. Appendix II includes species that, although currently not threatened with extinction, may become so without trade controls. CITES regulates international trade through a system of permits designed to ensure that trade is legal and will not threaten the species' survival in the wild. Queen conch is heavily fished for its meat, and the shells and pearls are sought by collectors for jewellery. Because these animals are slow-growing, late to mature (3-5 years), and tend to aggregate in shallow water to spawn, they are particularly vulnerable to overfishing (U.S. Fish and Wildlife Service, 2012).

A SWOT analysis of Haiti's fisheries sector (table 4.4) identifies what needs to be addressed to unlock fish export potential in a manner that aligns with the role the sector plays for national food and nutrition security and poverty alleviation. This effort will also require innovative policies that balance social, economic and environmental objectives that align with the national economic development policy and the UN 2030 Sustainable Development Agenda and regional initiatives. These policy frameworks guide international and regional efforts to promote sustainable use and conservation of living aquatic resources in the Caribbean.

Improving the governance and management of sustainable fisheries and aquaculture in Haiti is a recurrent issue that has been discussed at national, regional and international fora for decades. Several projects funded through bilateral and multilateral assistance and NGOs have been implemented over the years. A 2000 FAO project provided support to develop a national fisheries and aquaculture policy, with emphasis on updating the 1978 decree and enacting implementation and enforcement regulations to ensure coherence between international fisheries and aquaculture instruments and Haitian laws and regulations on socioeconomic development, agriculture, the environment and natural resources management. Many reports and institutions relate to the FAO policy proposal, including the MANRRD National Plans of Action (2010–2014) for the development of fisheries (MANRRD, 2010a) and

aquaculture (MANRRD, 2010b), as well as the high-level national strategy to transform Haiti into an emerging economy by 2030 (MPCE, 2015). These different plans put forth a good analysis of the sector's issues, obstacles, and possible solutions, as well as implementation strategies and estimated budgets.

4.6.2 Ongoing projects in fisheries and aquaculture

Haiti's national strategy (MPCE, 2016), which is its highest-level policy to transform the country into an emerging economy by 2030, proposes rebuilding Haiti along four key pillars: territory, economy, society and institutions. For each pillar, a set of national programmes and subprogrammes have been identified for execution through specific projects. All four pillars have relevance to fisheries and aquaculture. However, the sector is specifically addressed under Pillar 2 (economic development), with Programme 2.2 addressing the national policy to modernize and develop agriculture and Programme 2.3 addressing fisheries and aquaculture.

Programme 2.3 is comprised of seven sub-programmes to be supported by triennial projects addressing the needs of each of the 16 fishing areas. For 2014–2016, the plan of action to implement Programme 2.3 prioritized fisheries management, development of landing and cold chain infrastructure, value-chain development, increased production through aquaculture development, and deployment of FADs in marine fisheries (MPCE, 2016). The budget for the triennial investment plan was estimated at 771.32 million Haitian gourdes (equivalent to US\$103 million in 2021).

At the time of this report, it was not possible to assess achievements, draw lessons or predict how the ongoing and future triennial plans are performing. The 2014–2016 mid-term report indicated a low level of disbursement (less than 20 per cent) and implementation. The few available reports confirm that the DFA has been mainly involved in supporting implementation of projects driven by bilateral and international institutions. Among these, projects were carried out by the Spanish Agency for International Cooperation (AECID) and the Inter-American Development Bank (IDB), in the South-East and South-West fishing areas, respectively, as discussed below. Other externally funded projects relate mainly to marine protection or are small charity projects in aquaculture.

The AECID has been implementing fisheries and aquaculture development projects in the South-East Department of Haiti since 2006. The objective is to improve income

Table 4.4 Strengths, weaknesses, opportunities and threats analysis of marine fisheries in Haiti

Strengths	Opportunities
<ul style="list-style-type: none"> • Long coastline and Exclusive Economic Zone • Long tradition and working experience of community management and cooperatives and associations • Availability of a young labor force • High demand in the country and neighbouring tourism resorts for fish and fishery products • A large Haitian diaspora interested in good investment opportunities • The resilience and optimism of Haitians and their unwavering ties to the land and sea 	<ul style="list-style-type: none"> • High international demand for fish and seafood • International financial and technical assistance to develop fisheries and aquaculture and restore aquatic ecosystems in Haiti • Real opportunities for competitive value addition in Haiti before export • Availability of labour, in particular young and female labour, for fish and seafood post-harvest processing • Real opportunities to reduce post-harvest losses in artisanal fisheries
Weaknesses	Threats
<ul style="list-style-type: none"> • Nonexistent fisheries management and support services • Deficient landing and post-harvest handling infrastructure • Noncompliance with sanitary and phytosanitary measures and Convention on International Trade and Endangered Species rules for queen conch • Lack/insufficiency of qualified workers and managers 	<ul style="list-style-type: none"> • Corruption and political instability • Overfishing and deficient fisheries management • Exposure to natural disasters and lack of preparedness • Rampant poverty and inefficient government

Source: Prepared by the authors.

and livelihoods, working conditions, and the safety of fishermen and women and traders, and to provide training and technical and organizational support to fisheries associations. The project is in its eighth biannual phase and has provided training and technical assistance on fishing techniques and gears, safety at sea, fish safety and quality. It has built Communal Maritime Fishing Centres to strengthen fisheries associations and co-management.

For inland fisheries and aquaculture, the AECID has conducted studies to estimate the fish production potential of water bodies, and provided fishing equipment and training in aquaculture and fish preservation, marketing, and value-chain development.

The other important programme has been funded by the IDB since 2015 for a total of US\$15 million.⁴⁷ The general objective of the programme is to improve the income of small fishermen and women in three of Haiti's southern departments (South, South-East and Grande Anse) through the sustainable development of artisanal fisheries. The specific objectives are to:

- Strengthen the institutional management of the fisheries sector for resource sustainability and for improved

sanitary and food safety conditions for the marketing of seafood products

- Improve the quality of fish at landing sites through improved public infrastructure
- Increase artisanal fisheries productivity and reduce economic losses through the establishment of a rights-based fishery management scheme.

In order to achieve these objectives, and consistent with the challenges identified, the programme is financing three components:

1. Institutional strengthening and information system
2. Public infrastructure
3. Stakeholders' capacity-building.

As with Angola, Haiti also receives modest overseas development assistance resources in support of its fisheries sector. According to the OECD-DAC database, the total amount received by Haiti from official donors between 2003 and 2017 was about US\$9.28 million. In 2017 alone, Haiti received US\$450,000 from the government of Spain as part of the multiyear project described above to strengthen fisheries and aquaculture in Haiti's South-East department. Such directed support from development partners is critically vital to develop the fisheries sector and enhance its socioeconomic significance in a structurally weak and vulnerable economy such as that of Haiti.

⁴⁷ IDB Project HA-L1096, Artisanal Fisheries Development Program, available at <https://www.iadb.org/en/project/HA-L1096>.

Chapter 5 POLICY LESSONS AND RECOMMENDATIONS

5.1 Learning from others: The Chilean salmon industry

This study has focused on two least developed countries, Angola and Haiti, and their comparative advantages in marine resources given their long coastlines, as well as the potential to diversify and modernize their economies by developing the fisheries and aquaculture sector. There are lessons that Angola and Haiti could learn from the experiences of other developing countries such as Mauritius, South Africa, Viet Nam, China and Chile, to name but a few. For Haiti, the experiences of SIDS such as Mauritius and Seychelles could be valuable. For commodity-dependent economies such as Angola and many other LDCs with long coastlines (including Haiti), the rapid economic diversification and structural transformation achieved by Chile based on successful development of the fisheries and aquaculture sector presents an excellent role model and experience from which relevant lessons could be drawn.

In less than three decades, Chile, which was historically a commodity-dependent (copper) and poor economy like most developing countries, has become the second largest salmon-producing and exporting country in the world, making Chile's exports more diversified and turning it into the most efficient producer of high-value fishery products. Understanding how this remarkable accomplishment was achieved will generate important lessons for Angola and Haiti and other LDCs that are rich in living aquatic resources.

There are two important reasons to single out Chile as a role model for Angola and Haiti and other LDCs. The first is the similarities in the development trajectory between Chile and commodity-dependent LDCs. Until the mid-1970s, Chile was totally dependent on a single commodity, copper, for production, exports, income, employment and government revenue. Over 60 per cent of Chile's exports consisted of raw copper, and the copper mines dominated the country's economic activities directly or indirectly. Thus, although Chile had higher GNI per capita income than most LDCs, in terms of dependency on commodities for production and exports, the similarities were striking. This makes Chile's successful economic and export diversification exemplary for drawing lessons.

The second reason to single out Chile as a role model is because in less than four decades, the country was able to

modernize and diversify its economy and develop export capacity in sectors where it had no previous revealed comparative advantages. Among the sectors targeted was the fisheries and aquaculture sector, particularly the production and export of salmon that meets international best-practice standards. The achievement that has resulted from this effort is astonishing (Box 5.1), especially considering Chile's remoteness from the international economic centre, which limits the country's integration into global value chains.

A large part of the explanation for Chile's accomplishment lies in the application of industrial policy and its alignment and complementarity with trade and investment policies. This is one of the important lessons that Angola and Haiti can draw from the experiences of countries such as Chile and others that have applied a new-generation industrial policy to develop a dynamic and internationally competitive fisheries and aquaculture sector. For example, both Chile and Angola are resource-rich countries – copper in the case of Chile and oil in Angola. Both countries also have had similar patterns of dependency on a single commodity for production and exports, with state-owned companies playing a major role. Yet their longer-term economic performance has been vastly different. Chile has steadily increased linkages between the copper industry and the rest of the economy, while Angola has remained totally dependent on exports of raw oil. Moreover, whereas Chile progressively reduced its level of resource dependence, Angola became more resource-dependent: copper currently represents 50 per cent of Chilean exports while oil accounts for 94 per cent of Angola's exports.

Chile followed a two-track economic diversification strategy: (1) diversification “within” industry (increasing value added in the copper industry by improving the quality of copper extraction and exporting processed products and complementing this with the development of domestic ancillary/logistics services); and (2) diversification “across” industries (development of fisheries such as high-quality salmon exports, and increasing exports of high-value-added agricultural goods such as fruit and vegetables and wine production) (Meller and Simpasa, 2011). In addition, Chile set up mechanisms that allowed it to save the rents from mineral extraction and invest in critical growth expenditures. Specifically, Chile implemented (1) a structural fiscal surplus rule that sterilizes the country's spending levels against copper fluctuations, thus ensuring macroeconomic stability and also generating the accumulation of wealth when copper prices are high; and (2) sovereign funds to administer the rents saved.

Chile invested a significant amount of savings in research and development (R&D), in training on advanced skills (i.e. scholarships to enrol Chileans into top global universities), and in financing and mentoring high-growth start-up firms. However, unlike in Chile, resource endowment in Angola has not led to inclusive growth and poverty reduction. The effect of economic growth on overall poverty reduction has been small, as much of the benefits of growth have accrued to those already above the poverty line. Growth has been primarily driven by increased oil prices, which has done little to create jobs and expand opportunities beyond the relatively small labour force already employed in the oil industry. Thus, for Angola, economic diversification remains an essential objective to deliver more inclusive growth in the

face of declining oil prices, and to create employment for the country's fast-growing, urban and youthful population.

The question is, what are the policies and strategies that enabled Chile to successfully implement economic diversification, including by shifting capital and labour into new sectors and economic activities, particularly in the fisheries and aquaculture sector? Box 5.1 summarizes the results of an UNCTAD study on Chile's success in developing an export-oriented and highly competitive and modern salmon industry. Although the study was conducted over a decade ago, the lessons learned from it are still relevant. Where possible, information from the study has been updated with relevant recent information.

Box 5.1 Successful learning and catching-up in Chile's salmon industry

The emergence and development of the Chilean salmon industry demonstrates the important role of fostering productive capacity and structural economic transformation through industrial policy, technology transfer, an effective governance and management system, and investment in quality-control infrastructure.

Industrial policy and technology transfer have enabled Chile to build a globally competitive and innovative salmon industry. Starting from zero, the industry has become one of Chile's main export sectors and a significant contributor to the country's development. Today, Chile is the second largest salmon producer in the world and has acquired the capability to manufacture technologies required to produce other fish species. By the end of 2019, Chile was exporting US\$5 billion worth of salmon annually.

The successful development of the industry underscores Chile's approach to industrial and economic development. Chile promoted scientific and technological innovation that adds value to or generates new industries based on its natural resource endowment. In this case, the long coastline, abundant freshwater sources and islands, and good climatic conditions are part of its natural endowments – which, with the appropriate technologies, have played a vital role in the development of the salmon industry.

The development of the salmon industry was a gradual and painstaking process, and success was not assured. Chile undertook several trials, including attempts to stock rivers and lakes spanning several years so that the country could master fish farming technologies. It solicited technical support from several international institutions with best-practice experience in fish breeding and farming and used its national institutions to acquire, assimilate, develop and diffuse fish farming technologies. Some of the early firms were created by public institutions and researchers that had accumulated some basic operational knowledge and skills in fish farming.

Several prominent national players that promote the development of firms and technologies facilitated the diffusion of salmon farming technologies. Among others, Fundación Chile, Corporación de Fomento de la Producción and Instituto Tecnológico del Salmón played prominent roles in the development of the industry in Chile. Fundación Chile established Salmones Antártica as a limited company, which demonstrated the commercial viability of large-scale farming, breeding and production of salmon. In addition, the firm carried out research activities on farming procedures and provided technical assistance to small and emerging producers. The rapid growth of Salmones Antártica stimulated private interest and led to the expansion of the industry. The close cooperation between government agencies and the salmon producers played a vital role in the growth of the industry, especially in the development of licensing regulations, sanitary standards and support for research and development activities (R&D). Similarly, R&D institutions have worked closely with the national fishing agency, the National Commission for Science and Technology, and the salmon industry.

Box 5.1 Successful learning and catching-up in Chile's salmon industry (cont.)

The industry has also been successful in assimilating foreign technologies and developing indigenous technological capability. Some of the major accomplishments include the acquisition and development of technologies used in the production of well boats, sequencing of salmon pathogen genomes, development of vaccines to control some salmon infections, and replacement of fishmeal ingredients with vegetable-derived alternatives in the formulation of salmon feed. Furthermore, the experience resulting from the transfer of technology is now being used to develop technologies needed to farm other fish species. As a result of these measures, salmon production in Chile grew about 17-fold between 1990 and the early 2000s. Its share in the global production of farmed salmon and trout increased from about 10 per cent in 1990 to about 35 per cent within the same period.

Today, Chile has moved from being a learner to a major player in the production and marketing of salmon products. The industry's exports increased from about US\$291 million in 1993 to about US\$1.4 billion in 2004 and US\$5 billion in 2019. Chilean salmon is now being exported to new markets in Asia and Eastern Europe. The export products have also evolved from mainly frozen tail-less and beheaded salmon that were easier to process, store and transport to the export of value-added products. As technologies for processing and packaging various fish products were acquired and developed locally, the ratio of value-added products increased three-fold. Foreign direct investment played a marginal role in the early development phases of the industry. However, the entry of large foreign firms into the Chilean salmon industry in the last two decades has facilitated the introduction of new technologies and the expansion of production, fostered vertical integration, and increased the average size of firms.

Source: Based on UNCTAD (2006b).

5.2 Policy framework for the development of the fisheries and aquaculture sector in Angola

Over the past decade, the government of Angola has introduced important reforms in the governance of the fisheries and aquaculture sector and has devoted a significant amount of public investment to infrastructure, research, training and regional cooperation. It has also adopted policies to improve fisheries management and develop commercial freshwater aquaculture. Still, 90 per cent of the fish currently harvested in Angola is consumed domestically, with very limited processing to extend shelf life and marketability or to improve value and income for the many operators. In addition, poor post-harvest handling and processing practices lead to important fish losses and waste, reduce the nutritional quality of fish, and expose consumers to food safety problems. It also jeopardizes resource sustainability. Furthermore, the low fish price associated with low quality means that artisanal fishermen and women tend to overfish to sustain their livelihoods. Finally, access to national, regional and international lucrative markets is constrained by limited competitiveness, low efficiency, and noncompliance with SPS and other market requirements.

Taking into consideration the new political and socioeconomic environment in Angola, it is recommended that the country

prioritize the promotion of value chains in marine fisheries, investment in efficient post-harvest processing, and establishment of credible fish inspection and safety and quality control systems and improved market entry. Inland fisheries and aquaculture have the potential within Angola's overall strategy to promote integrated food security and small-scale agro-industries. On the other hand, marine aquaculture has some way to go. Several projects for fish, crustaceans and shellfish have shown promising economic and technical feasibility. However, Angola first needs to acquire basic knowledge about potential suitable sites and species, particularly in relation to access to inputs (feeds, seeds), fish disease management and aquaculture technology.

These aspects are key to attracting private investment into a sector that is considered a high risk for investors. In this respect, the experience of other African countries bordering the Atlantic Ocean can prove useful. Most of these countries have encountered difficulties developing marine aquaculture on the Atlantic Ocean. The few African countries that have developed marine aquaculture (e.g. Senegal, Morocco, South Africa) have engaged mainly in shellfish production and some production of seabass and seabream. South Africa has difficulties competing on the European market with similar fish species produced in Greece and Turkey. On the other hand, many African countries (e.g. Nigeria, Ghana, Zambia) have successfully engaged in freshwater aquaculture of tilapia and catfish.

Promotion of marine fisheries requires the integration of conservation, management and sustainable use, along with efficient fisheries value chains that align with *Visão 2025* and Angola's regional and international commitments. In this respect, there are important lessons to learn from Chile, Mauritius, Namibia, Senegal, Ghana and several other developing countries to significantly increase value addition and value creation in fisheries, while ensuring national food and nutritional security.

Based on this, Angola should adopt a vision to promote a sector where strong and efficient fisheries and aquaculture value chains contribute to poverty reduction, economic growth, employment, food and nutrition security, social and environmental sustainability, and economic and export diversification. Such a vision can be aligned with the *Visão 2025* for the management, conservation and development of sustainable fisheries resources to contribute to ensuring people's food security and socioeconomic development in order to enhance people's livelihoods and the nation's prosperity.

To implement this vision, the Ministry Agriculture and fisheries should identify ways and means to strengthen the governance, management and technical capacity of stakeholders, and to develop an enabling environment to promote best practices, food safety and quality, investment and market access (UNCTAD, 2020).

The overall objective of the policy to design a marine value chain would be to develop a marine fisheries sector with efficient and competitive fish and seafood value chains that contribute significantly to growth, economic and export diversification, and economic development in a socially and environmentally responsible manner.

Table 5.1 proposes aspirational goals and realistic strategic objectives that can support the development of fish and seafood value chains in the course of this decade. Some of the policies and strategic objectives can be developed gradually over 2021–2025 through a set of programmatic and high-impact activities that can lead to a better-organized, well-supported, and competitive private sector. The period from 2025–2030 should be devoted to learning and drawing lessons from successful countries within Africa and from other developing regions and upscaling them to attract more investors.

The short- and long-term aims of the strategy are to:

- Acquire value-chain analysis and development knowledge, and improve skills and know-how

- Draw practical policy lessons from Mauritius and Chile on how best to sustainably harness the fisheries and aquaculture sector for socioeconomic development, including export diversification and value addition
- Develop institutions including R&D facilities dedicated to the fisheries and aquaculture sector and the agriculture sector
- Pilot promising post-harvest and value-chain operations
- Develop a sustainable aquaculture subsector that replenishes and supports the natural fish stock
- Improve fish safety and quality standards
- Create an enabling environment with efficient support services
- Upscale and disseminate successful experiences
- Enhance public and private investment targeted at the fisheries and aquaculture sector.

UNCTAD has already proposed technical support to develop a value-chain and trade promotion policy for 2021–2030. The long-term policy can be further developed into a five-year proposal to translate the goals and objectives of table 5.1 into concrete activities carried out through a plan of action and supported by a detailed budget, resource mobilization strategy, and monitoring, evaluation and reporting plan.

UNCTAD proposes support for capacity and skill development through the regional Fisheries and Aquaculture Centres of Excellence that were established recently to assist LDCs aspiring to develop their capacity to export aquatic-based products.⁴⁸ The AfDB and the EU are potential donors to develop and fund the project in collaboration with UNCTAD. Both have prioritized fish and seafood value-chain development in developing countries in their assistance programmes. The FAO has launched the FISH4ACP initiative to support the development of fish and seafood value chains in 10 African, Caribbean and Pacific countries, though as of now that initiative does not include Angola.⁴⁹ Likewise, the AfDB has initiated preliminary work to analyse selected marine clusters to identify possibilities and obstacles for promising supply chains that may be incorporated into wider activities to promote the production of high-value-added products, import substitution, and export promotion.⁵⁰

48 As part of its ongoing work on fisheries, UNCTAD has established Centres of Excellence, which are designed to serve as network hubs for capacity-building and the exchange of experiences in the African and Asian regions. The Asian Centre of Excellence is hosted by the Nha Trang University (Viet Nam) and the African Centre is hosted by the Fisheries Research Centre of Mauritius. The two Centres of Excellence also provide opportunities for policy practitioners and stakeholders from the LDCs and other developing economies to benefit from targeted and practical training on fisheries trade-and-development-related topics.

49 FAO, "FISH4ACP: Unlocking the potential of sustainable fisheries and aquaculture in Africa, the Caribbean and the Pacific," available at <http://www.fao.org/in-action/fish-4-acp/en/> (accessed 12 September 2021).

50 See AfDB, "Angola," available at <https://www.afdb.org/en/countries/southern-africa/angola> (accessed 12 September 2021).

Table 5.1 Action matrix for proposed strategic interventions for the development of fisheries and aquaculture in Angola

	Responsible entity	Timeline	Priority actions
GOAL 1: Stakeholders have a solid understanding of fish and seafood value chains and develop specific improvement strategies and investment plans	Ministry of Agriculture and Fisheries (MINAGRIP) (including provincial directorates, delegations, field stations and research institutes such as the Cabinet of Studies Planning and Statistics, assisted by Artisanal Fishing Support Centres); in collaboration with national directorates for infrastructure (fisheries market infrastructure), AgroProdesi, the Agency for Private Investment and Promotion of Exports (AIPEX), and relevant fishermen and women and industry associations and cooperatives	By December 2023	<ul style="list-style-type: none"> Identify and validate priority areas for capacity-building jointly with the government, private sector entities, academia and nongovernmental organizations (NGOs) (key national stakeholders) Develop targeted training packages and organize training sessions jointly with national training institutions, embedding the training in the relevant national institutions' curricula
<i>Objective 1.1: Analyse key fish and seafood value chains in Angola and markets, and design profiles for the development of selected value chains</i>	MINAGRIP in collaboration with the Ministry of Industry and Commerce (MINDCOM), AgroProdesi, AIPEX, National Support Institute for Micro, Small and Medium Enterprises (INAPEM), relevant universities, and relevant fishermen and women and industry associations and cooperatives	By December 2023	<ul style="list-style-type: none"> Aligned with the priority areas established under Goal 1, identify and prioritize key fish and seafood value chains in a consultative forum with key national stakeholders Provide training in value-chain and market analysis to key national stakeholders Carry out value-chain and market analyses, and draft selected development profiles
<i>Objective 1.2: Assess investment needs and constraints, and develop and promote investment plans</i>	AIPEX in collaboration with MINAGRIP, MINDCOM, INAPEM and relevant fishermen and women and industry associations and cooperatives	By December 2022	<ul style="list-style-type: none"> If needed, provide targeted training on the assessment of investment needs and constraints, including investment plan development Validate the investment plans through a consultative process with key stakeholders Design and carry out promotion and communication campaigns for the investment plans
<i>Objective 1.3: Upgrade selected value chains and have investment plans in infrastructure validated by stakeholders and funded</i>	MINAGRIP in collaboration with AIPEX, AgroProdesi, MINDCOM, INAPEM and relevant fishermen and women and industry associations and cooperatives	By December 2024	<ul style="list-style-type: none"> Identify modalities and develop plans for the financing of value-chain upgrading Draft resource mobilization strategies with key national stakeholders Organize a validation workshop with key national stakeholders that includes reaching agreement on roles and responsibilities in resource mobilization efforts as well as monitoring and evaluation
GOAL 2: Significantly improve the performance of fish and seafood value chains through strengthened support services, adoption of good practices, and compliance with regulatory and market access requirements	MINAGRIP in collaboration with AIPEX, AgroProdesi, MINDCOM, INAPEM, the Ministry for Social Action, Family and Women's Promotion (MASFAMU), Ministry of Transportation (MINTRANS), NGOs, relevant universities, and relevant fishermen and industry associations and cooperatives	By December 2027	<ul style="list-style-type: none"> Identify and prioritize the main support service providers in a broad consultative workshop with key national stakeholders Develop and deliver capacity-building curricula for the main support service providers Establish monitoring frameworks and train relevant enforcement institutions to monitor and provide support to achieve compliance and implement good practices

Responsible entity	Timeline	Priority actions
Objective 2.1: <i>Strengthen the institutional and technical capacity of the competent authority for fish inspection and promote its recognition by major markets</i>	MINAGRIP In collaboration with AIPEX, AgroProdesi, MINDCOM, the Ministry for Foreign Affairs (MIREX), INAPEM, and relevant universities and vocational training centres such as SEFOPESCAS	By December 2026 <ul style="list-style-type: none"> Carry out a comprehensive needs assessment of the Fish Inspection Authority, and develop a capacity-building plan and training package jointly with national training institutions Implement training through national training institutions, and ensure effective follow-up and mentoring
Objective 2.2: <i>Strengthen the capacity of value-chain actors to implement best practices and improve compliance with regulatory and market access requirements</i>	MINAGRIP in collaboration with AgroProdesi, AIPEX, INAPEM, MINDCOM, MASFAMU, relevant universities and vocational training centres, and relevant fishermen and women and industry associations and cooperatives	By July 2027 <ul style="list-style-type: none"> Carry out a comprehensive needs assessment of value-chain actors, and develop capacity-building plans and training packages jointly with national training institutions Implement training through national training institutions and ensure effective follow-up and mentoring
Objective 2.3: <i>Improve financial institutions' and potential investors' understanding of the investment opportunities, risks and mitigation measures to reduce risks, and increase their willingness to invest</i>	Bank of Angola and AIPEX in collaboration with MINAGRIP, the Ministry of Finance (MINFIN), Prodesi, and international financial institutions	By July 2023 <ul style="list-style-type: none"> Identify investment opportunities and related risks and mitigation measures through a consultative process with key national stakeholders, building on the value-chain analysis and needs assessments carried out Identify potential financing institutions and investors, and develop profiles and strategies for their engagement Carry out a communication campaign to approach financial institutions and potential investors with relevant information on how to support the fisheries and aquaculture sector
GOAL 3: Improve and streamline inclusiveness and social and environmental sustainability at the different stages of the selected value chains	MINAGRIP in collaboration with the Ministry of Culture, Tourism and Environment (MCTA), AIPEX, INAPEM, MINDCOM, AgroProdesi, NGOs, relevant universities, and relevant fishermen and women and industry associations and cooperatives	By December 2023 <ul style="list-style-type: none"> Analyse the inclusiveness and social and environmental sustainability of the fisheries and aquaculture sector based on existing research. Agree on priority actions with key national stakeholders Put in place/strengthen monitoring and evaluation and reporting mechanisms Strengthen the enforcement of relevant standards to ensure inclusiveness and social and environmental sustainability
Objective 3.1: <i>Include organizations of value-chain actors in decision-making processes and ensure their access to efficient support services to enhance their performance and the income and livelihoods of their agents</i>	MINAGRIP in collaboration with AIPEX, INAPEM, AgroProdesi, MINDCOM, MINTRANS, and relevant fishermen and women and industry associations and cooperatives	By July 2022 <ul style="list-style-type: none"> Through a broad consultative process with key national stakeholders, identify the key decision-making processes involving the target sectors, as well as modalities to engage with organizations of value-chain actors Establish/strengthen mechanisms to effectively implement the engagement process Put in place/strengthen relevant monitoring, evaluation and reporting mechanisms to track participation by the actors in question

	Responsible entity	Timeline	Priority actions
Objective 3.2: Put mechanisms in place to ensure that value-chain development translates into equitable distribution of benefits and contributes positively to food security and nutrition, decent incomes, and access to social services	MINFIN in collaboration with the Ministry of Economy and Planning, MINAGRIP, MASFAMU, the Ministry of Public Administration, the Ministry of Public Administration, Labour and Social Security, and NGOs	By December 2027	<ul style="list-style-type: none"> • With the help of existing analysis of taxation and redistribution mechanisms, identify key entry points jointly with key national stakeholders with a view to improving these mechanisms for the sectors concerned • Put in place/strengthen relevant monitoring, evaluation and reporting mechanisms
Objective 3.3: Enhance environmental sustainability through market instruments and increased consideration of climate change in selected value chains	MCTA in collaboration with MINAGRIP, AIPEX, INAPEM, AgroProdesi, MINDCOM, MINTRANS, NGOs, and relevant fishermen and industry associations and cooperatives	By July 2025	<ul style="list-style-type: none"> • Identify global good practices for market instruments and for including climate change in selected value chains • Develop strategies to put in place such good practices, adapted to the Angolan context • Implement a pilot and evaluate results for possible replication

Source: Prepared by the authors.

5.3 Policy framework for the development of the fisheries and aquaculture sector in Haiti

From Chapter 4, it is evident that the fisheries and aquaculture sector in Haiti is highly strategic not only for national food security, employment creation and poverty reduction, but also for economic and export diversification and structural transformation. However, the sector is highly underdeveloped. It suffers from complex and multidimensional impediments with severe implications for the sector, the aquatic environment, biodiversity, and the communities whose livelihoods depend on the sustainability of the aquatic ecosystem. Upgrading the sector will require a careful balance between strong and focused conservation, exploitation and utilization measures.

Haiti has recently implemented several projects aimed at improving the governance and management of fisheries, upgrading infrastructure, providing incentives for aquaculture operations, and encouraging processing, safety and quality control. Still, despite rich aquatic resources, most of the fish currently harvested by Haitians is consumed domestically, with limited processing to add value, extend shelf life and marketability, or improve the income of the many operators along the fisheries and aquaculture value chains. In addition, poor post-harvest handling and processing practices lead to important fish losses and waste (estimated at 40 per cent in some cases), reduce the nutritional quality of fish,

and expose consumers to food safety problems. It also jeopardizes resource sustainability. The low fishing yields, combined with low prices of category 2 and 3 quality fish, push artisanal fishermen and women to fish more to make a living. As exports to lucrative markets are banned because of noncompliance with SPS and other market requirements, the wealth extracted from fisheries and aquaculture in Haiti remains low and depends on informal exports to the neighbouring Dominican Republic.

Taking into consideration the political and socioeconomic environment in Haiti and the situation of its fisheries and aquaculture sector, table 5.2 presents five objectives that require urgent action.

In sum, the key areas for policy intervention in the development of Haiti's fisheries and aquaculture sector are centred on:

- Addressing the legal and institutional frameworks for fisheries and aquaculture management
- Creating an enabling environment and incentives to promote the socioeconomic development of the sector
- Upgrading key infrastructure, with a focus on landing, post-harvest practices and marketing infrastructure
- Building the capacity of the government to implement policies and governance of the sector
- Enhancing the capability of the private sector to add value and export fish products that meet international standards.

Table 5.2 Action matrix for proposed strategic interventions for the development of fisheries and aquaculture in Haiti

	Responsible entity	Timeline	Priority actions
Objective 1: Address the legal and institutional frameworks for fisheries and aquaculture management	Ministry of Agriculture, Natural Resources and Rural Development (MANRRD) in collaboration with the Ministry of Environment (MDE), relevant universities, private sector support institutions, industry associations, and NGOs	By December 2025	<ul style="list-style-type: none"> Consider the fisheries industry in its different categories – subsistence, commercial, recreational (which needs to be developed), and scientific (to help advance the blue economy agenda for the future) – with a view to accommodating a comprehensive approach Engage in a process to update relevant legislation to align it with international law, including introducing provisions on Maritime Zones of national jurisdiction (including territorial sea, continental shelf, Exclusive Economic Zone jurisdictions) as well as with regulations for the high seas, in line with the United Nations Convention on the Law of the Sea; and domesticate international environmental law on the marine environment Put in place or update Haiti's competition laws related to scientific research for fishery, coastal resource management, and other types of fisheries products (particularly shrimp and eels) Put in place legal frameworks to promote sustainable fisheries exports
Objective 2: Create an enabling environment and incentives to promote the socioeconomic development of the sector, including through aquaculture development	MANRRD in collaboration with MDE, Ministry of Commerce and Industry (MCI), relevant universities, private sector support institutions, industry associations, and NGOs	By December 2026	<ul style="list-style-type: none"> Decentralize fisheries administration under MANRRD to the regions Support existing institutions for sustainable fisheries development and establish new ones, including research centres (regional public universities) and professional /extension services Establish a fisheries surveillance centre (Centre de Surveillance de Pêche), with the aim to monitor the activities of foreign vessels operating in high seas and maritime zones, monitor overall fishery activities, enforce laws, and control the economic operators of the fisheries and aquaculture sector Create an economic observatory (Observatoire Economique) to improve the governance of resources and the diffusion of economic information
Objective 3: Upgrade key infrastructure, with a focus on landing, post-harvest practices, and marketing infrastructure	MANRRD in collaboration with the Ministry of Public Works, Transport, Communication and Energy (MTPTC), the Ministry of the Economy and Finance (MEF), the MCI, relevant universities, private sector support institutions, industry associations, and NGOs	By December 2028	<ul style="list-style-type: none"> Put in place spatial planning of specific areas for fisheries and aquaculture development Identify the most promising/priority zones for fisheries and aquaculture development at the national level, including the South region (Le Grand-Sud)
Objective 4: Build the capacity of the government to implement governance of the fisheries and aquaculture sector and of the private sector in order to add value and to export fish products that meet international standards	UN system in collaboration with international financial institutions, the International Organization for Standardization, relevant universities, industry associations, and NGOs	By December 2028	<ul style="list-style-type: none"> Build the capacity of governmental institutions to implement and enforce the governance frameworks of the sector Enhance the capacity of the private sector to improve compliance Develop comprehensive training packages at various levels and establish a dedicated training centre for fisheries.
Objective 5: Facilitate public and private investment flows to the fisheries and aquaculture sector	Haiti Investment Facilitation Centre in collaboration with MANRRD, MDE, MEF, private sector support institutions, industry associations, and NGOs	By December 2024	<ul style="list-style-type: none"> Organize a comprehensive consultative meeting and establish mechanisms to update key actors on the processes and steps to improve sustainable fisheries management, validate and prioritize actions, and discuss the next steps for a country program. The relevant actors should include UN system agencies (UNCTAD/UNDP/FAO), MANRRD, MDE, MEF, MTPTC, MCI, universities and vocational training institutes (Institute National de Formation Professionnelle), private sector support institutions, industry associations, micro-finance institutions, NGOs, and institutional donors

Source: Prepared by the authors.

These proposed policy intervention areas should be addressed concurrently, giving priority to key activities in each fishing region under each area. Central to the sustainability of the interventions is the necessity to improve post-harvest infrastructure and practices, credible fish inspection, safety and quality systems for better processing, value addition and export.

Haiti's high-level strategic plan (MPCE, 2016) has the merit to provide a long-term vision that aligns with the 2030 Sustainable Development Agenda and the many international, regional and local initiatives it embraces. Haiti's triennial plans, the national 2018–2022 policy, and the implementation of the plan and policy in agriculture, fisheries and aquaculture provide a roadmap to update, design and implement field programmes adapted to each fishing region and its communities. The results of the various projects implemented by bilateral and multilateral institutions and NGOs to improve fisheries, aquaculture, conservation and biodiversity need to be collectively assessed with a view to drawing lessons in order to replicate and upscale successful experiences into other fishing regions, with strong involvement of fishing communities and the private sector.

In this respect, UNCTAD, along with other international organizations, could assist Haiti in assessing how it could draw valuable lessons from more successful countries. The key policy recommendation of this report is to highlight the importance of industrial policy as an instrument to target the fisheries and aquaculture sector as a source of growth, economic diversification, and value addition. The Chilean experience described earlier in this chapter demonstrates that with the right policies, public investment in basic infrastructure, skill formation, technology transfer and upgrading, and quality improvement, even low-income and commodity-dependent economies such as Haiti could develop a dynamic fisheries sector that can compete with the best in the world.

Indeed, this study has also shown that there are numerous international and regional organizations and development partners that have the capabilities and willingness to provide technical skill development to LDCs such as Haiti. One of these organizations is UNCTAD, which is supporting LDCs through its fisheries and aquaculture Centres of Excellence and its wide networks of valuable expertise. UNCTAD has proposed mobilizing resources to develop and implement projects along two concurrent pathways, that is, both short-term and medium-term projects that assess successful experiences in the South-East and South-West

fishing areas to adapt them for replication and upscaling in other fishing regions with a focus on unlocking their potential for improved post-harvest activities, marketing and trade.

Long-term projects should be enshrined in the 2030 Agenda for Sustainable Development, with trade-related targets of SDG 14 guiding capacity-building and investment in best practices and market instruments to improve resource sustainability, legality, and environmental, social and consumer protection. Fundamental challenges to long-term development of fisheries and aquaculture arise from the weakness of the MANRRD/DFA and its uneven enforcement of the rule of law. As a result, the MANRRD/DFA struggles to provide basic services and infrastructure for the economic and physical well-being of fishing communities. Insufficient transparency and accountability in the management of living aquatic resources contributes to the underfunding of state institutions, with the result that most projects are financed by international donors.

The MANRRD/DFA is also constrained by limited institutional and technical capacity. Governance needs to be strengthened by improving the rule of law and enhancing MANRRD/DFA accountability. UNCTAD can support future programs that will address these issues at both the national and local levels of government. UNCTAD can also help MANRRD/DFA and the private sector improve their capacity for effective and efficient management and mobilize resources and deliver services to fishing communities, enhancing and rationalizing national-local and inter-agency relationships, coordination, and communication on policy and budget issues.

5.3 Challenges to moving forward in Angola and Haiti

Despite national and international efforts to develop the fisheries and aquaculture sectors in Angola and Haiti, these resources remain underdeveloped, artisanal and/or traditional, with little or no value addition or industrial-scale operations. Besides the lack of financial and technical resources, there are also inadequacies in the areas of sectoral policies and strategies. In those cases where there are good policies, there is weak institutional and human resource capacity to effectively implement those policies, especially those that are centred on fostering productive capacity and structural economic transformation. Consequently, the countries are unable to fully harness the potential of their natural resources, including fisheries and aquaculture, to accelerate their socioeconomic

transformation and development. Often there are gaps between policy ambitions and implementation. In some cases, financial resources including from donors, are not aligned with the policies and strategies or have failed to target sectors of comparative advantage such as fisheries. In other cases, the institutions charged with implementing the policies lack the technical or human capacity to effectively carry out their work. The fisheries and aquaculture sectors in both countries are among the most severely underfunded or under-resourced both in terms of human and technical resources.

In both Angola and Haiti, the key to harnessing the potential of the fisheries sector for socioeconomic development and unlocking its trade and development potential is to build productive capacity and better use and maintain existing capacity. Doing so should be based on a careful diagnostic of binding constraints, effectively exploiting comparative and competitive advantages, but also defying and going beyond existing comparative advantages. Such approaches are particularly important to enhance export diversification,

build export competitiveness and gradually foster structural economic transformation. The approaches need to include efforts aimed at fostering entrepreneurship, industrialization, and technological upgrading, including by learning from the successful experiences of other developing countries such as Chile and Mauritius – two countries that made the most out of their fisheries sectors.

Alongside fostering productive capacity and structural economic transformation based on their comparative advantages, Angola, Haiti and other LDCs that have marine and freshwater resources need to develop their aquaculture subsector, increase value addition, and meet international food quality and safety as well as environmental standards. LDCs must also address the challenges they face with illegal, unregulated and unreported fishing activities, and engage in mutually beneficial fish license agreements, allowing international fishing fleets unfettered access to marine waters, including Exclusive Economic Zones. Such agreements should be environmentally sustainable and economically viable or supportive of the development needs of LDCs.

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