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Unlocking the potential
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in Africa, the Caribbean and the Pacific

SUMMARY REPORT

The large shrimp value chain in Cameroon

August 2023



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Background and rationale

FISH4ACP is an initiative of the Organisation of African, Caribbean and Pacific States (OACPS) that aims to ensure the sustainability of fisheries and aquaculture value chains. The initiative contributes to food and nutrition security, economic prosperity and job creation by ensuring the economic, social and environmental sustainability of fisheries and aquaculture in Africa, the Caribbean and the Pacific. FISH4ACP is implemented by the Food and Agriculture Organization of the United Nations (FAO) and funded by the European Union and the German Federal Ministry for Economic Cooperation and Development.

FISH4ACP focuses on increasing the productivity and competitiveness of 12 fisheries and aquaculture value chains in 12 OACPS member countries, ensuring that economic improvements go hand in hand with environmental sustainability and social inclusion. The programme pays particular attention to small and medium-sized enterprises, due to their potential to generate social and economic benefits, especially for women and young people.

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Abbreviations and acronyms

ISA	Automatic Identification System
JIG	Joint initiative group
IUU	Illegal, unreported and unregulated fishing
ISH	Institute of Fisheries Sciences
ITC	International Trade Center
MIDEPECAM	Mission for the Development of Artisanal Marine Fisheries
MINEPIA	Ministry of Livestock, Fisheries and Animal Industries
kg	kilogram
USD	US dollar
VMS	Vessel Monitoring System
XAF	CFA Franc (Financial Cooperation in Central Africa)

1. Introduction

1.1 Background

The Government of Cameroon proposed Cameroon's large shrimp value chain to the FISH4ACP programme in 2019. The country mainly wants to revive shrimp exports to the European Union, after 18 years of stoppage. Cameroon suspended exports to the European Union in 2004 following evidence of non-compliance with hygiene standards during the handling of fishery products, which was highlighted by the European Union Food and Veterinary Office. The European Union officially suspended imports of fish products from Cameroon in 2009 due to the authorities' insufficient ability to carry out reliable controls on these products (European Union, 2009). This summary report presents the main results of the functional analysis and the sustainability and resilience assessment that led to the development of a value chain upgrade strategy and implementation plan.¹



**Guinea shrimp, Pink shrimp, Giant tiger prawn,
Caramote prawn,**
(*Parapenaeopsis atlantica*, *Penaeus notialis*, *Penaeus monodon*,
Penaeus kerathurus)

¹ The full report is available upon request (Blanc, PP., Drago, N., Hummel, L., Meke Soung, P. N., Nguyen, H. and Ujeneza, N. 2023. *The Large shrimp value chain in Cameroon. Analysis and upgrade report.* FAO, Rome.

1.2 Value chain analysis methodology

The methodology used, known as the “FISH4ACP methodology”, consisted of four stages: functional analysis, sustainability assessment, development of an upgrade strategy and implementation planning (actions and investments). The one-year process began with a functional analysis conducted in June 2021 with secondary and primary data collection in partnership with the Yabassi Institute of Fisheries Sciences (ISH) and culminated in a planning workshop held in Douala in June 2022. The private sector, Government, donors, civil society and regional organizations were closely involved throughout the process and the analysis team received support from the Directorate of Fisheries, Aquaculture and Fisheries Industries. Analysis of the shrimp value chain in Cameroon has been restricted to large shrimp, for which there is export potential. Thus, the value chain analysis focuses on four species, all from marine fisheries: *Penaeus notialis* (pink shrimp), *Penaeus monodon* (giant tiger prawns), *Parapenaeopsis atlantica* (Guinea shrimp), *Penaeus kerathurus* (caramote prawn).

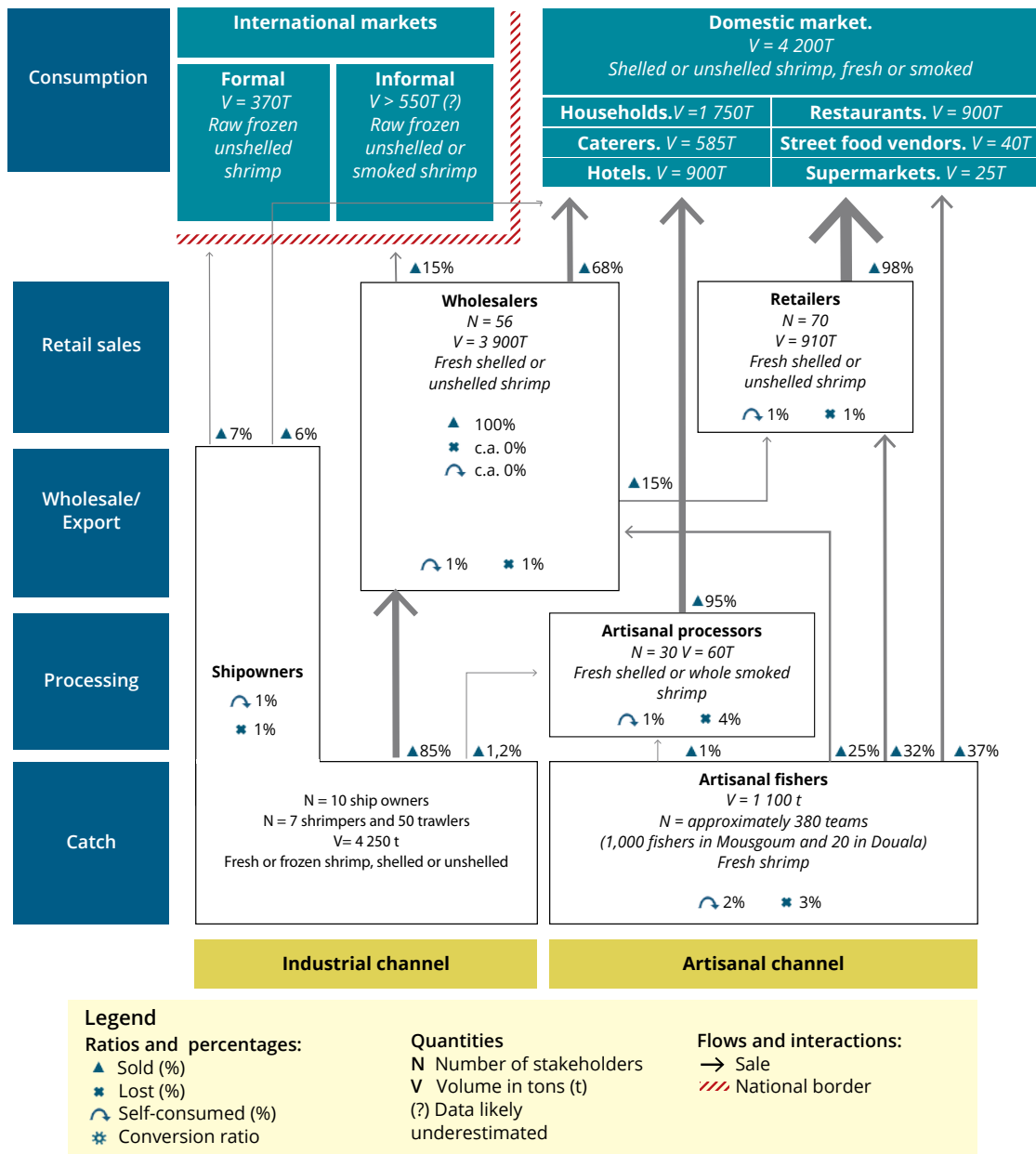
2. Outcomes

2.1 Functional analysis

2.1.1 Value chain mapping

Figure 1 provides a visual representation of the large shrimp value chain in Cameroon.

Figure. 1. Mapping the large shrimp value chain in Cameroon



Source: Blanc, PP., Drago, N., Hummel, L., Meke Soung, P. N., Nguyen, H. and Ujeneza, N. 2023. *The Large Shrimp Value Chain in Cameroon. Summary report.* FAO, Rome.

Cameroon produces nearly 5 300 tonnes of shrimp annually from commercial marine fishing. The main markets are, in order of importance in volume, the domestic market (nearly 4 200 tonnes of large shrimp per year), the regional market (Gabon, Central African Republic, Chad, Equatorial Guinea and Nigeria, with about 590 tonnes per year) and exports to Asia (China, Hong Kong SAR, Vietnam, Malaysia, estimated at 290 tonnes per year.) About 126 tonnes are self-consumed and approximately the same amount is lost. The total value of Cameroon's shrimp exports (formal and informal) is between 1.6 million USD and 4.6 million USD (data from an FAO field survey conducted as part of the FISH4ACP project in 2021).

2.1.2 Shrimp market

The international market

Supply and demand

The global market is largely dominated by farmed shrimp. In 2017, farmed shrimp production amounted to 55 million tonnes, which was 39 percent higher compared to 2011. In the same year, global production of shrimp from fisheries amounted to about 3.6 million tonnes (a moderate growth rate of 9 percent compared to 2011). Global shrimp imports are rising sharply (with a cumulative annual growth rate of 9 percent from 2015 to 2019), driven by Chinese demand (with a cumulative annual growth rate of 73 percent) (ITC, 2021a; FAO 2019; FAO 2020b) (Table 1).

Table 1. Top ten shrimp importing countries

Country	Imports 2019		Unit price (USD/kg)	CAGR 2015–2019	Share of world imports
	Value (1 000 USD)	Volume (tonnes)			
Global	17 799 632	2 349 542	7.5	8%	100%
1 USA	4 814 028	550 837	8.7	3%	27%
2 China	3 973 351	649 272	6.1	73%	22%
3 Japan	1 442 958	143 913	10.0	0%	8%
4 Ecuador	1 128 888	159 217	7.1	0%	6%
5 France	709 483	92 375	7.7	1%	4%
6 Italy	477 729	65 309	7.3	2%	3%
7 Republic of Korea	450 221	56 940	7.9	7%	3%
8 United Kingdom	433 507	42 431	10.2	3%	2%
9 The Netherlands	346 780	41 773	8.3	4%	2%
10 Canada	331 119	37 068	8.9	0%	2%
Top 10 importers total	14 108 064	1 839 135	7.7	9%	79%

Source: Blanc, PP., Drago, N., Hummel, L., Meke Soung, P. N., Nguyen, H. and Ujeneza, N. 2023. *The Large Shrimp Value Chain in Cameroon. Summary report*. FAO, Rome.

Authors based on International Trade Center (ITC) data (2021a).

Note: acronyms used: kg (kilogram); CAGR (cumulative annual growth rate); USD (US dollar)

The top 10 importers of shrimp (caught and farmed combined) are the United States of America, China, Japan, Spain, France, Italy, the Republic of Korea, the United Kingdom, the Netherlands and Canada. In 2019, these countries imported 1.8 million tonnes of shrimp worth nearly 14 million USD, accounting for almost 80 percent of global shrimp imports. The United States of America (27 percent) and China (22 percent) accounted for half of the value of global shrimp imports in 2019, followed by Japan (8 percent), Spain (6 percent) and France (4 percent) (Table 1).

Table 2. Top ten shrimp exporting countries

Country	Exports 2019		Unit price (USD/kg)	CAGR 2015-2019	Share of world exports
	Value (1 000 USD)	Volume (tonnes)			
Global	17 616 880	2 448 731	7.2	6%	100%
1 India	4 554 389	630 598	7.2	10%	26%
2 Ecuador	3 675 300	614 854	6	18%	21%
3 Vietnam	1 961 743	235 714	8.3	3%	11%
4 Indonesia	1 269 175	149 160	8.5	2%	7%
5 Argentina	1 052 404	165 512	6.4	8%	6%
6 Tunisia	662 545	67 238	9.9	1%	4%
7 China	507 331	53 309	9.5	-15%	3%
8 Mexico	395 878	38 588	10.3	6%	2%
9 Bangladesh	364 851	34 055	10.7	-1%	2%
10 Spain	303 497	33 620	9	0%	2%
...					
20 Madagascar	86 753	8 011	10.8	11%	0.50%
37 Nigeria	29 201	4 404	6.6	32%	0.20%
79 Cameroon	950	143	6.6	N/A	0.00%

Source: Blanc, PP., Drago, N., Hummel, L., Meke Soung, P. N., Nguyen, H. and Ujeneza, N. 2023. *The Large Shrimp Value Chain in Cameroon. Summary report*. FAO, Rome.

Authors based on International Trade Center (ITC) data (2021a).

Note: acronym used: CAGR (cumulative annual growth rate);

Global shrimp exports amounted to about 18 billion USD in 2019 and grew at a cumulative annual rate of 6 percent over the period 2015–2019 (Table 2). India, Ecuador, Vietnam, Indonesia, Argentina and Thailand are the main exporters of shrimp, with nearly 1.9 million tonnes of shrimp exported in 2019 (75 percent of total export volumes), worth 13 million USD. Market leaders India (26 percent), Ecuador (21 percent) and Vietnam (11 percent) mainly produce farmed shrimp, while shrimp caught at sea mainly come from the Gulf of Mexico and Argentina (FAO, 2020a).

Cameroon lags behind on the global market. In 2019, the value of its shrimp exports was 950 000 USD (less than 0.01 percent of the total value of global exports), for a volume of 143 tonnes, which earned it the 79th position among exporting countries (Table 2).

Cameroonian customs record even lower values (about 360 000 USD for 134 tonnes in 2019). In comparison, Nigeria ranked 37th among exporters in World Trade Organization rankings, with 4 400 tonnes of shrimp exported to the European Union countries (Belgium, Netherlands, France, Germany, Portugal, Spain) for nearly 30 million USD in 2019 (UN Comtrade, 2021).

The main export markets for Cameroonian shrimp are Asian (China, Malaysia and Vietnam in 2019), while the United States of America and Canada account for a negligible share of exports.

Determining factors

The price of shrimp is mainly determined by size (FranceAgriMer, 2017). Whole shrimp (“Head On, Shell On”) are classified according to the number of individual shrimps per kilogram (kg) (Table 3). The larger the shrimp, the higher the price (Gillett, 2008).

Table 3. Example of whole shrimp commercial classifications

	Number of individual shrimps/kg
Grade 000	8–13
Grade 00	16–24
Grade 0	32–42

Source: Blanc, PP., Drago, N., Hummel, L., Meke Soung, P. N., Nguyen, H. and Ujeneza, N. 2023. *The Large Shrimp Value Chain in Cameroon. Summary report*. FAO, Rome.

The increase in farmed shrimp is driving down global prices for both farmed and caught species (Gillett 2008; FAO, 2020c). Nevertheless, there is a significant price difference between farmed shrimp, with an average import price of 7.5 USD/kg (Table 1) and caught shrimp, which retail for 25 USD to 70 USD/kg in Europe (Comptoir des Mers, 2015).

Since 2009, the supply trend has been shifting towards differentiation via products that have been upgraded and processed (FAO, 2009). In addition, consumers are increasingly sensitive to the impact of their eating practices on their health and that of ecosystems. Demand for products that have been certified and labelled for sustainability is expected to increase in the European and US markets (Gillett, 2008; Centre for the Promotion of Imports from Developing Countries, 2019), where only 10% of global shrimp catches in 2015 were certified to meet sustainable fisheries specifications (Daly *et al.*, 2018).

Given the large volumes imported, the United States of America, China and the European Union have a direct influence on the global shrimp market. The United States of America prohibits imports of shrimp caught on vessels without turtle exclusion devices (Gillett, 2008) and applies anti-dumping measures (import taxes) for farmed shrimp. China suspended shrimp imports from Ecuador in 2020 for health reasons (Reuters, 2021; FAO, 2021). The European Union applies strict control measures to verify that imported food products comply with the regulations in force in its market.

The domestic market

Supply and demand

The national market represents 80 percent of the captures of large shrimp, most of which come from the industrial channel and are sold through about 50 wholesalers and approximately 70

retailers. Smoked shrimps are intended for human as well as animal consumption, and the feed mill sector has gone through increasing development in recent years.

Table 4. Estimated total supply and domestic consumption (2021)

	Quantity (tonnes)
Inputs	
Total production:	5 288
Imports	-
Outputs	
Exports	*291
Informal exports	590
Total loss	120
Domestic market of which:	4 287
<i>Households</i>	1 757
<i>Hotels</i>	863
<i>Restaurants</i>	901
<i>Catering</i>	575
Street food vendors	43
Supermarkets	23
Self-consumption	125

Source: Blanc, PP., Drago, N., Hummel, L., Meke Soung, P. N., Nguyen, H. and Ujeneza, N. 2023. *The Large Shrimp Value Chain in Cameroon. Summary report*. FAO, Rome.

Note: *the value of formal exports corresponds to the value reported by shipowners in the context of functional and economic interviews, and not to official customs data.

Consumption of large shrimp in Cameroon amounts to nearly 4 300 tonnes per year (Table 4), with an estimated value of 10 million USD.

Large shrimps are mainly intended for segments with high purchasing power such as wealthy households, hotels and restaurants. Fresh, whole produce is the most sought after, but smaller or damaged shrimp can be used in less sophisticated restaurants, smoked or sold along with other species of fish.

The segments with higher purchasing power are mainly found in Douala and Yaoundé and, to some extent, in other urban centres in the southwest, coastal areas, west, east and south (National Institute of Statistics, 2015).

Local consumers prefer giant tiger prawns (*Penaeus monodon*), followed by pink shrimp and Guinea shrimp. According to the survey, consumers' main selection criteria for shrimp are the taste and perceived quality of the product, with price only third in importance.

Determining factors

Table 5. Retail price ranges by shrimp species

Species	Price (USD/kg)	Price (XAF/kg)
Giant tiger prawns	10.6 - 11.2	5 883 - 6 216
Pink shrimp	3.2 - 9.4	1 776 - 5 217
Guinea shrimp	4.5 - 7.4	2 498 - 4 107
Camarote prawn	3.6 - 5.4	1 998 - 2 997
Mean	5.5 - 8.4	3 039 - 4 634

Source: Blanc, PP., Drago, N., Hummel, L., Meke Soun, P. N., Nguyen, H. and Ujeneza, N. 2023. *The Large Shrimp Value Chain in Cameroon. Summary report.* FAO, Rome.).

Table 5 provides an overview of retail prices for large shrimp in Cameroon.

Giant tiger prawns are the most expensive, costing about 10 000 CFA francs (XAF) per kg (about 20 USD/kg). Camarote prawns are the cheapest, with a retail price ranging between XAF 2 000 and XAF 3 000/kg (3.6 USD to 5.4 USD/kg). Prices for other species fluctuate between the two extremes.

These price ranges include temporal, spatial and quality variations:

- i. Prices are affected by the seasonal nature of shrimp fishing. Prices are generally lower during the high season (April to October) due to a higher abundance of shrimp. They are higher during the low season (November to March) due to a lower abundance of shrimp (based on an FAO field survey conducted as part of the FISH4ACP project, 2021).
- ii. The place of sale also has an impact on the prices charged due to related transport costs. For example, the price of large shrimp is generally higher in Yaoundé and inland than on the coast.
- iii. Shrimp quality is essentially determined by size. In addition to the commercial classification of shrimp that applies to export, there are classifications specific to Cameroon (for example, pink shrimp are classified into six size groups). Figure 2 shows Class 3 shrimp.

Figure 2. Class 3 pink shrimp



Market opportunities for Cameroon

Cameroonian shrimp has untapped potential to several countries, which could increase its export value by almost 70% (ITC, 2021b). The most promising markets are France, Vietnam, China, the United States of America and Spain. In France and Spain as well as in the United States of America, large Cameroonian shrimp could enter the market with a product certified to the European Union quality standards, or even to sustainability specifications. The main challenges in accessing these markets are obtaining export approval to the European Union and the increased effectiveness of turtle exclusion devices on industrial fishing vessels in order to legally access the United States of America market. China and Vietnam have an advantage since some channels already exist. It appears that it would be very easy to market products to Gabon and the Central African Republic because of their geographical proximity and their membership of the Central African Economic and Monetary Community.

2.1.3 Components of the value chain

Value chain stakeholders

Cameroon's large shrimp value chain has 10 industrial fishing ship owners, more than 1 000 artisanal fishermen specialized respectively in giant tiger prawns and Guinea shrimp fishing and working in 380 crews, about 50 wholesalers and 70 retailers, as well as about 30 artisanal processors.

Fishers

Shrimp fishing is practised in Cameroon by industrial vessels (shrimpers and trawlers) and artisanal fishers. The 10 industrial fishing companies catch just over 4 200 tonnes each year. The 1 000 artisanal fishermen – mainly from the Mousgoum ethnic group – who specialize in shrimp fishing catch about 1 100 tonnes per year. The annual total is thus about 5 300 tonnes of large shrimp caught in Cameroon. Artisanal fishermen operate within the zone within three miles of the coast, while industrial vessels fish beyond three nautical miles.

Figure. 3. Shrimp fishing boat



Industrial fishing

Industrial fishing is marked by the practice of “bareboat” chartering.² Thus, domestic companies assume an administrative role, for which they receive financial compensation from foreign companies (Njock and Njifonjou, 2001; Koranteng *et al.*, 2014). An industrial fishing company (shipowner) has an average of four vessels and catches about 421 tonnes of shrimp per year. Thus, the 10 shipowners catch a little more than 4 200 tonnes annually. Shrimp are trawled by trawlers (Figure 3) and shrimpers and are unloaded in the autonomous ports of Douala and Kribi. In 2019, according to official data, the Cameroonian fleet included 57 licensed vessels, including seven shrimpers and 50 trawlers (Ministry of Livestock, Fisheries and Animal Industries, 2019). Due to their age (30 to 50 years), only 83 percent of the boats are active simultaneously, with the rest grounded for maintenance. Shrimp fishing requires a license to fish for shrimp and other crustaceans, which authorizes the use of trawls with a smaller mesh size than for fish fishing.³ However, vessels fishing under license for fish also catch significant quantities of shrimp in their by-catch. There is also very little control over the type of trawl used, so that in practice, a trawler can catch as much shrimp as a shrimper (up to 127 tonnes per year). Shipowners mainly sell giant tiger prawns (84 percent) and supply 85 percent of their catch to wholesalers. They allocate only 1 percent of their catches to artisanal processors, 6 percent directly to end consumers (hotels, restaurants and households), 7 percent to formal exports, 1 percent to self-consumption, with losses of around 1 percent. The average crew consists of a captain, a second captain, an engineer (usually foreigners) and five sailors (usually Cameroonian). A pointer/time clock intervenes on arrival to guide the manoeuvres.

Cameroonian shipowners list the following main challenges (Beseng, 2021): i) the high cost of fuel; (ii) the reduction of fishing zones in favour of areas of oil activity; (iii) maritime piracy, which requires armed soldiers (from the Rapid Intervention Battalion or the Cameroonian Navy) to embark every three days in order to ensure the crew’s safety, which generates an additional cost partially borne by the government.

Artisanal fishers

The main sites for artisanal fishing are: the ports of Youpwé (Douala) and Cap Cameroun, Kribi (Mboamanga); the beaches of the Bamusso, Enyenge and Idabato settlements on the Bakassi peninsula; the beaches of the Idenau settlements. Small-scale fishers generally group together in crews of two to four people, make between two and six trips per week and catch between 5 and 25 kg of shrimp per trip and between 250 kg and 5 000 kg of shrimp per year (average of 2.8 tonnes per crew). About 37 percent of the volumes caught by small-scale fishers are sold directly to end consumers, 32 percent to retailers, 25 percent to wholesalers and 1.2 percent to artisanal processors. Sales by artisanal fishers are more diversified than those of industrial fishers. While prawns cover 67 percent of their volumes sold, the remaining third are made up of species of lower value (including 12 percent of sales consisting of Guinea shrimp, 11 percent pink shrimp and 5 percent caramote prawn). The share of self-consumption is about 2 percent and losses are about 3 percent, mainly due to poor storage conditions onboard canoes.

² Foreign companies, freighters, provide the capital (they own the vessels, manage the maintenance, provide fuel and fishing equipment. They also play a commercial role and manage the sale of catches. Cameroonian companies and charterers take care of the formalities with the domestic authorities (registering with the merchant ships, obtaining the fishing license from MINEPIA, recruiting and paying staff on board).

³ According to Article 9 of Order No. 0002/MINEPIA of 1 August 2001 (MINEPIA, 2001), which establishes procedures for the protection of fishery resources. The minimum mesh sizes of industrial fishing nets used in maritime waters under Cameroonian jurisdiction shall be as follows: (i) conventional panel trawls (fish and cephalopods): minimum mesh size 70 mm (mm); (ii) coastal shrimp trawls: minimum mesh size 50 mm; (iii) deep-sea shrimp trawls: minimum mesh size 50 mm.

The main challenges reported by small-scale fishers are: (i) the low availability of ice and its random quality; (ii) the isolation of fishing camps, which do not have fishing infrastructure (landing stages, fish trading halls), or sales (paved roads, storage); (iii) the reduction of fishing areas in favour of oil activities and the Kribi oil terminal; (iv) pollution from oil as well as chemicals used by industrial vessels to eliminate discarded by-catches; (v) conflicts with industrial fishermen fishing in the area normally dedicated to artisanal fishing and which damage nets set by small-scale fishers.

Exporters

Two companies – Établissement KSL and Ndum & Sons – have an Export Technical Notice from the Ministry of Livestock, Fisheries and Animal Industries (MINEPIA) and are therefore the only companies officially authorized to export after authorization from the Minister of Trade. They export about 7 percent of their catches annually (290 tonnes per year) to Asia (China, Malaysia, Vietnam). Shrimp are exported whole, frozen and raw. Informal export is not yet documented. It is estimated to represent at least 13 percent (about 590 tonnes annually) and is sent to countries in the subregion (Central African Republic, Chad, Equatorial Guinea, Gabon, Nigeria).

Distributors

Shrimp distributors include different kinds of intermediaries and traders who buy shrimp from fishers and sell them to various consumers (mainly hotels and restaurants and wealthy households located in the main cities [Douala, Yaoundé, Limbe, Kribi]). Shrimp distributors include:

- i. about 70 fish wholesalers: these are mostly women who buy fish, shrimp and other crustaceans from artisanal fishers and then sell them at retail in towns along the coast;
- ii. a large number of collector-transporters, who purchase shrimp as they are unloaded after being caught (such as Idenau) and then transport them in half-barrels weighing of approximately 200 kg of shrimp to semi-wholesale-retailers in town (such as Yaoundé, Kribi, Douala, etc.);
- iii. about fifty semi-wholesalers-retailers are established in town, mainly fishmongers and who sell wholesale and retail shrimp, with daily sales totalling between 100 and 400 kg;
- iv. shrimp purchasing centres supplied by any of the distributors described above.

Distributors play an important role as liquidity providers in the value chain by pre-financing small-scale fishers' trips to sea. They also pay shipowners in advance to reserve the goods. They have cold storage equipment (cold rooms, freezers) with very variable capacities (between 6 and 77 tonnes).

Processors

Processors are also generally women. The study identified about 30 processors. Processing remains rudimentary and involves shelling shrimps in category two or those about to spoil, and to a lesser extent, smoking. There are also two nascent initiatives to produce other shrimp-based products, such as chitosan and condiments made from shrimp heads and shells (Fig. 4).

Figure 4. Shrimp products made by a local company in Douala



Input and service providers

Input suppliers

The main inputs are fuel used by industrial vessels (and about 20 percent of artisanal fishermen who use motorized canoes), ice to preserve shrimp at all links in the value chain, sodium metabisulphite used by industrial fishers and some wholesalers to shells from browning, packaging materials and, to a lesser extent, smoking wood used by smokers.

The fuel, which sells at about 1.1 USD per litre and accounts for 45 percent of industrial vessels' operating costs, is a heavy burden on the profitability of fishing activities. In addition to the current high cost of fuel worldwide, industrial vessels' fuel consumption is higher than average in the sector due to the advanced age of the boats. Vessels and canoes are therefore encouraged to source from neighbouring Nigeria (where fuel is sold at about 0.63 USD per litre), and illegally unload catches there at the same time.

Ice is generally available and priced affordably (\$0.09/kg). It is supplied by public and private suppliers. Nevertheless, the quality of the ice is often insufficient due to frequent power cuts, which affect production, and unrefrigerated transport over long distances to supply remote areas.

Service Providers

The large shrimp value chain in Cameroon is mainly financed by equity and informal support (tontines, advances, family loans or loans granted by relatives). Bank loans are rare and remain highly selective and conditional on the transparency of management accounts, so that even industrial fishers have difficulty accessing them.

Extension services are provided by MINEPIA's decentralized services at the regional level and by the bodies under its supervision, such as the Mission for the Development of Artisanal Maritime Fisheries (MIDEPECAM) and the Maritime Fisheries Development Fund (CDPM). MIDEPECAM

provides one extension service, the supply of fishing equipment and ice production; the CDPM provides financial support for the development of public marketing infrastructure.

A conducive national environment

Cameroon's large shrimp value chain is evolving in a somewhat restrictive business environment. Since 2014, the government has been attempting to better regulate the activity of industrial fishing vessels, which are almost entirely owned by foreign companies and individuals. However, in practice, they continue to operate through the creation of joint ventures with Cameroonian companies.

In addition to this legal challenge, fishing is carried out in an environment prone to maritime, piracy forcing shipowners to bring soldiers onboard fishing vessels, which entails a financial loss. This military presence lowers productivity, since it is at the expense of the number of sailors on board (there is limited room on the ship) and requires fishing activities to halt every three days in order to replace the brigade on board.

Finally, shortcomings in sanitary quality control have led to the self-suspension of exports of fish products to the European Union since 2004 and more generally prevent shrimp from being sold where they would command the highest prices. More recently, in 2021, this challenge was compounded when the European Union issued Cameroon a yellow card for its failures to control illegal, unreported and unregulated (IUU) fishing.⁴

2.1.4 Governance

Vertical links

In industrial shrimp production, the owners of industrial vessels (who are often foreign) set the price of shrimp, in the case of artisanal fishing, this is done by wholesalers.

Prices are determined according to unofficial but unanimous standards for shrimp quality (fresh or poorly preserved) and size. The vertical relations between stakeholders in the shrimp industry take place in an environment of trust. Transactions are carried out within the framework of long-term partnerships, so that fishers (artisanal as well as industrial) are guaranteed to sell their production, and traders (wholesalers as well as retailers) are able to obtain supply, especially if they have purchase orders. These partnerships are usually established through oral contracts between the two parties. Sales on credit are widespread in both the industrial and artisanal shrimp sector. This may take place upstream or downstream, based on the parties' needs and available liquidity.

Horizontal links

Collective organizations are still new, but they are growing. Almost none of these organizations are specific to the large shrimp value chain (except for the Bamusso Shrimp Fishermen's Association) and rather bring together stakeholders from the fisheries sector as a whole.

Artisanal shrimp fishermen are grouped together in joint initiative groups (JIGs), associations and cooperatives (for example, the Youpwé Artisanal Fishermen's Cooperative or the Kribi Fishermen's Cooperative). These structures, which vary in size (from 4 to 170 members), are financed either by contributions (JIGs and associations) or by entrance fees and shares (cooperatives), which can be adapted according to their members' income.

⁴ (Editor's note, the European Union issued a red card to Cameroon in January 2023)

Female processors are also grouped into various local associations, or at the national level, within seafood processors' associations or agricultural and fisheries processing cooperatives. As for industrial fishing, shipowners are brought together by the Union of Marine Fisheries Shipowners, which defends their interests with the government. However, there is no inter-professional association to organize dialogue between all of these organizations, and the value chain remains poorly governed by the stakeholders. No collective organization for vendors has been identified.

Market power

Both industrial and artisanal wholesalers enjoy a strong position on the shrimp value chain. Many of them pre-finance trips to sea through advance payments or the purchase of equipment (nets, vests, anchors, etc.). For fishermen, they offer an advantage over Nigerian buyers, who offer higher prices but do not offer pre-financing.

Trust

Stable relationships between suppliers and customers contributes positively to transactions within the value chain. It ensures product availability and compensates for difficulties in accessing formal sources of financing through purchase and sale credits, which have a low risk of default. Therefore, value chain transactions therefore take place in a climate of trust, though this is qualified by the absence of a formal dispute resolution mechanism between artisanal and industrial fishers concerning fishing areas. Despite the formal nature of their businesses, shipowners offer low levels of financial transparency.

Social capital

Social relations play a key role in access to knowledge, equipment, financing and markets.

Indeed, artisanal fishing and processing are subsistence activities, performed thanks to knowledge transmitted within families and communities. In some fishing cooperatives, profits are redistributed among the various members. Tontines can also be organized within these cooperatives or by mobilizing personal networks.

Tontines' success is explained not only by their ability to provide funding but also by their function as a powerful social link, which is driven by values of solidarity and mutual trust among members (Kemayou *et al.*, 2011). All stakeholders described using their personal networks to exchange information on the large shrimp market. Merchants also rely on their personal networks to find customers.

Formal and informal rules impacting governance

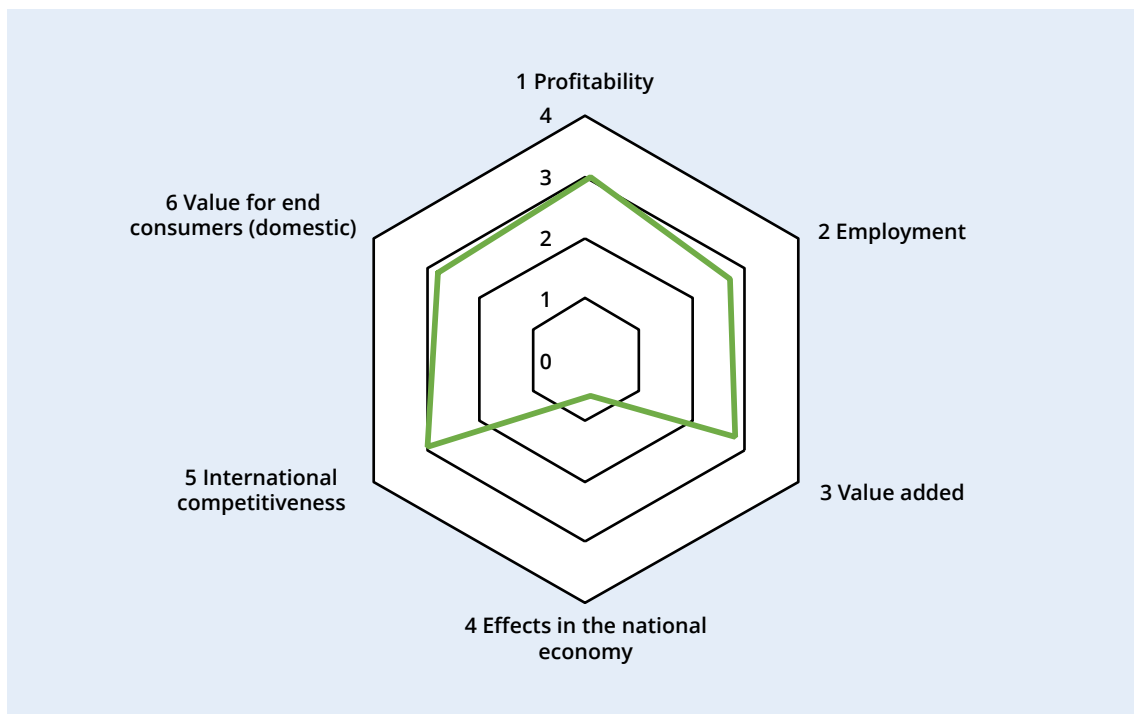
Despite formalization observed within industrial fishing and wholesale companies and the recent restructuring within collective organizations, the large shrimp value chain generally operates informally. This is manifested by the non-registration of artisanal canoes, the small number of artisanal fishers who hold a fishing license (estimated to be one third of all artisanal fishers, according to a MINEPIA expert), an unequal tax burden between the different links in the value chain and weak social protection. Sailors onboard industrial ships are recruited under conditions bordering on legality and often describe facing racism from managers and crewmembers, who are mostly foreign.

2.2 Sustainability

The performance of the large shrimp value chain is assessed through its economic, social and environmental sustainability.

2.2.1 Economic sustainability

Figure 5. Economic sustainability



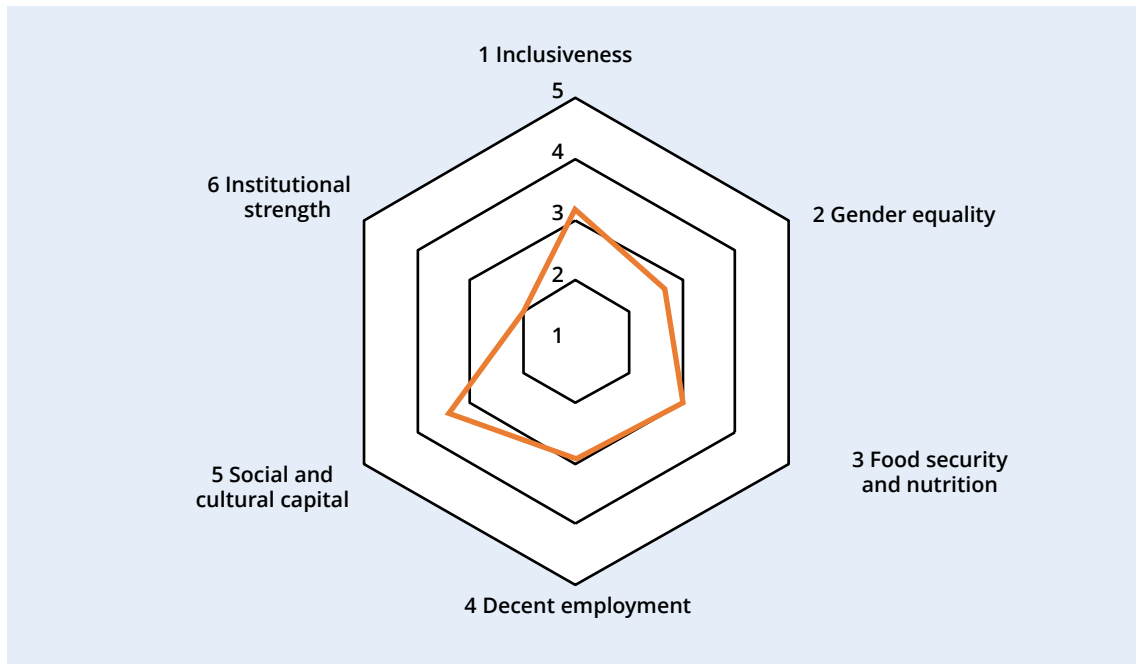
Source: Blanc, PP., Drago, N., Hummel, L., Meke Soung, P. N., Nguyen, H. and Ujeneza, N. 2023. *The Large Shrimp Value Chain in Cameroon. Summary report*. FAO, Rome.

The value chain's strength is economic sustainability, though this score does not exceed 60 percent. This figure is driven down by spillovers to the national economy due to significant tax shortfalls. Figure 5 summarizes the economic sustainability analysis of the large shrimp value chain. Ratings range from 1 (not sustainable) to 2 (concerning) and 3 (sustainable).

2.2.2 Social sustainability

The shrimp value chain's social sustainability is worrying, with a score of 44 percent. Its main weakness is institutional strength due to multiple shortcomings which do not ensure sustainable fishing. Furthermore, the decision-making process in the sector is not inclusive, and most stakeholders claim not to be consulted on the issues facing the sector. Figure 6 summarizes the social sustainability assessment of the large shrimp value chain. Ratings range from 1 (very concerning) to 5 (not concerning at all).

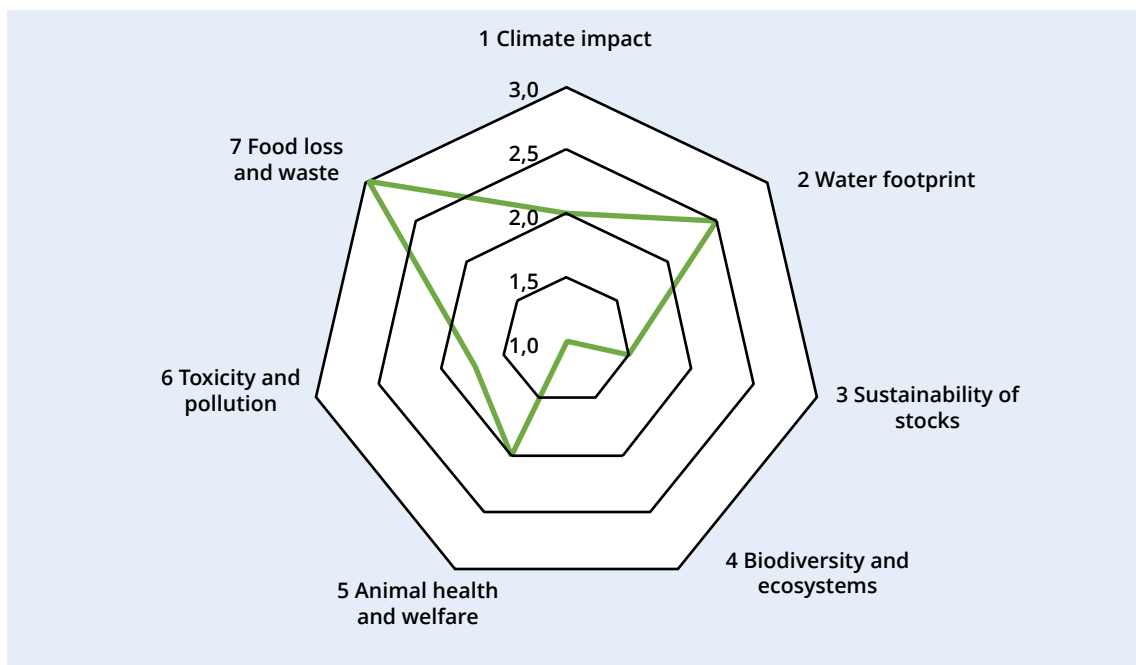
Figure 6. Social sustainability



Source: Blanc, PP., Drago, N., Hummel, L., Meke Soung, P. N., Nguyen, H. and Ujeneza, N. 2023. *The Large Shrimp Value Chain in Cameroon. Summary report.* FAO, Rome.

2.2.3 Environmental sustainability

Figure 7. Environmental sustainability



Source: Blanc, PP., Drago, N., Hummel, L., Meke Soung, P. N., Nguyen, H. and Ujeneza, N. 2023. *The Large Shrimp Value Chain in Cameroon. Summary report.* FAO, Rome.

Environmental sustainability is clearly the shrimp value chain's weak point, with a score of 42 percent. This figure is due to major concerns regarding the sustainability of fish stocks, biodiversity

and ecosystems, animal health and welfare, toxicity and pollution. Figure 7 provides an overview of the large shrimp value chain’s environmental sustainability assessment. Ratings range from 1 (unsustainable) to 2 (concerning) and 3 (sustainable).

2.3 Resilience

Resilience is considered concerning with a score of 42 percent. It is of particular concern with regard to redundancy, i.e. the value chain’s excess capacity in the event of an impact. The pressure on stocks is so great that threatens the very existence of the value chain and its stakeholders. In addition, the export market’s highly concentrated nature sheds doubt on Cameroon’s ability to sustain itself in a highly competitive global market in the event that any one of its export companies should leave.

Table 6 and Table 7 summarize the value chain sustainability assessment.

Table 6. Large shrimp value chain sustainability scores

Economic Sustainability Score	60%
Social Sustainability Score	44%
Environmental Sustainability Score	42%
Resilience Score	42%
Average Sustainability Score	47%
Number of Hotspots (red)	22

Source: Blanc, PP., Drago, N., Hummel, L., Meke Soung, P. N., Nguyen, H. and Ujeneza, N. 2023. *The Large Shrimp Value Chain in Cameroon. Summary report.* FAO, Rome.

The sustainability map (Table 7) shows that the value chain’s overall sustainability performance is worrying, with an overall sustainability score of 47 percent.

Environmental and social performance weighs the most heavily on this overall score. The map shows 22 hotspots (red areas or areas of high concern).

Table 7. Large shrimp value chain sustainability scores

Economic sustainability	Social sustainability	Environmental sustainability
Net revenue	Distribution of salaries and employment	Electricity consumption
Net revenue trend	Distribution of added value	Fuel consumption
Benefits on sales	Poverty and vulnerability	Carbon footprint
Return on investment	Discrimination	Clean and renewable energy use
Number of equivalent to full-time jobs	Women’s economic participation	Water and ice consumption
Number of full-time jobs	Gender-based division of labour	Water pollution and sewage treatment

(cont.)

Economic sustainability	Social sustainability	Environmental sustainability
Number of salaried employees	Gender-based access to productive resources	State of stocks and dynamics
Number of independent jobs/jobs in family businesses	Women's decision-making and leadership	Pressure on fishing
Average salary of employed workers	Food availability	Impact on associated species
Average salary of workers employed in family business	Access to food	State of vulnerable ecosystems
Total net salaries	Food use (nutrition)	State of threatened or protected species
Direct added value to the value chain	Food supply stability	Implementation of biosecurity measures
Indirect added value to the value chain	Respect for labour rights	Appropriate animal slaughter and handling
Total added value	Child and forced labour	Responsible use of chemical products
Contribution to the trade balance	Job security and safety at work	Air pollution
Integration rate	Attractiveness of employment	Pollution from inorganic solid waste
Impact on public finances	Collective action	Pollution from organic solid waste
Contribution to investment	Transaction coordination	Food loss
Nominal protection coefficient	Social cohesion	Food waste
Cost ratio of interior resources	Cultural traditions	
Consumer surplus	Policy, regulations and standards	
Food safety	Access to financing	
Consumer assessment	Access to natural resources	
Consumer preference	Access to information	
Price vs. substitutes		
Resilience		
Redundancy	Diversity	Connectivity
Collaboration	Learning and adaptation	Participation and inclusion

Source: Blanc, PP., Drago, N., Hummel, L., Meke Soung, P. N., Nguyen, H. and Ujeneza, N. 2023. *The Large Shrimp Value Chain in Cameroon. Summary report*. FAO, Rome.

■ Not worrying	■ Worrying	■ Very worrying	 Not calculated
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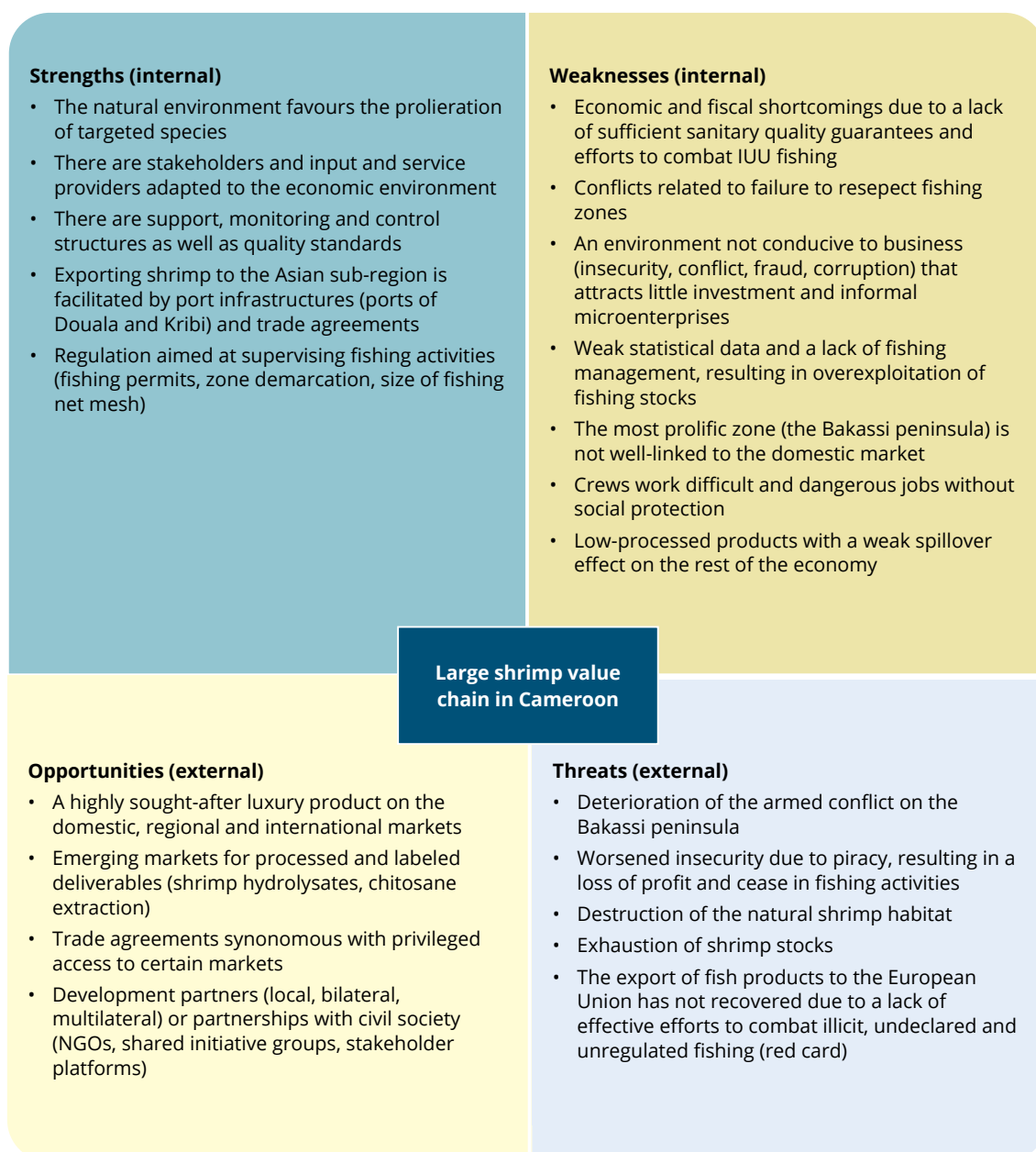


3. Upgrading strategy

3.1 Strengths, weaknesses, opportunities and threats assessment

Figure 8 presents the Cameroonian large shrimp value chain’s main strengths, weaknesses, opportunities and threats.

Figure 8. SWOT analysis



Source: Blanc, PP., Drago, N., Hummel, L., Meke Soung, P. N., Nguyen, H. and Ujeneza, N. 2023. *The Large Shrimp Value Chain in Cameroon. Summary report*. FAO, Rome.

The main strategic options emerging from the analysis revolve around the following opportunities and threats:

- i. halt the depletion of shrimp stocks (**threat**) through better monitoring of the state of the resource and fishing control (**weakness**) and effective enforcement of existing legislation (**strength**);
- ii. improving health quality (**weakness**) and effectively combating IUU fishing (**weakness**) in order to access the most lucrative markets (**opportunity**);
- iii. support Cameroon's positioning on the global large shrimp market by developing a labelled product (**opportunity**) to reward the efforts made in terms of sustainable fishing (**weakness**);
- iv. support added value initiatives and the emergence of a shrimp processing industry (**opportunity**) and use existing marketing channels (**strength**) to position itself in innovative markets (**opportunity**).

3.2 Vision, core strategy and theory of change

A shared vision was developed and agreed on by stakeholders during the validation and action planning workshops: **“Improve the value chain production and competitiveness to promote stakeholders’ well-being and sustainable and controlled fishing”**.

To achieve this vision by 2032, the following specific and measurable targets have been set:

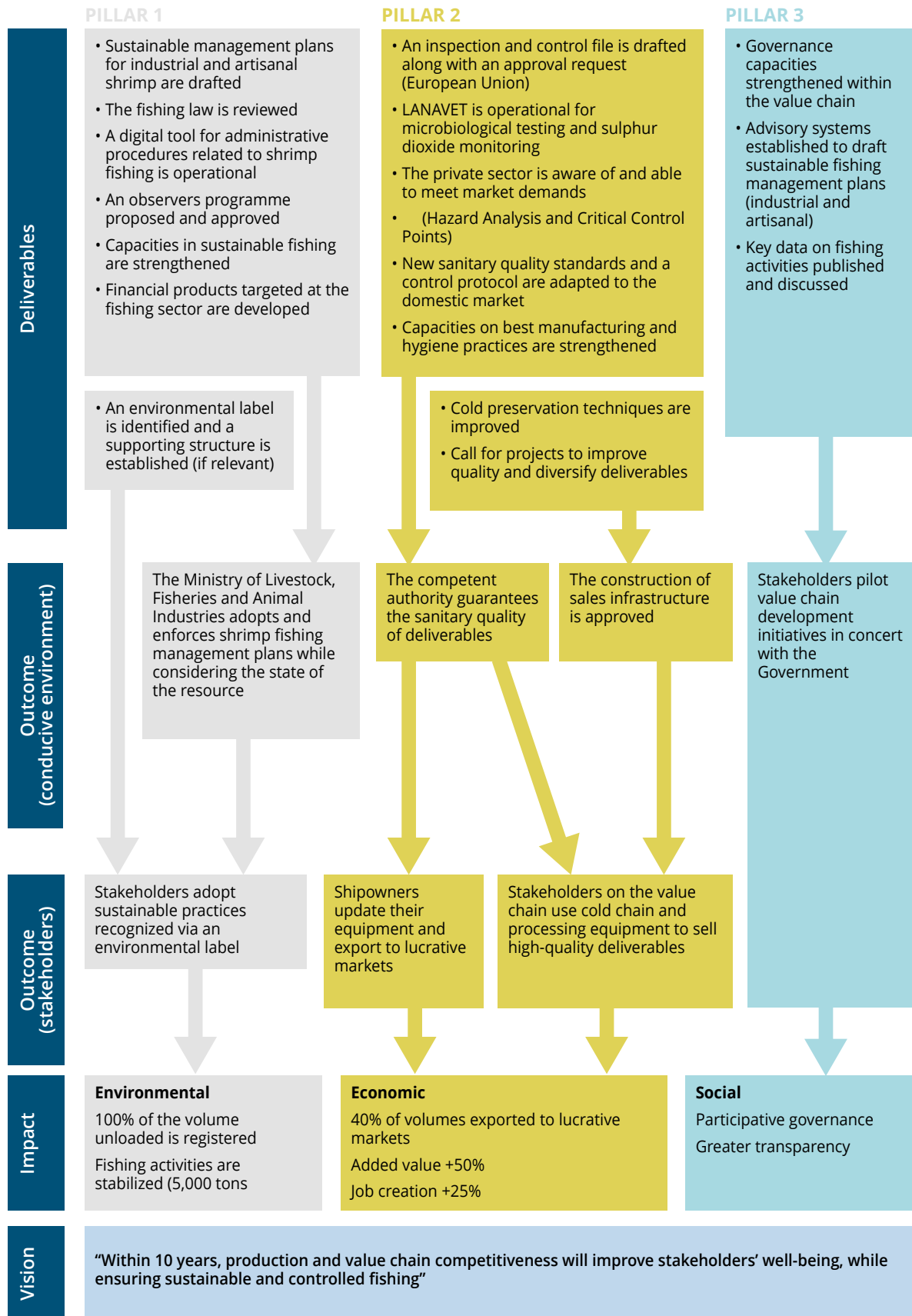
- maintain fishing at a stable level (around 5 000 tonnes of shrimp caught per year);
- 100 percent of landings recorded in national statistics;
- 40 percent of catches exported annually to new international markets (European Union, United States of America, Canada, Japan, etc.), 10 percent of catches exported to Asian markets and 50 percent of catches for the domestic and regional markets.

This vision is in line with stakeholders’ desire to work to improve the value chain and derive socio-economic benefits while conserving fisheries resources. The vision takes into account the increase in the quantities of shrimp formally sold on the market, but also recognizes the need not to catch any more shrimp, given that the resource already appears close to overexploitation. Growth will therefore need to come from a better monitoring system that will limit the loss of revenue previously caused by IUU fishing, unreported catches, transshipments at sea and informal exports. To achieve this ambition by 2032 and contribute to development objectives, the value chain upgrade strategy is based on three main strategic pillars:

- pillar 1 - Sustainable fishing;
- pillar 2 - Improving health quality and access to lucrative markets;
- pillar 3 - Participatory governance and increased transparency.

These pillars are complementary and interdependent. Indeed, stakeholders are more likely to comply with increased control (pillar 1) if they are offset by increased income (pillar 2) and the opportunity to participate in the development of decisions that impact them (pillar 3). Conversely, increasing the attractiveness of the value chain (pillars 2 and 3) without worrying about the preservation of stocks and associated ecosystems (pillar 1) would directly jeopardize the sustainability of the value chain and any wealth created. How these strategic axes will contribute to achieving this vision by 2023 is explained in the theory of change (Figure 9).

Figure 9. Analysis matrix of strengths, weaknesses, opportunities and threats on the value chain



Source: Blanc, PP., Drago, N., Hummel, L., Meke Soun, P. N., Nguyen, H. and Ujeneza, N. 2023. *The Large Shrimp Value Chain in Cameroon. Summary report.* FAO, Rome.

3.3 Upgrading strategy

This section outlines proposed improvements to business models, input and service delivery, and governance to achieve the vision by 2032.

3.3.1 Improved business models

Improved scenarios and business models for industrial fishing companies

Expected profit estimates are based on the baseline situation observed in 2021, when 50 trawlers and seven shrimpers caught a total of 4 212 tonnes of shrimp, and 380 small-scale fishing crews caught about 1 077 tonnes. Given that current pressure already tends toward overexploiting fishing resources, stakeholders will only be able to increase value and profits by changing their business plan, rather than increasing the quantities of shrimp caught.

Current markets and scenarios involving target markets

Table 8. Current and target markets - industrial fishing

	Current performance (2021)		Medium-term objectives (2026)		Long-term objectives (2032)	
	Quantity sold (tonnes)	Total market share	Quantity sold (tonnes)	Total market share	Quantity sold (tonnes)	Total market share
Total	4 212	100%	4 212	100%	4 212	100%
Domestic market	3 818	91%	2 948	70%	1 685	40%
Regional market	-	0%	421	10%	421	10%
Asian market	291	7%	421	10%	421	10%
Lucrative market	-	0%	421	10%	1,685	40%
Losses and self-consumption	103	2%	-	-	-	-

Source: Blanc, PP., Drago, N., Hummel, L., Meke Soung, P. N., Nguyen, H. and Ujeneza, N. 2023. *The Large Shrimp Value Chain in Cameroon. Summary report.* FAO, Rome.

Currently, industrial fishing companies sell 91 percent of their catch on the local market (3 818 tonnes) and export 7 percent to Asian countries (291 tonnes) (Table 8). Losses and self-consumption are estimated at 2 percent. These companies do not have access to the European, American and Japanese markets, which are considered very lucrative.

Access to the most profitable international markets will depend on industrial fishing companies. The objective is to boost exports to the European Union and export 10 percent of industrial fishing (421 tonnes) in the medium term (2026) and 40 percent (about 1 685 tonnes) to the most lucrative markets by 2032.

In addition to penetrating the most lucrative markets, this model assumes that industrial fishing companies will increase the quantities sold on the Asian market from 291 tonnes (2021) to 421 tonnes (2026 and 2032), an increase of 82 percent. According to the model, the 590 tonnes of shrimp exported informally will be declared and, eventually, Cameroon will formally export shrimp to its neighbouring countries, up to 421 tonnes per year by 2026.

As the quantities of shrimp caught annually are expected to remain constant, the increase in shrimp exports will be accompanied by a decrease in the volume sold on the domestic market. Of the 3 818 tonnes from industrial fishing sold on the local market in 2021, this model predicts that industrial fishing companies will sell only 2 948 tonnes on the domestic market in 2026, a figure expected to drop to 1 685 tonnes in 2032, a decrease of 23 percent and 56 percent respectively for the two deadlines.

Pricing scenarios

Pending a detailed analysis of market opportunities and competitiveness of Cameroonian shrimp, the assumption is that European, American and Japanese markets offer the best market options for trading large wild shrimp from Cameroonian fisheries. For example, whole wild giant tiger prawns retail between 25 USD and 70 USD/kg (Comptoir des Mers, 2015) on the French market.

Table 9. Pricing scenarios

	Unit price (USD/kg)	
	2022	2026
Average price of shrimp (local market)	8.4	10.5
Average price of shrimp (regional market)	13.8	17.2
Average price of shrimp (Asia)	8.4	10.5
Average price of shrimp (lucrative markets)	23.4	29.3
Weighted average price of all sales	8.4	12.4
Fuel cost	0.9	1.2

Source: Blanc, PP., Drago, N., Hummel, L., Meke Soung, P. N., Nguyen, H. and Ujeneza, N. 2023. *The Large Shrimp Value Chain in Cameroon. Summary report*. FAO, Rome.

The assumption is that prices will increase annually by 5.73 percent (World Bank, 2021) and that in 2026, shrimp will be sold for an average of 10.5 USD/kg on the local market, 17.2 USD/kg on the regional market, 10.5 USD/kg for export to Asia and USD 29.3/kg on lucrative markets.⁵

Revenue scenarios

As a result, improved business models will allow shrimp to be sold at higher prices, while catching the same quantities as today in 2026 and 2032 (4 212 tonnes). A typical industrial fishing company will see sales increase from 3.5 million USD per year (2021) to 5.2 million USD in 2026 (47 percent growth over five years, or an average of about 11 percent per year).

⁵ According to interviews with informal shrimp wholesalers/exporters to regional markets, shrimp prices in neighbouring countries are XAF 3 000 to XAF 5 000 higher than prices in Cameroon.

Table 10. Annual operating account for a typical industrial fishing company

	2021		2026		Change 2021–2026
	(million USD)	Percentage of turnover	(million USD)	Percentage of turnover	
Turnover	3.53	100%	5.20	100%	47%
Expenses	2.08	59%	2.80	54%	
Raw materials	-	0%	-	0%	
Physical inputs	1.73	49%	2.30	45%	
Services	0.01	0.2%	0.01	0%	
Workforce	0.19	5%	0.20	5%	
Other expenses	0.15	4%	0.20	4%	
Upgrade	-	-	0.05	1%	
Gross revenue	1.45	41%	2.40	46%	
Tax on revenue	0.59	17%	0.90	17%	
Net revenue	0.86	24%	1.30	25%	51%

Source: Blanc, PP., Drago, N., Hummel, L., Meke Soung, P. N., Nguyen, H. and Ujeneza, N. 2023. *The Large Shrimp Value Chain in Cameroon. Summary report.* FAO, Rome.

A typical industrial fishing company will see an increase in profits, depending on the scenarios that take place, from USD 0.86 million in 2021 to USD 1.3 million in 2026, or an average annual growth rate of about 13 percent.

Improved scenarios and business models for industrial fishing companies

As mentioned earlier, 380 crews of Cameroonian small-scale fishers caught 1 077 tonnes of shrimp in 2021 (data from an FAO field survey conducted as part of the FISH4ACP project, 2021). With an estimated 11 percent of catches exported informally to neighbouring countries (about 120 tonnes per year), the local market therefore absorbs 89 percent artisanal fishers' catches, or about 956 tonnes per year.

Table 11. Current and target markets - industrial fishing

	Current performance (2021)		Medium-term objectives (2026)		Long-term objectives (2032)	
	Quantities of shrimp sold (tonnes)	Percentage	Quantities of shrimp sold (tonnes)	Percentage	Quantities of shrimp sold (tonnes)	Percentage
Total	1,077	100%	1 077	100%	1 077	100%
Domestic market	956	89%	915	85%	915	85%
Regional market	120	11%	162	15%	162	15%
Asian market	-	0%	-	0%	-	0%
Lucrative market	-	0%	-	0%	-	0%

Source: Blanc, PP., Drago, N., Hummel, L., Meke Soung, P. N., Nguyen, H. and Ujeneza, N. 2023. *The Large Shrimp Value Chain in Cameroon. Summary report.* FAO, Rome.

Support for artisanal fishers' institutional and managerial organization as well as their inclusion in the development of shrimp fishing in Cameroon will motivate them to declare all their catches and sell them on the domestic market. This will reduce the quantities sold on the informal market.

Thus, the model assumes that in the medium term (2026), 85 percent of catches from small-scale fisheries will be sold in Cameroon (i.e. 915 tonnes per year, i.e. a decrease of 4.3 percent compared to the baseline) and 15 percent will be formally exported to the countries of the subregion (i.e. 162 tonnes per year).

The proposed improvements will allow small-scale fishers to sell fresher shrimp directly to buyers with whom they will establish longer-term business relationships (processors, wholesalers/retailers), through better structuring and organization. These business relationships will allow small-scale fishers to obtain a higher price, from 6.2 USD/kg (2021) to 7.7 USD/kg in 2026, a price increase of almost 5 percent per year on average.

Thus, these improved business models will enable small-scale fishing crews to increase the value of their sales from 17 126 USD per year (2021) to 21 971 USD in 2026 (Table 12) (an increase of about 7 percent per year on average).

Table 12. Annual operating account for a typical artisanal fishing company

	2021		2026		Change 2021–2026
	(million USD)	Percentage of turnover	(million USD)	Percentage of turnover	
Turnover	17 126	100%	21 971	100%	28%
Expenses	14 209	83%	17 828	81%	
Raw materials	-	0%	-	0%	
Physical inputs	3 790	22%	4 809	22%	
Services	4 910	29%	6 136	28%	
Workforce	4 628	27%	5 784	26%	
Other expenses	880	5%	1 100	5%	
Upgrade	-	-	-	-	
Gross revenue	2 918	17%	4 143	19%	
Tax on revenue	-	0%	-	0%	
Net revenue	2 918	17%	4 143	19%	42%

Source: Blanc, P.P., Drago, N., Hummel, L., Meke Soung, P. N., Nguyen, H. and Ujeneza, N. 2023. *The Large Shrimp Value Chain in Cameroon. Summary report*. FAO, Rome.

Therefore, the net profits of an artisanal fishing crew will increase from 2 918 USD (2021) to 4 143 USD, an increase of 42 percent in five years, or an average annual growth of about 8 percent.

Summary of target markets: industrial and artisanal fisheries

Table 13. Current and target markets - industrial and artisanal fishing

	Current performance (2021)		Medium-term objectives (2026)		Long-term objectives (2032)	
	Quantities of shrimp sold (tonnes)	Percentage	Quantities of shrimp sold (tonnes)	Percentage	Quantities of shrimp sold (tonnes)	Percentage
Total	5 288	100%	5 288	100%	5 288	100%
Domestic market	4 774	90%	3 904	74%	2 600	49%
Regional market	120	2%	541	10%	583	11%
Asian market	291	6%	421	8%	421	8%
Lucrative market	-	0%	421	8%	1 685	32%
Losses and self-consumption	106	2%	-	-	-	-

Source: Blanc, PP., Drago, N., Hummel, L., Meke Soung, P. N., Nguyen, H. and Ujeneza, N. 2023. *The Large Shrimp Value Chain in Cameroon. Summary report*. FAO, Rome.

In 2032, 32 percent of Cameroon's annual shrimp catches will be exported to the European Union and other highly lucrative markets (1 685 tonnes), 8 percent to Asia (421 tonnes), 11 percent to the countries of the sub region (583 tonnes) and 49 percent will be sold on the domestic market (2 600 tonnes) (see Table 13).

To achieve this, Cameroon is called upon to implement an improved governance model, based on monitoring, control and surveillance of fishing, as well as support for health reforms.

3.3.2 Improved inputs and service providers

Guarantee sanitary quality in line with export market requirements

Strengthening the system for health management, monitoring and control will improve access to the most lucrative global markets. This will be a selling point for importers and consumers, provided they are given the necessary guarantees. The European Union requirement levels are the most stringent and the targeted standard in order to access other desirable and lucrative markets (e.g. Canada, the United States of America, Japan). This involves action at the level of the competent authority, the analytical laboratory and the private sector.

- **Competent authority:** the aim is to identify the competent service(s) within MINEPIA (Directorate of Veterinary Services and Fisheries Products Control Office), to adapt their mission and operation (training of inspectors, review of regulatory texts, controls and export

health certificates) so that they can guarantee the sanitary quality of fishery products in line with the European Union requirements. Technical support will be provided within the framework of the FISH4ACP project to draft the inspection file, carry out the necessary controls, disseminate export standards within the private sector and finally submit the final European approval.

- **Analysis laboratory:** the LANAVET laboratory must be capable of supervising microbiological, chemical and heavy metal residue analyses in line with the European Union standards. This involves acquiring additional equipment (although outsourcing heavy metal residue analysis is more realistic), recruiting and training staff, and implementing a quality approach to obtain ISO 17025 certification.⁶ Beyond these actions, defining a viable long-term economic model is essential to ensuring proper functioning of the laboratory beyond the duration of the FISH4ACP project.
- **Private sector:** this effort mainly entails implementing a traceability system, with the necessary records and self-checks, as well as the HACCP protocols (Hazard Analysis and Critical Control Points). Industrial fishing companies will have to improve their vessels and shore-based facilities to meet the standard. An upgrade for export diagnosis will identify the necessary steps and assess the costs and benefits of exporting to the targeted markets.

Developing cold chain services and processed products for the local and regional market

Establishing processing units will contribute to adding value to products that do not meet quality standards for international markets. Initially, a complementary study will be carried out under the FISH4ACP project to identify existing market opportunities for processed products, for example: extraction of chitosan from shrimp shells, shrimp hydrolysates and dried or cooked shrimp that has been shelled and packaged for sale in supermarkets.

Once market opportunities are clearly established, a call for projects will be launched under the FISH4ACP project to set up processing units. Financial institutions will be closely involved in the process and will play a role in financing the winning projects (e.g. the International Bank for Savings and Credit and its business incubator). Thus, this call for projects will contribute to strengthening value chain stakeholders' entrepreneurial capacities, improving access to finance and equipment and promoting value chain activities, including in innovative sectors.

Cold chain services should also be improved through the optimization of MIDEPECAM units' production capacities. This involves replacing MIDEPECAM's ice layers to produce ice flakes, which have an extended lifespan. The Idenau plant is a priority in order to meet the needs of artisanal fishers on the Bakassi peninsula. It is expected that the quantities of ice sold will increase due to its superior quality, as long as the price is kept constant (\$0.3/50 kg bag). This will result in an increased return on investment for MIDEPECAM and encourage it to replicate this type of plant in other areas of intervention.

Facilitate access to fishing gear that meets standards

Currently Cameroon does not have any fishing net manufacturing units. If the import tax on nets represents an additional cost, this might also be seen as an opportunity to develop

⁶ According to the International Organization for Standardization (2017), ISO 17025 is intended for all types of laboratories that perform testing, calibration or sampling. This standard establishes the general requirements of competence, impartiality and consistency of these organizations' activities, allowing them to demonstrate their competence and ability to produce valid results throughout the world.

net production and create local jobs. Ultimately, this will increase the availability of nets to commercially available standards and thus reduce their cost, which will increase the likelihood that fishers will use compliant nets. This activity may be developed by MIDEPECAM, by the private sector or via a public-private partnership. At the same time, increased control measures must be put in place to limit the import, marketing and use of non-compliant nets. These measures are part of the more general framework of legislation and measures for monitoring, control and surveillance of fishing activities (section 3.3.3).

Develop ongoing training opportunities

Different training needs were identified during field surveys and validation and planning workshops. These needs focus on sustainable fishing and processing practices, good manufacturing and hygiene practices, and capacity building at the level of collective organizations.

Rather than funding one-off training sessions, the FISH4ACP project will support actors and stakeholders in the large shrimp value chain in developing ongoing training opportunities, which will benefit the fisheries products sector more broadly. These include:

- identify existing training opportunities within the bodies under the supervision of MINEPIA (MIDEPECAM and Caisse de Développement de la Pêche Artisanale Maritime) and the Ministry of Scientific Research and Innovation, universities (ISH, Limbe Nautical Arts and Fisheries Institute, Higher School of Economic and Social Sciences, etc.) and the private sector (GIC Bellomar, International Bank for Savings and Finance);
- adapt this offer to the needs identified within the large shrimp value chain;
- establish a viable business model, either by levying part of the duties and taxes collected from the large shrimp value chain (e.g. from sanitary and veterinary inspections) or by identifying training that could be subject to fee-based services.

Part of this process will involve evaluating trainings.

3.3.3 A more conducive environment

Developing marketing infrastructure

Although the approved strategy is essentially focused on increasing exports and large shrimp do not contribute directly to the country's food security, three priority areas have been identified to optimize the quality of large shrimp, as well as fishery products in general that are sold on the domestic market:

- **the construction of a landing stage and fish market in Idenau** to further connect this area to major urban markets while improving product handling conditions;
- **the redevelopment of the Mfoundi** market in Yaoundé in order to optimize market access, facilitate transactions and allow hygienic processing of fishery products;
- **the development of a fish trading hall at the autonomous port of Douala**, in order to allow hygienic processing of fish products.

The Government's interest, the feasibility of these projects and potential partners and donors must nevertheless be deepened and confirmed.

Define a policy framework for concerted resource management

Ensuring sustainable fishing by 2032 aims to contain the current level of shrimp stocks exploitation, thereby stemming their risk of depletion. This requires moving from a policy of uncontrolled exploitation of the resource to a real resource management policy, which is concerted between the various actors and stakeholders and based on reliable data. Increased monitoring and control of fishing activities will not only ensure resource sustainability but also incorporate the added value generated, replacing the current shortfalls caused by high rates of IUU fishing.

Implementing a policy of concerted shrimp resource management involves three levels of action:

- establishing sustainable management plans for shrimp fisheries;
- producing, monitoring and analysis of reliable data to provide information on fishing activities and the level of pressure on stocks;
- establishing multi-stakeholder consultation fora for the development of management plans and data monitoring and analysis (section 3.3.4).

Establishing sustainable management plans for shrimp fisheries;

The objective of these plans is to ensure the sustainability of the resource and shrimp fishing activities. All proposed measures must be included in the renewed legal framework.

Measures common to industrial and artisanal fishing

i. Demarcating fishing sub-zones at the scale of industrial and artisanal fishing zones

The sub-zoning (Figure 10) will be brought to the attention of public and private stakeholders through the production and dissemination of a map. This measure meets three needs:

- calibrate the methods for implementing various measures contained in the sustainable management plans for industrial and artisanal shrimp fishing, based on the state of stocks and ecosystems in each sub-area;
- facilitate monitoring, control and surveillance of activities at sea;
- ensure the traceability of consignments for export to international markets, including the European Union.

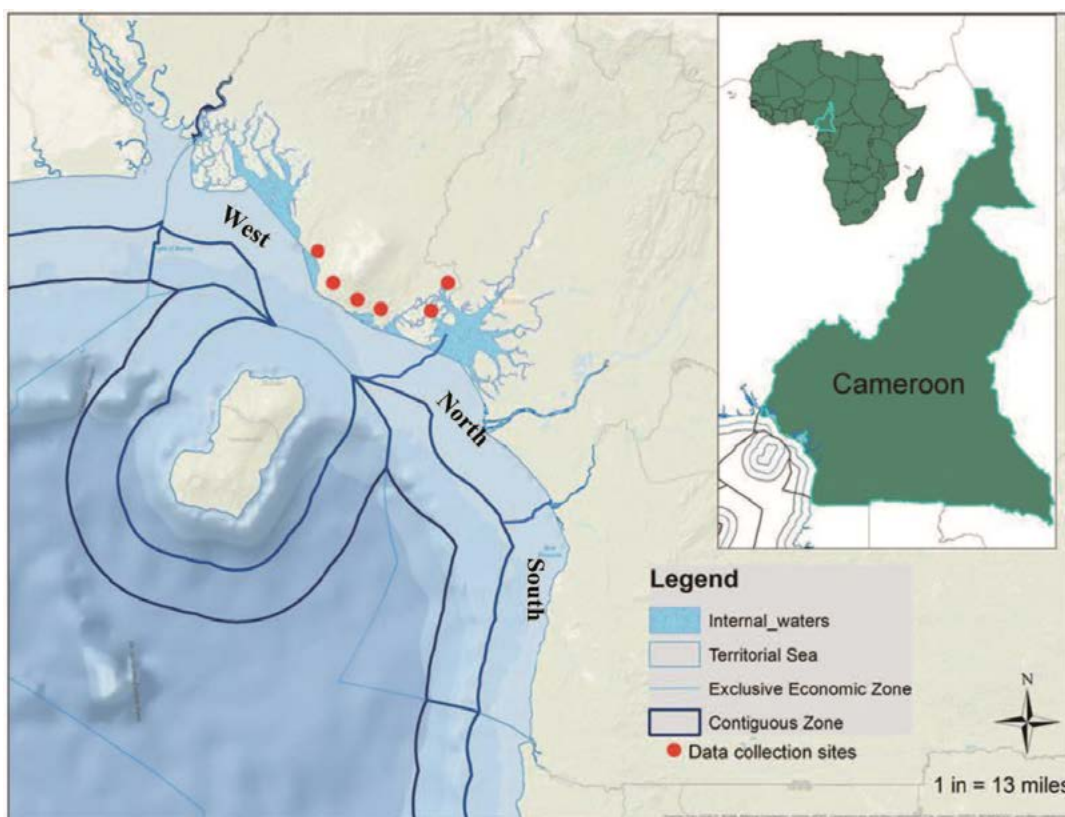
ii. Annual definition of detailed rules for implementing measures, based on available data on the state of stocks and fishing activities

The number of licenses and permits to be allocated, the maximum catch quotas for shrimp, the duration and frequency of biological rest periods are all measures that may be included in sustainable management plans. Rules for implementing these plans will be defined annually, based on the information collected on the state of stocks and fishing activities.

iii. Enhanced sanctions and supervision

The aim is to review the sanctions established in Law No. 94/01 of 20 January 1994 on the forest, wildlife and fisheries regime (Republic of Cameroon, 1994), to ensure that these penalties are truly dissuasive in the event of non-compliance. Monitoring capacity should also be strengthened to effectively enforce these sanctions and combat IUU fishing. The establishment of an audit

Figure 10. Proposed sub-zoning of fishing activities



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system to verify that the conditions for granting and renewing fishing licences and permits will be supported under the FISH4ACP project.

iv. Payment of the health and veterinary inspection fees unrelated to quantities declared

Currently, the payment of the sanitary and veterinary inspection fees is determined based on the quantities declared, which encourages fishers to under-report how much they have caught. Therefore, the proposal involves identifying a lump sum to be paid to obtain a fishing permit and license, while generating at least an equivalent amount of revenue for the State.

Measures specific to industrial fishing

The industrial shrimp fisheries management plan 2014–2019 carried out within the framework of the EAF (Ecosystem Approach to Fisheries)-Nansen project will be updated and completed via the following measures:

i. Removal of the distinction between shrimp fishing and fish fishing licenses in favour of a multi-purpose license

Distinguishing between shrimp fishing licenses and fish fishing licenses leads to a bias in the monitoring of fishing activities. However, vessels fishing with licenses for fish also catch significant quantities of shrimp in their by-catch. Any shrimp fishing monitoring measures must therefore include vessels operating under both types of licenses. Therefore, the proposal includes eliminating the distinction between shrimp fishing licenses and those for fishing fish, and to replace both with a multipurpose license. Specific quotas will be applied to define

maximum quantities of shrimp to be caught. The use of trawls with a mesh size suitable for shrimp fishing will be subject to authorization by MINEPIA. The number of authorizations issued will depend on the shrimp catch quotas defined.

ii. Extending the validity period of multipurpose licences and strengthening the conditions for granting and renewing them.

This measure encourages both public and private stakeholders to preserve shrimp and fisheries resources in the long term. For example, the validity period of multipurpose licences will be extended to 20 years in order to incorporate the concept of sustainable management. Granting and maintenance of fishing licences will be subject to compliance with a number of criteria, namely:

- the type of fishing gear used (mesh size pursuant to legislation);
- the use of by-catch exclusion and reduction schemes pursuant to international law;
- respect for clearly established fishing zones;
- compliance with biological rest periods;
- boarding observers in accordance with the law;
- the effective use of AIS (Automatic Identification System) and VMS (Vessel Monitoring System) technologies to facilitate the live tracking of vessels;
- keeping a logbook and declaration of catches via a digitized tool set up as part of the FISH4ACP project (including data on target, by-catch and discarded catches);
- Creating added value: in order to increase Cameroon's foreign exchange inflows, shipowners will have to abide by a minimum threshold of added value. This threshold may be XAF 900 million for shrimp fishing only, as established through the functional analysis for the year 2021 and will have to be approved by the private sector. Each year, shipowners will provide certified operating accounts to prove that they meet performance criteria.

Conducting control audits will make it possible to verify industrial fishing companies' compliance with these conditions. In the event of non-compliance with the conditions or in the event of a reduction in fishing activities, licenses will be resold or withdrawn.

Measures specific to artisanal fishing

Before defining the content of the artisanal fisheries management plan, a more precise assessment of small-scale fisheries and their impact on the dynamics of shrimp stocks is essential. The priority is therefore to identify and encourage small-scale fishers to obtain fishing licences. Implementing a digital tool for carrying out administrative procedures (obtaining a fishing license and registering vessels), training in the use of the tool and conducting a registration campaign for artisanal fishers, as well as conducting a framework survey on small-scale fisheries are all activities that will contribute to this goal within the framework of the FISH4ACP project. Observers will also be trained and deployed to the main landing sites for artisanal fisheries, in partnership with MINEPIA.

Given that AIS and VMS technologies are difficult to apply to artisanal fisheries, it is necessary to reflect on monitoring measures adapted to their specificities. In particular, research will focus on participatory monitoring mechanisms that involve fishing communities. Synergies will be established with stakeholders involved in the implementation of such mechanisms, such as the African Marine Mammal Conservation Organization (AMMCO) and the Tube Awu association, which intervene at the level of the Kribi-Campo protected marine area. This will take the form of an exchange of experience with the participatory monitoring committees

set up in inland fisheries, in order to identify to what extent these could be applied to sea fisheries. A webinar will be organized on participatory monitoring measures adapted to small-scale fisheries and to disseminate knowledge on this subject and identify best practices.

With regard to monitoring measures specific to artisanal fisheries, exchanges of experience will be facilitated in order to draw inspiration from existing initiatives on water bodies through the establishment of participatory monitoring committees and a study on the tracing of artisanal fishing vessels.

Producing, monitoring and analysis of reliable data to provide information on fishing activities and the level of pressure on stocks;

Implementing a **digitalized tool for registering fishers** will streamline mandatory administrative procedures while generating useful information for monitoring fishing activities. Fishers will have to submit their applications on this portal for registration (Ministry of Transport), fishing licenses and permits (MINEPIA) and to declare the quantities caught (MINEPIA). Industrial fishers will also have to submit their accounts certified through this channel in order to follow the criterion on the granting of added value. This digitized tool can also be used to inform fishers about relevant news and mandatory rules that impact them (map of authorized fishing areas, sustainable management plans, implementing regulations, news, etc.).

Technical support will also be provided to MINEPIA for the effective implementation of an **observer programme** to collect data onboard vessels (industrial fishing). Although the law already requires industrial fishing companies to take observers on board at their own expense and MINEPIA is responsible for the implementation of this programme, in practice, it is not operational. For artisanal fisheries, MINEPIA will receive support to strengthen the monitoring and analysis of quantities at landing sites.

Each year, a **monitoring and analysis unit** will be responsible for compiling and analysing the data generated by this digitized tool and the observer programme. This data will be complemented by the results of the framework survey on artisanal fisheries, information from AIS/VMS systems, as well as intervention reports at sea from the Rapid Intervention Brigade (Ministry of Defence), the Control and Surveillance Brigade (MINEPIA) and the Merchant Navy. This unit will be composed of agents from MINEPIA, ISH and civil society organizations in order to benefit from their complementary expertise.

Gradually, all of this data will make it possible to better understand the state of stocks and the intensity of fishing activities, in order to determine the number of licenses and permits to be granted in each area, as well as the quotas and rest periods to be applied.

In order to achieve the intended impact of increasing transparency, part of the data collected as well as the analyses carried out will be published by the monitoring and analysis unit on an online portal accessible to the general public. This portal will be linked to the digitized fishing activities monitoring tool, which will have a twofold purpose of collecting data and disseminating information adapted to different users (fishers, public officials, and the general public). The published data shall include, as a minimum: the number of registrations issued by the Ministry of Transport and the names of the vessels in question to facilitate monitoring of fishing activities; the number of fishing licenses and permits issued for each sub-zone; the total quantities fished from industrial and artisanal fisheries.

This transparency effort will help ensure concerted management of the resource and provide additional guarantees in the fight against IUU fishing.

3.3.4 Improved governance

Establish consultation fora for the management plans development and implementation and data monitoring and analysis

An initial consultation will take place as part of the development and implementation of sustainable management plans for shrimp fishing. These measures and their implementation will be negotiated each year within public-private advisory systems specific to industrial and artisanal shrimp fishing. In addition to the Government and representatives of artisanal and industrial fisheries, civil society organizations, academic institutions and research organizations will be closely involved in negotiations to ensure sustainable fishing. The discussions will be based on the annual analysis reports provided and published by the monitoring and analysis unit. This will allow a negotiated balance between increased fishing control and changes deemed acceptable by the private sector. For example, the minimum criterion of added value, the amount of public taxes and fees (licenses and permits, sanitary and veterinary inspection taxes, etc.), and the duration and frequency of biological rest periods may be negotiated in this context.

The payment of the health and veterinary inspection fee can take the form of a lump sum which would be coupled with the payment of the license and the fishing permit. Regardless of the taxation method selected, it would be particularly strategic to involve stakeholders in that process in order to ensure accurate monitoring of fishing activities. Conversely, better monitoring of fishing activities will make it possible to distribute taxes and duties more equitably between private stakeholders and the State.

The licensing system set up in Madagascar through Decree No. 2000-415 (Republic of Madagascar, 2020) offers an interesting example, which can be studied more deeply during an exchange of experience organized within the framework of the FISH4ACP project. Following this example, the amount of the industrial fishing licenses could be defined annually at the level of each sub-zone. MINEPIA would define a minimum threshold enabling it to generate the level of revenue sought. For each zone, industrial fishers would then offer an amount deemed acceptable for the area they are interested in. The most attractive offer would be retained. The zones would be allocated, per campaign, to a single company (or a group of companies submitting a joint bid). This individual allocation would facilitate control (by the Government but also by the operating company) and monitoring.

A second, broader level of consultation will take place following publication of the monitoring and analysis unit's annual reports on the state of the resource and fishing activities. These publications will give rise to a multi-stakeholder dialogue within the framework of the FISH4ACP project allowing stakeholders from the value chain but also more broadly from civil society to discuss these results alongside the Government.

Establish a platform bringing together large shrimp value chain stakeholders

This platform will bring together representatives of the main value chain stakeholders identified during the analysis phase. It will have a legal status allowing it to be considered as a fully-fledged stakeholder by the Government, which will be a first step towards structuring value chain stakeholders at the national level.

The platform will be a key player in concerted resource management policy. It will make it possible to identify and support artisanal and industrial shrimp fishing representatives to the Government in the development and implementation of sustainable management plans. It will

also be responsible for organizing the multi-stakeholder dialogue open to the general public around the monitoring of the state of the resource and the fishing effort. The platform will also promote the interconnection and organization of the different links in the value chain as part of establishing processing units.



4. Value chain action and investment plan

The total cost of the activities to be implemented by all actors and stakeholders to achieve the 2032 vision is approximately 20 million USD. This estimate will need to be refined as activities are planned and partners are consulted. Table 14 and Table 15 provide an overview of the investment plan broken down by type of cost and funding source.

Table 14. Investment plan (breakdown by type of cost)

	USD	%
Studies, legislation	1 853 800	9%
Facilitation, monitoring, technical assistance	491 000	2%
Infrastructure, service	17 315 000	87%
Training	145 000	1%
Communication	15 000	0%
Equipment, material, inputs	50 000	0%
	19 889 800	100%

Note: cette répartition ne tient pas compte des activités 1.2.1, 1.2.2, 1.4.7 et 1.4.8 pour lesquelles le montant reste à définir.
Source: auteurs.

Table 15. Investment plan (breakdown by funding source)

	USD	%
FISH4ACP	990 000	5%
Government	410 000	2%
Private secto	150 000	1%
Donors	17 170 000	86%
Mixed (FISH4ACP, Government, donors, private sector)	1 169 800	6%
	19 889 800	100%

Note: cette répartition ne tient pas compte des activités 1.2.1, 1.2.2, 1.4.7 et 1.4.8 pour lesquelles le montant reste à définir.
Source: auteurs.

Table 16 presents all the activities to be carried out by all value chain stakeholders in order to achieve the 2032 vision. For each of the activities, a responsible institution, an indicative cost and a timetable have been identified. Activities planned to begin 2022 are indicated in bold and underlined.

The October 2022 launch ceremony for the upgrade strategy implementation will partially formalize the commitments of the various stakeholders responsible for the activities. Upstream, working meetings with MINEPIA as well as with the main stakeholders are necessary to validate and organize activities implementation, beginning in 2022.

Table 16. Value chain action and investment plan

N°	Products and activities	Responsibility	Type of cost	Estimated cost (USD)	Timeline
1.1	Sustainable management plans for industrial and artisanal shrimp fisheries drafted and submitted for approval			114 000	
1.1.1	<u>Drafting of a technical document including the updated management plan for industrial shrimp fishing and the development of an artisanal fisheries management plan</u>	FISH4ACP	Study/Legislation	96 000	2022-2023
1.1.2	Updating technical documents based on data generated and results of consultation processes	FISH4ACP-MINEPIA	Study/Legislation	18 000	2023-2025
1.2	Technical Contributions to the Fisheries Law Revision Project			TBD	
1.2.1	<u>Support for internal consultation workshops at MINEPIA to draft new fisheries legislation and support for external consultations with key stakeholders to review and approve draft fisheries legislation</u>	FAO GCP/ GLO/447/EC, AMMCO	Mediation, follow-up, advice	TBD	2022-2023
1.2.2	Support for MINEPIA/ Ministry of Transport consultation meetings to limit flags of convenience	FAO GCP/ GLO/447/EC, AMMCO	Mediation, follow-up, advice	TBD	2023
1.2.3	<u>Monitoring the Fisheries Act Review Process</u>	FISH4ACP	Mediation, follow-up, advice	20 000	2022-2025
1.3	Operational digital tool for carrying out administrative procedures related to shrimp fishing			100 000	
1.3.1	<u>Creation of a digitalized tool for monitoring and controlling artisanal and industrial fishing activities (online portal + application)</u>	FISH4ACP	Infrastructure/ service	60 000	2022
1.3.2	Awareness and training of trainers in use of the digital tool	AMMCO/ISH	Training	10 000	2023

(cont.)

N°	Products and activities	Responsibility	Type of cost	Estimated cost (USD)	Timeline
1.3.3	Support for the dissemination of knowledge and the use of the digital tool (awareness + registration campaigns)	AMMCO/ISH	Training	30 000	2023-2025
1.4	Proposed and approved observer scheme			1 684 800	
1.4.1	<u>Conduct of a framework survey on artisanal fisheries</u>	MINEPIA	Study/Legislation	380 000	2022
1.4.2	<u>Support for the conduct of the framework survey on artisanal fisheries</u>	FISH4ACP	Study/Legislation	100 000	2022
1.4.3	Implementation of an observer programme (industrial and artisanal fisheries)	MINEPIA	Study/Legislation	1 024 800	2023-2025
1.4.4	Support for the development of an observer programme	FISH4ACP	Study/Legislation	70 000	2023
1.4.5	Support for the compilation of annual reports on fishing activities and the state of the resource	FISH4ACP	Study/Legislation	60 000	2023-2025
1.4.6	Establishment of participatory monitoring committees	MINEPIA	Mediation, follow-up, advice	20 000	2024
1.4.7	Effective AIS/VMS systems (industrial fishing)	MINEPIA	Infrastructure/ service	TBD	2023-2025
1.4.8	Support for patrols at sea	FAO GCP/ GLO/447/EC, AMMCO	Infrastructure/ service	TBD	2023-2025
1.4.9	Seizure of non-compliant nets	MINEPIA	Infrastructure/ service	30 000	2023
1.5	Strengthened capacity for sustainable fishing practices and processing			115 000	
1.5.1	Training of stakeholders on responsible fishing and processing techniques	FISH4ACP	Training	35 000	2023-2025
1.5.2	Organisation of a webinar on "Monitoring small-scale fishing activities"	FISH4ACP	Study/Legislation	10 000	2023
1.5.3	Production and distribution of a map of authorized fishing areas	FISH4ACP	Infrastructure/ service	20 000	2023

(cont.)

N°	Products and activities	Responsibility	Type of cost	Estimated cost (USD)	Timeline
1.5.4	Support for the establishment of an audit system to monitor fishing activities' compliance with legislation	FISH4ACP	Infrastructure/ service	50 000	2023-2025
1.6	Development of financial products targeting the fisheries sector			50 000	
1.6.1	Develop fishing equipment (nets) based on materials and technologies available in Cameroon	Private sector	Equipment/ materials/inputs	50 000	2026
1.7	Environmental label identified and supporting structure established (if relevant)			120 000	
1.7.1	Comparative study of environmental labels	Shrimp platform	Study/Legislation	20 000	2025
1.7.2	Establishment of the supporting structure and launch of the environmental certification process (subject to proven interest following the comparative study)	Shrimp platform	Mediation, follow-up, advice	100 000	2025
2.1	Preparation of an inspection and control file and an approval request (European Union)			80 000	
2.1.1	Technical support for drafting the inspection file and field controls and export controls/approval	FISH4ACP	Mediation, follow-up, advice	20 000	2023
2.1.2	Technical support for the preparation of the European approval request for submission	FISH4ACP	Mediation, follow-up, advice	20 000	2024
2.1.3	Communication/ training with industrial stakeholders on export standards and controls	FISH4ACP	Mediation, follow-up, advice	30 000	2023
2.1.4	Inspector training	FISH4ACP	Training	10 000	2025
2.2	LANAVET is operational for microbiological testing and sulphur dioxide monitoring			30 000	

(cont.)

N°	Products and activities	Responsibility	Type of cost	Estimated cost (USD)	Timeline
2.2.1	Technical advice and support for the development of a sustainable economic model	FISH4ACP	Mediation, follow-up, advice	20 000	2023-2025
2.2.2	Conducting a technical audit	FISH4ACP	Study/Legislation	5 000	2025
2.2.3	Training of laboratory technicians	FISH4ACP	Training	5 000	2023-2025
2.3	The private sector is aware of and able to meet market requirements			40 000	
2.3.1	Upgrade for export diagnostics	FISH4ACP	Study/Legislation	20 000	2022
2.3.2	Technical support for the implementation of a traceability system, HACCP procedures and self-checks	FISH4ACP	Mediation, follow-up, advice	20 000	2023-2025
2.4	New sanitary quality standards and control protocol established for the national market			35 000	
2.4.1	Improved sanitary quality laws and standards for the domestic market	MINEPIA/MSP	Study/Legislation	10 000	2024
2.4.2	Training inspection agents.	MINEPIA/MSP	Mediation, follow-up, advice	20 000	2025-2031
2.4.3	Study of products available on the local market	MINEPIA	Infrastructure/ service	5 000	2025-2031
2.5	Strengthened capacity on good manufacturing and hygiene practices			30 000	
2.5.1	Training of trainers in good hygiene practices	FISH4ACP	Mediation, follow-up, advice	10 000	2023
2.5.2	Support for the dissemination of knowledge by trainers (organization of training, teaching materials, etc.)	FISH4ACP	Mediation, follow-up, advice	20 000	2024
2.6	Call for projects to improve quality and diversify products			105 000	
2.6.1	Market and competitiveness study - diversification of shrimp products	FISH4ACP	Study/Legislation	40 000	2023

(cont.)

N°	Products and activities	Responsibility	Type of cost	Estimated cost (USD)	Timeline
2.6.2	Drafting a call for projects and selecting winning projects	Private sector, financial institutions	Mediation, follow-up, advice	5 000	2023
2.6.3	Technical support to project leaders and members of the shrimp platform	FISH4ACP/GIZ/AFRACA	Mediation, follow-up, advice	30 000	2023
2.6.4	Technical support to project leaders and members of the shrimp platform	FISH4ACP/GIZ/AFRACA	Mediation, follow-up, advice	20 000	2023-2024
2.6.5	Support for communication and organization of an experience-sharing event on the winning projects	FISH4ACP	Communication	10 000	2025
2.7	Improving cold storage techniques			150 000	
2.7.1	Acquiring and commissioning an "office" ice production system in Idenau	GIZ/MINEPIA (MIDEPECAM)	Infrastructure/ service	150 000	2023
2.8	Priority marketing infrastructure programmes identified			17 000 000	
2.8.1	Landing stage and fish market in Idenau: feasibility study, impact study, mobilization of project funding, implementation and monitoring	MINEPIA/MSP	Infrastructure/ service	10 000 000	2023
2.8.2	Support for the cold chain and improvement of hygiene conditions - Mfoundi market in Yaoundé	MINEPIA/MSP	Infrastructure/ service	5 000 000	2023
2.8.3	Development of a fish trading hall at the autonomous port of Douala: feasibility study, impact study, mobilization of project funding, implementation and monitoring	MINEPIA/MSP	Infrastructure/ service	2 000 000	2023
3.1	Strengthened governance capacity within the value chain			135 000	
3.1.1	Operationalizing the shrimp platform	Shrimp platform	Mediation, follow-up, advice	45 000	2022-2025
3.1.2	Support for organizing an open house day within collective structures	FISH4ACP	Mediation, follow-up, advice	20 000	2023-2025

(cont.)

N°	Products and activities	Responsibility	Type of cost	Estimated cost (USD)	Timeline
3.1.3	<u>Training of governance focal points within collective organizations (representation of interests)</u>	FISH4ACP	Training	20 000	2022-2023
3.1.4	<u>Study trip to Senegal and remote exchange of experiences (Madagascar)</u>	FISH4ACP	Training	35 000	2022
3.1.5	<u>Monitoring and evaluation of upgrade activities implementation</u>	Shrimp platform	Mediation, follow-up, advice	15 000	2022-2025
3.2	Advisory systems established for the preparation of sustainable fisheries management plans (industrial and artisanal)			40 000	
3.2.1	<u>Public-private consultation to define the industrial shrimp fishing management plan</u>	FISH4ACP	Mediation, follow-up, advice	20 000	2022-2025
3.2.2	Public-private consultation to define the artisanal shrimp fishing management plan	FISH4ACP	Mediation, follow-up, advice	20 000	2023-2025
3.3	Key fishing data published and discussed			41 000	
3.3.1	Support for compiling annual reports on fishing activities and the state of the resource	FISH4ACP	Communication	5 000	2023
3.3.2	Organizing an annual meeting to discuss data on the state of the resource and shrimp fishing activities	ISH	Mediation, follow-up, advice	36 000	2023-2025
Total				> 19 889 800	

Source: Blanc, PP., Drago, N., Hummel, L., Meke Soung, P. N., Nguyen, H. and Ujeneza, N. 2023. *The Large Shrimp Value Chain in Cameroon. Summary report*. FAO, Rome.

Acronyms used: AMMCO (African Marine Mammal Conservation Organization); GIZ (German cooperation); Institute of Fisheries Sciences HACCP (Hazard Analysis and Critical Control Points); AIS (Automatic Identification System); MINEPIA (Ministry of Livestock, Fisheries and Animal Industries) MINTP (Ministry of Transport) VMS (Vessel Monitoring System); USD (US dollar)

Les activités à financer par		
<input type="checkbox"/> FISH4ACP	<input type="checkbox"/> Private sector	<input type="checkbox"/> Donors
<input type="checkbox"/> Government	<input type="checkbox"/> Mixed sources (e.g. FISH4ACP and the private sector)	Bold and underlined: Activities planned to start in 2022



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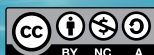
This report presents the results of the value chain analysis of the large shrimp value chain in Cameroon conducted from 2021-2022 by the value chain development programme FISH4ACP. This report contains a functional analysis of the value chain, assesses its sustainability and resilience, develops an upgrading strategy and an implementation plan to which FISH4ACP will contribute.

FISH4ACP is an initiative of the Organisation of African, Caribbean and Pacific States (OACPS) aimed at making fisheries and aquaculture value chains in twelve OACPS member countries more sustainable. It contributes to food and nutrition security, economic prosperity and job creation by ensuring the economic, social and environmental sustainability of fisheries and aquaculture in Africa, the Caribbean and the Pacific.

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