

FINAL REPORT  
ON  
THE PROJECT FOR  
IMPROVEMENT OF VALUE CHAIN FOR  
FISH PRODUCTS IN POINTE-NOIRE  
  
REPUBLIC OF CONGO

April 2019  
JAPAN INTERNATIONAL COOPERATION AGENCY

FISHERIES ENGINEERING CO.,LTD.



# Contents

Summary	
Location Map	
Photo	
List of Figures & Tables	
Abbreviations	

## **CHAPTER 1. SITUATION OF FISH PRODUCT SUPPLY AND DEMAND IN THE REPUBLIC OF CONGO .....1-1**

1-1 FISH CONSUMPTION IN THE REPUBLIC OF CONGO .....	1-1
1-1-1 Fish consumption in the Republic of Congo .....	1-1
1-1-2 Fish Consumption-Increasing Factors .....	1-2
1-2 FISH DEMAND FORECAST IN CONGO .....	1-3
1-3 STRUCTURE OF THE FISH PRODUCT MARKETS IN CONGO .....	1-4
1-3-1 Preference for Fish Products in Congo .....	1-4
1-3-2 Fish Products Appreciated by the Congolese Families .....	1-5
1-3-3 Consumer Preferences Relating to Freshwater Fish and Sea Fish .....	1-5
1-3-4 Pelagic and Demersal Fish Market Mechanism.....	1-6
1-4 IMPORTED FISH SPECIES .....	1-7
1-4-1 Volumes of Imported Fish and their Percentage in the National Consumption....	1-7
1-4-2 Imported Fish Domination in the Markets .....	1-8
1-5 PRICES OF FISHERY PRODUCTS .....	1-10
1-5-1 Prices of Fishery Products and Prices of Other Food Products .....	1-10
1-5-2 Differences Between the Consumer Prices of Fish Products in Brazzaville and Pointe-Noire .....	1-11
1-5-3 Seasonal Fluctuations of Fishery Product Consumption Prices.....	1-12

## **CHAPTER 2. VALUE CHAIN OF FISH PRODUCTS OF THE ARTISANAL FISHERIES IN POINTE-NOIRE .....2-1**

2-1 STATUS OF THE ARTISANAL FISHERIES IN POINTE-NOIRE .....	2-1
2-1-1 Fishery Industry in Pointe-Noire .....	2-1
2-1-2 Pelagic Fishing .....	2-1
2-1-3 Demersal Fishery .....	2-3
2-1-4 Processing by Smoking .....	2-4
2-1-5 Processing by Salt-Drying.....	2-5
2-1-6 Fish Trade .....	2-5

2-1-7 Overview of Public Markets .....	2-5
2-1-8 Retail Sale.....	2-6
2-1-9 Consumers.....	2-6
2-2 CURRENT STATE OF THE VALUE CHAIN OF ARTISANAL FISH PRODUCTS .....	2-6
2-2-1 Pelagic Fishing .....	2-6
2-2-2 Incomes of Pelagic Fishermen .....	2-8
2-2-3 Comparison with Similar Fishery in Other Countries.....	2-8
2-3 DEMERSAL FISHERY .....	2-9
2-3-1 Demersal Fishing Incomes .....	2-9
2-3-2 Incomes of Demersal Fishery Stakeholders .....	2-10
2-3-3 Comparison with Similar Fishery in Other Countries.....	2-10
2-3-4 Balance Sheet of the Smoke Processing .....	2-11
2-4 BALANCE SHEET OF THE PROCESSING BY SALT-DRYING .....	2-13
2-5 OPERATING BALANCE SHEET OF FISH TRADE .....	2-14
2-6 RETAIL SALE.....	2-16
2-6-1 Retail Prices and Gross Profit Rates .....	2-17
2-7 VALUE ADDED OF FRESH PELAGIC FISH.....	2-18
2-8 VALUE ADDED OF FRESH DEMERSAL FISH .....	2-19
2-9 VALUE ADDED OF SMOKED PRODUCTS .....	2-20
2-10 VALUE ADDED OF SALTED AND DRIED PRODUCTS .....	2-21
2-11 VALUE ADDED RATE OF THE ARTISANAL FISHERIES PRODUCTS AND AVERAGE TURNOVER OF VENDORS.....	2-21
2-12 ANNUAL INCOMES OF ARTISANAL FISHERIES STAKEHOLDERS AND POVERTY THRESHOLD .....	2-22

**CHAPTER 3. PILOT PROJECTS.....3-1**

3-1 SELECTION OF PILOT PROJECTS .....	3-1
3-2 FISH QUALITY IMPROVEMENT PLAN .....	3-2
3-2-1 Components of the Pilot Fish Quality Improvement Project.....	3-2
3-2-2 Fish Freshness Estimation Method.....	3-5
3-2-3 Pelagic Fishery .....	3-8
3-2-4 Demersal Fishery .....	3-13
3-3 IMPROVEMENT PLAN OF THE SALES PRACTICE IN THE PUBLIC MARKETS .....	3-17
3-3-1 Components of the Pilot Project for the Improvement of the Sales Practice in the Public Markets.....	3-17
3-3-2 Trial Manufacturing of Hygienic Stalls and Their Dissemination .....	3-18
3-3-3 Hygiene Control of Public Markets.....	3-23
3-3-4 Activities for the Establishment of Fresh Fish Vendors' Associations.....	3-25



3-4 PILOT PROJECT FOR THE IMPROVEMENT OF FISH PROCESSING PRACTICES.....	3-26
3-4-1 Components of the Pilot Project for the Improvement of Fish Processing Practices .....	3-26
3-4-2 Processing Workshop and Tebiyama Kiln (a Type of Kiln with a Steamer Basket Shape Called "Seiro") .....	3-27
3-4-3 Hygiene training workshop for processors .....	3-31
3-4-4 Availability of water for washing of the fish in processing .....	3-32
3-4-5 Development of women smokers' association.....	3-35
3-5 PILOT PROJECT FOR LANDING BEACH MANAGEMENT.....	3-36
3-5-1 Pilot project for landing beach maintenance and management.....	3-36
3-5-2 Awareness-raising on cleanness and achievement of cleaning activities.....	3-37
3-5-3 Links with administrative bodies .....	3-39
3-5-4 Development of the beach ownership consciousness of fishermen and strengthening of the awareness on cleaning .....	3-40
3-5-5 Change of consciousness on the cleaning of environment.....	3-41
3-5-6 A plan for utilizing fish remains discarded to process into feed for pig .....	3-41
3-6 PLANS FOR CONSTRUCTION OF THE ARTISANAL FISHERIES CENTER AND FOR PROCUREMENT OF EQUIPMENT FOR IT .....	3-42
3-6-1 Objective of the construction of the artisanal fisheries center and procurement of equipment.....	3-42
3-6-2 Elements of Plans for construction of the artisanal fisheries center and for procurement of equipment for it .....	3-42
3-6-3 Selection of the site .....	3-43
3-6-4 Layout plan .....	3-44
3-6-5 Environment Impact Assessment (EIA).....	3-45
3-6-6 Outline of the planned facilities .....	3-46
3-6-7 Bid for equipment to be procured from Japan.....	3-54
3-6-8 Management and operation of artisanal fisheries facilities.....	3-55

**CHAPTER 4. MANAGEMENT OF COASTAL ARTISANAL FISHERIES BY THE CONGOLESE GOVERNMENT .....4-1**

4-1 ASSESSMENT OF THE CURRENT COASTAL ARTISANAL FISHERIES MANAGEMENT .....	4-1
4-2 OVERVIEW OF FISHMAT, FISHERY MANAGEMENT ASSESSMENT TOOL FOR DEVELOPING COUNTRY.....	4-1
4-3 ITEMS AND WEIGHING OF FISHMAT, AS WELL AS MCSA CODE .....	4-2
4-4 ASSESSMENT OF THE CURRENT SITUATION OF CONGOLESE FISHERIES .....	4-6
4-4-1 Items on the Basic information to understand current situation .....	4-6
4-4-2 Items on the Maintain/Rehabilitation of the Ecosystem .....	4-6

4-4-3 Items on the Resource management (Input-Control) .....	4-7
4-4-4 Items on the Resource management (Output-Control).....	4-7
4-4-5 Items on the Improvement of business structure .....	4-7
4-4-6 Items on the Improvement of processing and distribution for fish products .....	4-7
4-4-7 Items of the Reinforcement of human resource and organizations .....	4-8
4-4-8 Items of the Reinforcement of Capabilities for assessment and analysis .....	4-8
4-5 RESULTS OF FISHMAT ANALYSIS .....	4-8
4-5-1 Impact of PECHVAL pilot projects .....	4-10
4-5-2 Comparison of FishMAT analysis results with other countries .....	4-11

**CHAPTER 5. THE PLAN FOR IMPROVEMENT OF THE ARTISANAL FISH PRODUCTS VALUE CHAIN IN POINTE-NOIRE.....5-1**

5-1 STRATEGY OF THE IMPROVEMENT PLAN.....	5-1
5-1-1 Elements of the value chain improvement plan.....	5-1
5-1-2 Internal/external environments of the artisanal fisheries in Pointe-Noire.....	5-3
5-2 BASIC CONCEPTS FOR THE IMPROVEMENT PLAN OF FISH PRODUCTS VALUE CHAIN IN ARTISANAL FISHERIES IN POINTE-NOIRE .....	5-11
5-3 MEASURES TO BE TAKEN FOR THE IMPROVEMENT OF FISH PRODUCTS VALUE CHAIN IN ARTISANAL FISHERIES IN POINTE-NOIRE .....	5-15
5-3-1 Basic Concept 1: Eliminate any contamination of fish products in artisanal fisheries all along the production and distribution processes and prevention of freshness loss and deterioration of the quality of fish products .....	5-15
5-3-2 Basic Concept 2: Develop basic infrastructures in artisanal fisheries to increase distribution volumes of fish products of artisanal fisheries by the reduction of loss in catches, loss in processing, loss in distribution .....	5-16
5-3-3 Basic Concept 3: Establish a support system for organisation of stakeholders in artisanal fisheries, and broaden financial supports to stakeholders in artisanal fisheries and their associations .....	5-18
5-3-4 Basic Concept 4: Invigorate functions and systems in the administration for artisanal fisheries management of the Ministry of Agriculture, Livestock and Fisheries of Congo, which seems to be falled behind compared to other African governments commitments .....	5-19
5-4 ROADMAP TOWARDS IMPROVEMENT OF THE FISH PRODUCTS VALUE CHAIN IN ARTISANAL FISHERIES IN POINTE-NOIRE.....	5-21
5-5 ACTION PLANS .....	5-27
5-5-1 Improvement plans which will be implemented during the first two years (2021-2023).....	5-27
5-5-2 Improvement plans which implementation is scheduled for the following 2 years	

(2023-2025).....5-37  
5-5-3 Plans which implementation will begin 5 years later (from 2027) .....5-42  
5-5-4 Plans which implementation will begin 10 years later (from 2032) .....5-44

ANNEX

1. Member List
2. Record of Discussion (R/D)
3. Minutes of JCC



# Summary

## 1. Project Background

The economy of the Republic of Congo (hereinafter referred to as Congo) depends mostly on the oil industry. In 2015, the oil and oil related industries represented 49.2%, almost half, of the country's GDP. Ups and downs of the Congo's economy are affected by the international oil prices and the economy remains unstable, thus the diversification of industries is one of the major challenges for the country's economy to achieve sustainable development. In addition, as the country heavily relies on import foods, it is necessary to improve the productivity of agriculture, livestock and fisheries sector as one of the major challenges for economic development, to remedy the low food self-sufficiency rates which causes higher consumer prices. The contribution made by fisheries to the rural economy is much significant than that of agriculture and livestock, and FAO estimates that the fisheries sector's contribution to the GDP is 2.75%. Fish products make a significant contribution to the food security with an annual consumption of 26.52 kg per capita (in 2009), and it provide 24.9% of animal proteins in food consumed in the country.

In its "Poverty Reduction Strategy Paper (PRSP) (2008-2010)" and its "Strategy Paper Document for Job Growth and Poverty Reduction (DSCERP)", Congo has defined the food security as a priority for the country's national development, aiming to accelerate the poverty reduction through development of agriculture and fisheries. In its "Fishery Sustainable Development Plan 2011-2020", the Congolese Government proposes its commitment to increase landed fish volumes, and fish products distributing in the markets with the development of continental fisheries, artisanal fisheries, as well as the reduction of post-harvest loss for assuring the food security, the economic growth and the poverty reduction. The Congolese Government also considers the development of infrastructures and human capacity building are essential. "The Fishery and Aquaculture Policy Paper" presented by the President of the Republic of Congo in July 2013 indicates that the role of fisheries and aquaculture is to contribute to the food self-sufficiency, to the national food security and to create people's jobs; the Paper lists up several strategies, including development of the domestic market, construction of quays and ports, improvement of the production value chains for supplying hygienic and high quality food products to consumers by more effective landing of catches as well as building human resource capacities and administrative organization reform.

In Congo, fishery is subdivided into continental fishery, industrial fishery and artisanal marine fishery. The continental fishery is representing 48% of the national fish production, but fishing in river and lakes practised with none-motorised canoes is of very limited catch volume and the production seems to be distributed in the traditional subsistence economy of limited neighbouring areas. The rest of the production is made by the marine fishery. The industrial fishery represents 33% and artisanal fisheries 19%, which plays an important role in fish supply for food.

The annual fish consumption per person in Congo is estimated at 26.52 kg (2009), which exceeds

the average annual fish consumption in Africa of 9.1 kg, and the world average of 18.1 kg, mentioned in FAO report 2012, and corresponds to a very high level in Africa. Fish production in Congo increased from 44,000 to 64,000 tons in ten years (from 2000 to 2010), but population growth estimated to 3.13% causes significant increase of the demand, fish consumption increasing from 67,000 t in 2000 to 106,000 t in 2010. The balance of 42,000 t (2010) are covered by imported fish. But compared to the high demand of the Congolese population in fish products, domestic production of fish is deficient substantially, this deficit has been covered in 2013 by importation of frozen fish and salted and dried fish, which exceeds the domestic production of marine fisheries. Uptrend of demand for fish products in tandem with population growth and the low augmentation of fish production, fish supply that cannot meet the demand is a structural issue for fisheries in the Republic of Congo. But since the fish self-sufficiency level is low, the country depends largely on its imports. If the fish supply system is not progressing, population growth in the future will put major risk of deficient supply.

On the other hand, for the maritime resources of the EEZ and Congo's inland waters, FAO estimates that the maximum sustainable production in these water areas will be between 158,000 tons and 178,000 tons<sup>1</sup>. Among these resources, only 56,000 tons represent the volume of the resources already exploited by the fishery sector. However, the development possibilities are still valuable for pelagic resources and inland freshwater fish resources. If these resources are exploited more effectively, the domestic fish demand could practically be met even in 2025, without resorting to imports. But the demersal fish resource development possibilities are limited, and the future developments shall be considered carefully by conducting resource studies.

In Congo, marine fishing is operated in Pointe-Noire and Kouilou department, where have only coastline on the Atlantic Ocean. Fitted with industrial fish port facilities, cold storages for the landed fish and transport infrastructures, Pointe-Noire is the sole industrial fishing base of the country, and also the center of artisanal fisheries. Thus, Pointe-Noire is a place where almost all the marine fish in Congo is landed. But the fish products supply chain from upstream to downstream is underdeveloped and the fluent and undisturbed distribution can not be attained, so that expansion of fish production is hampered. The fish products distributed to the consumers in Pointe-Noire and its suburbs are not secured in safety of food, and it is urgently required to enhance the value of these products as food. On the other hand, the income of people working in the fish products value chain, such as fishers, processors and fish vendors remain very low. The improvement of the value chain is one of the demanding issues to be solved.

Artisanal fisheries in Congo bears several problems, among others, poor access to markets, lack of basic social infrastructures, such as public water supply, electricity, sanitation, etc. as well as coastal erosions, degeneration of the resources, etc. In the value chain of Congolese artisanal fisheries, not only negative elements relating to artisanal fisheries are numerous at all stages - from catch to

---

<sup>1</sup> Review of the Fisheries and Aquaculture Sector: Congo, FAO, Feb. 1995

distribution, or processing: the insufficient capacity of boats, lagging behind the modernization of fishing techniques, the low productivity of processing, etc. - but also many external negative elements such as the underdeveloped infrastructure and the imbalance of society development as a whole, which makes many weaknesses in the value chain segments and as many threats have already realized, there are many problems to be solved.

The landing beaches for artisanal fisheries along the main road running in parallel with the coastline are not developed, and all fishing related activities, such as the lifting up of boats, the provisional landing of catches, fish trading, salting-drying, processing, repair of nets and boats are carried out in chaos and disorder on the beach. Also, hygiene conditions are extremely unacceptable; fish waste and other garbage are abandoned and exposed under burning sun, bad odours smelling from everywhere. Fish are landed on crowded beach inefficiently, the underdevelopment of infrastructures and of the distribution network catalyse degradation of the freshness and quality of the landed fish with contamination.

Artisanal fisheries catches are distributed in fresh, or processed in smoking and drying; but the processing techniques remains rudimentary, the loss rate caused by antiquated processing techniques is excessive. The quality of products is primitive; losses due to the quality deterioration during storage or transportation are inevitable.

Supply and demand, as well as the market mechanism for the pelagic fish differs from that of the demersal fish in the Congolese fish product market. Small-scale fishers are divided into two categories based on differences of fishing boats, fishing techniques, target fish, and nationality, the artisanal fishers called Popo using canoes with relatively big outboard engines with relatively high power, and the drifting gillnet to catch sardinella, and the artisanal fishers called Villi mainly operating demersal fishing using canoes relatively small with low-power outboard engines, and deep gillnets or line fishing.

The volumes of pelagic fish caught in Pointe Noire fluctuate significantly according to seasons. A fluctuation of catches is significant, the highest monthly catches data shows four times bigger than that of the lowest month. During the peak season, the sardinella is saturated in the market and prices fall off, and if excessive production continues, at some point consumers satiate the sardinella, and it takes some time for demand to resume even after the end of market saturation. The main pelagic species are the round and flat sardinella of the herring family, which are characterised by a rapid quality deterioration if they are not properly preserved after catching. Because of the lack of preservation means and infrastructures on the canoes and the lack of appropriate transportation means after fish landing, Pointe-Noire and its surroundings remain the only distribution areas of them. A 81% of pelagic fish caught by artisanal fishers are destined to smoking, 10% of them are sold in fresh and 9% are processed into salt-dried products. For the volumes by supply source of the pelagic fish distributed in the Congolese market, imported frozen fish represent 83% of the market share and the industrial fishing covers 10% and the share of artisanal fisheries is only 7%.

The landed volumes of demersal fish are stable, but much lower than the demand and the prices of these products remain high. Industrial fishing account for 52% for the distributed volumes of demersal fish, which exceeds the import volume of salt-dried fish and catches of artisanal fisheries are limited to only 1%. A 70% of catches of demersal species are consumed in fresh, and 30% of them are destined to salt-dried processing.

There are 16 authorized public markets in Pointe-Noire. There are also many spontaneous makeshift markets and sales points. These markets have approximately 15,000 vending stalls, including nearly 1,400 stalls selling fresh fish and 2,300 stalls for processed fish.

The crucial problem of these markets is that they do not have hygiene conditions for handling of food products. The garbage generated in the markets are not well managed; there are piles of discarded garbage near the food sales stalls. There is almost no public water network in most markets; thus the clean water for washing and cleaning fish and other food products is lacking. The sanitation system in the markets is not very effective; passages are always drenched because of the lack of drainage of waters from food products and rain, as well as the sludge accumulated there.

The preservation of fish for sale with ice is rarely applied, the freshness of fish displaying deteriorates rapidly, contaminated by flies and bacteria, and the smell is quite foul in the market. On the other hand, in public markets there are stalls of cloth and accessories, vegetables, meat, and others mixed with fish stalls. The proximity of fish with meat in particular have a risk of cross contamination.

The artisanal fisheries in Congo, lacking adequate infrastructures, insufficiency or absence of preservation means on board and on-shore, poor processing techniques, bad working environment, insanitary fish handling etc., are the causes for the acceleration of the loss of freshness of the fish and the deterioration of the quality of fish products. Not only fish industry stakeholders lose a large part of values in the fish products supply chain, but also it is difficult to supply good quality fish products to consumers.

The improvement plan of the fish products value chain in Pointe-Noire aims to drafting the master plan and the action plan enabling to improve the fish products value chain of Pointe-Noire. To secure these objectives, following elements were carried out in the current study:

- 1) Survey on the current situation of the fish products value chain in Pointe-Noire;
- 2) Determination of priority issues for the improvement of fish products value chain of marine artisanal fisheries from the results of the preliminary investigation;
- 3) Drafting of the necessary plan for the implementation of pilot projects;
- 4) Selection of appropriate pilot projects based on priority issues;
- 5) Implementation of Pilot Projects;
- 6) Integration of pilot projects results in the improvement plan of the fish products value chain of artisanal fisheries;
- 7) Development of the Action plan for the execution of the improvement plan.



Among issues in the artisanal fisheries in Congo, the most striking and most urgent problems to be addressed were clarified in the PECHVAL Project. Pilot Projects for the improvement of the quality of fish, improvement of the sales practice in the public markets, improvement of fish product processing practices, and maintenance and management of the landing beaches were selected to address these problems. In addition, the "construction of the artisanal fishing facilities" including spaces for landing, sorting and sale of catches as well as safe water supply facilities, ice and fuel, etc., and "support to the organization in charge of the management and operation of these facilities" are selected as the pilot projects.

The present study was initially scheduled from September 2012 to March 2016, for the period of 3 years and six months, but the local contractor was not able to complete the construction of artisanal fisheries center within the execution time of the contract, and the contract for construction works was terminated. A new restricted bid was invited, construction works have resumed, but because of the financial pressure on the government of oil price decline and the lack of foreign currency, the purchase of the ice making plant was delayed and the works could be completed only in February 2018. Thus, the duration of the third year contract for this study has been largely extended, and the execution period extended up to the end of the warranty period in April 2019.

## **2. Pilot Projects**

### **(1) Fish Quality Improvement Plan**

#### **【Objective】**

The artisanal fisheries in Congo is facing serious problems, such as an agonizing deterioration of fish freshness at each step of the fish product value chain and significant price loss resulting from them.

In the current situation of the fishery product value chain in Congo, no preservation of the fish freshness by conservation in ice and other measures is observed except during the demersal fishing at sea. As a result, fish lose its freshness before reaching the consumer in most cases. The "fish quality improvement" pilot project aims at making clear of the value loss in relation to the freshness loss in the fish product value chains, developing and teaching the practices of freshness preservation which could be adapted to the local situation.

#### **【Activity and result】**

To identify the fish freshness at each stage of the value chain is essential for the implementation of the fish quality improvement, we have developed a fish freshness estimate method by resorting to the accumulated temperature measurement.

The degeneration of proteins by oxidation reaction is the main cause of the fish freshness loss, and it is well known that this reaction is closely linked to the temperature and elapsed time.

As a result, we measured the fish freshness and temperature at given time intervals, established the correlation chart, and then sought the relational equation between the accumulated temperature and freshness scale to estimate the freshness from the accumulated temperature.

To measure freshness, without depending on a recognized laboratory that can make an accurate scientific analysis and considering the current situation in Pointe-Noire, where even if scientific equipment were provided, the researchers and technicians eligible to manipulate them and provision of stable reagents are hardly acquired, we adopt a relatively simple method, the freshness score method by sensory analysis. The freshness score is measured by MFA for catches of industrial fishing companies in Congo. We are employing the standard score check list same as that of applied to the inspection of catch fish of the industrial fisheries.

Sardinellas are mainly caught with floating gillnet. Fishers depart to the sea trip departure at 5 pm and continue the fishing until the return to the port at dawn the following day. The trip to fishing grounds takes 1 to 3 hours and fishing itself lasts approximately 8 hours. Once nets are set, fishers wait for considerable fish is deemed to be caught to haul the nets; but since they leave nets in the water sometimes as long as 8 hours, the freshness of fish netted have been already deteriorated when fish are taken into the boat.

Once in the boat, fish are not kept in ice, and are left at ambient temperature until dawn. The fishes are deteriorating their freshness substantially between their hauling up in the boat and landing on the beach.

The pelagic fish purchased by the smokers are transported to the smoking workshops and set in kilns after washed. There is a roof over kilns and fish are not exposed to the scorching sun, but washing is also often carried out in a location in full sunlight, where the wastewater disposal is easy. Transportation, washing and preparation of kilns take a lot of time. Usually 1 to 3 hours elapse between the purchase of fish and the starting the fire which means the end of the freshness deterioration, the quality deterioration of fresh fish during this period is substantial.

As for demersal fish, the statistical analysis of data relating to the freshness score and price when vendors or consumers buy fish on the Base Agip beach, where fish wholesalers trade demersal fish, has clearly revealed the sales price shrinks by 5.5% per hour during the rainy season (December - March), where the average diurnal temperature is 30°C and 4.3% during the dry season (June - September) where the average temperature is 25°C. However, if the preservation temperature can be maintained at 5°C by using enough ice, the sales price drop rate per hour can be constrained to 1%. After opening of CAPAP (Centre d'Appui a la Peche Artisanale a Pointe-Noire), sales of fish on the Base Agip beach has been prohibited.

## **(2) Improvement of the sales method of fish products in public markets**

### **【Objective】**

In the public markets in Pointe-Noire, fish are laid for long hours on stalls without ice nor any other preservation means, and this long stay at hot temperature causes a considerable freshness loss. Stalls being made of concrete or wood, drips and viscous liquids from the fish enter into them easily and their cleaning is difficult. On the other hand, water supply for cleaning and washing of stalls and fish is hardly acquired. Pollution by flies and microbes also make there tremendous unhygienic conditions. Garbage is piled up next to stalls, but cleaning is left to cleaners alone, the cleaning frequency is low and collection of piled up garbage is also not enough. Fish sale is carried out in an extremely unhygienic environment.

Safe water is needed to cleanse fresh fish in the markets. But some public markets do not have the public water supply, or it has been cut off for a long time. It is frequent that water is not available when it is needed.

### **【Activity and result】**

During the 2<sup>nd</sup> year, we asked URRM to carry out the supplied water quality analysis in 6 public markets of Pointe-Noire. All the 11 water samples contained heat-resistant colon bacillus and 6 were also polluted by fecal streptococci.

During the 2<sup>nd</sup> year, we created an association of vendors of fresh fish, smoked products and salt-dried products in the Timbamba market, appointed the members of the Management Committee and Evaluation Committee, and established basic statutes. Collaboration and coordination with the governmental entities being indispensable for the services of public infrastructures such as the development of water supply/drainage facilities, garbage collection and cleaning of the whole market in order to improve the its hygienic conditions; we made efforts to establish an agreement system with the financial and accounting Directorate of Finnce and Directorate of Environment of Pointe-Noire City. The Lumbamba municipality showed interest in the healthy operation and improvement of the hygienic conditions of the Timbamba market; but the organization was stagnating because vendors of the Timbamba market are gradually losing interest in the pilot project.

In the 3<sup>rd</sup> year, an association consisting of fresh fish vendors of the central market using model stalls was created.

## **(3) Improvement for fish products processing methods**

### **【Objective】**

The most typical processed fish products in Congo are the smoked products from 2 species of sardinella (Makoula, Masoundji) of the herring family. Smoking kilns are made of metal barrels. This practice was introduced by the Beninese community for more than 40 years ago. Smoking is still carried out almost according to the same practice. In the smoking process, fresh fish are placed

between a metal grid and wood sticks on 6 superimposed levels in the smoke kiln. Smoking is performed during 3 to 4 hours on the logs fire. Then, fish are left to cool down for a few hours, and then transferred into another smoking kiln, returned and smoked again. The problems of this process can be summarized as follows.

- The smoke causes headaches, eye and respiratory ailments. Burns and injuries are also possible because of the iron bars around the smoking kiln;
- Fish being superimposed on several levels, fire control is difficult. If it is too low, fish is underdone, and if it is too strong, fish burn and lose their commercial value;
- If fish were stale, quality of processed fish will be poor and their sales price will be low;
- The smoking process requires long time, needs a lot of work to turn fish over which hamper the productivity of processing;
- There is a lot of work in the process that can cause health problems like lumbago and other ailments.

#### **【Activity and result】**

The verification was carried out in the workshops of the improvement of existing kilns made up of second-hand steel drums, iron frames, bolts and nuts and the way of amelioration of the working environment and quality of products.

The workshop was held within the URRM premises, once a month from December 2013 to July 2014 mainly for women processors and the number of participants in the workshop of the 2<sup>e</sup> year was 47.

In the district of smoking workshops, we used part of the workshop of a leading woman processor to install a Tebiyama-type kiln in the real environment of a processing workshop with a view to carrying out practical smoking trainings.

In the pilot project of the 3<sup>rd</sup> year, workshops were organized 7 times, with a total number of 62 participants, including 41 Congolese women and 21 Beninese women. During the practical training, we explained the handling of equipment before smoking as well as hygienic fish treatment, fish washing for example in order to make participants clearly understand that carrying out these operations would result in higher quality.

We have organised a workshop emphasizing on general hygiene training targeting the people working in fish processing (particularly women fish-smokers), in order to make them understand the characteristics of fish products and strengthen their knowledge in hygiene for fish handling. As learning material, we created Powerpoint files explaining in a user-friendly way the importance of the freshness of the fish serving as processing materials and basic hygiene notions, such as hand-washing during operations and a manual has been prepared to give more detailed information. Workshop were held in the classroom by using those tools.

Moreover, to judge the freshness of the fish, we explained the basic criteria of freshness sensory

judgement, according to following items: eyes, skin, scales, fish shape, fish flesh, gills, guts, smell, etc.

The hygiene training workshop on processing was organised in the URRM at the eve of the workshop on processing training, from December 2013 to July 2014, and gathered all in all 66 women participants (2<sup>nd</sup> year).

During PECHVAL project 2<sup>nd</sup> year, we entrusted the Microbial Resources Research Unit (MRRU) with the water analysis of the 11 shallow wells and 6 deep wells of Songol, where are concentrated processing workshops. Analyses for the detection of heat resistant colibacillus and fecal streptococci showed that water samples were contaminated by heat resistant colibacillus and that contamination by fecal streptococci was checked on samples from 4 shallow wells and 3 deep wells. All these waters are inappropriate for consumption and washing fish which will be contaminated with. Thus, those waters were judged inappropriate as washing water for processing.

During the 3<sup>rd</sup> year, we tried to sterilize the water from 4 contaminated wells, to examine whether it was possible to obtain potable water. Sterilization was made by addition of bleach, but in 3 wells, contamination was so heavy that water quality didn't improve at all after sterilization. In another well the reduction of the number of bacteria was observed, but it couldn't eliminate them, which means the water is still inappropriate for consumption.

One of the reasons why the productivity of artisanal women processors of Pointe-Noire remains low is due to their vulnerable financial bases and the unavailability of required financial means. A women processors group in Base Agip wished to access to credit (small financial institution) to manufacture Tebiyama kilns and obtain funds for procurement of fish, we have established a working group of 15 people interested in the organization of associations, and supported their organization to that effect. We had supported to register temporarily the said association to the Departmental Directorate of Pointe-Noire and then the association's application for registration to the Ministry of Agriculture had been officially made. But in 2015, fish catch had been very poor in August - which is ordinarily a top peak season - and subsequently, sardinella fish catch had rarely recovered until December; thus it had been difficult to procure fish, processing activities had been stagnated and the amount of necessary registration fee could not be collected, thus registration had not been completed.

#### **(4) Landing beach management**

##### **【Objective】**

Returning from fishing trip, even if the fish is kept fresh and of good quality - should the reduction of fishing trip duration or improvement of fishing boats capacities be achieved- when the beach is contaminated by waste, dirt and bacteria, the fish landed will also be contaminated, which will thus accelerate its decay.

A family living near the site discharges roughly 1 bucket (approx. 10 litres) of wastes per day, which have been generally cast off on the sandy beach. At the initial stage of this project, we had observed

household wastes, fish remains, the tar from sub-marine oil layer, etc. scattered on the Songolo beach.

Leaving solid wastes in the landing beach and landing fish on litter of the beach contaminates the fish landed, depletes the value made by fishers and even jeopardizes fishers's reputation. Under the pilot project, the objectives of landing beach maintenance and management is:

- Inhabitants and stakeholders of fisheries will work together for cleaning the beach;
- Cleaning of the landing beach will avoid the contamination of the fish landed;
- During cleaning activities, sensitization on cleanliness will take place to strengthen awareness-raising on the cleaning of the environment by fishers's village dwellers;
- Carrying out cleaning activities organized - to which inhabitants and stakeholder of fisheries are involved and work together - will strengthen the organizational capacities of fishers's associations;
- Motivate inhabitants and stakeholders of fisheries to act by themselves for the improvement of the living and working environment;
- Creation of an activity system for the development of sustainable living environment by strengthening solid waste collection capacities in collaborating with the administrative organization supervising the fishers's village.

#### **【Activity and result】**

In the survey of fishers in Songolo at the initiation of the project (October 2012), regarding the beach environment 56.0% of them answered "very dirty," "dirty" or "we cannot say it is clean". Similarly, during the public hearings held at the starting of the project, some participants said that no solution could be found, insisting on the hygienic conditions problem: "We clean, but since there is no garbage bins, we bury the solid wastes in the soil", "Buried solid waste pile up, which worsens the hygienic conditions problem". "High waves and torrential rains dig up the wastes and contaminate again the beach".

The frequency of cleaning operations and the number of participants for the 1<sup>st</sup> and 2<sup>nd</sup> years were all in all 10 times, with more than 683 participants. But there were 37 participants to the 1st beach cleaning conducted on 7 April 2013, and only 10 participants to 2nd beach cleaning on 6 October. Fishers are interested into the hygienic conditions surrounding their home, but were reluctant to clean the beach.

Given this situation, the project tried to do the zoning of the cleaning scope in February 2014, starting by cleaning the area where fishers's houses were located, then the scope of the area was increased gradually, in parallel with the progress of awareness-raising on the importance of beach cleaning and finally covered the whole beach. The zoning of cleaning divided into 2 zones (A and B); zone A was subdivided into 3 sections and zone B into 4 sections, which makes all in all 7 sections. 2 people responsible for cleaning were appointed for each zone and each section, and then a cleaning committee was established. To materialize the autonomous management of the beach by fisherS, the

cleaning committee was put under the AICP, for the AICP to lead the cleaning, and thus the AICP daily coordinated cleaning in the beach and called for participation to cleaning. Some committee members became more active than in the beginning and the committee establishment contributed to continuous cleaning and to increasing the number of participants.

During the 3<sup>rd</sup> year, cleaning made under AICP supervision became more regular, reaching 8 times, with more than 383 participants. A survey next to fishers working in Songolo beach continued and several people interviewed expressed now that « the beach has become clean (very clean, clean, clean enough) » thanks to those regular cleaning activities. The percentage of positive answers was of 43.9% in the beginning of the project, but it increased to 73.4% in June 2014 then 90% in June 2015.

Cleaning activities by PECHVAL and the AICP were appreciated by the Chamber of Commerce and Industry of Pointe-Noire, a garbage container was donated by the Chamber in May 2014, which contributes to the development of garbage collection activities.

Since cleaning the landing beach is fishers's responsibility - under their activities of development of the landing beach environment - and the setting of garbage containers and garbage collection for the development of inhabitants' living environment supported by the local government, PECHVAL and AICP called upon the mayor of Mongo Mpoukou administrative district, of Pointe-Noire city; which the project site belongs to and asked for its collaboration for the installation of garbage containers and for garbage collection. In response to this demand, the mayor of Mongo Mpoukou administrative district visited the site to observe, discussed with PECHVAL, proposed a programme including following components for promoting further the link between the municipality of the administrative district and the AICP for cleaning activities of Songolo- Raffinerie beach, and declared that Mongo Mpoukou municipality would take full responsibility of the programme.

In May 2015, the municipality of Mongo Mpoukou administrative district installed garbage containers and started garbage collection, cleaning activities started under the supervision of the municipality of Mongo Mpoukou arrondissement in August 2015. Under this framework, the mayor of Mongo Mpoukou organised a public meeting with beach inhabitants, and presented a draft of management rules of the beach and established the rules and the regulation.

In February 2016, cleaning tools were supplied to the AICP by the municipality of Mongo Mpoukou administrative district, and the mayor of Mongo Mpoukou invites periodically a meeting of the cleaning committee composed of representatives of fishers's village inhabitants for cleaning and sensitization activities.

On 23<sup>rd</sup> October 2015, a cleaning activity upon request of the cleaning committee and shipowners, had been done without aegis of the PECHVAL. That day was declared rest day for fishing activities and the whole beach was cleaned with the participation of fishers's village inhabitants. The garbage collected was sent to the public dumping site on 2 trucks rented with the money collected from inhabitants and fishers. The fact that fishers could organize a large scale cleaning without asking

PECHVAL support, and that they didn't bury garbage but transported them to the dumping site with trucks rented with their own money is an important result.

Since November 2015, beach cleaning is done periodically and continuously lead by the cleaning committee.

For reducing the garbage on Songolo beach, a nutrition analysis and economic study were conducted on the small fish abandoned by the beach during landing, fish guts and remains cutted off when processing and the fish unsold and/or to be discarded off shore when the market is saturated during the abundant fish catch season, to study the feasibility of making livestock feed from them.

Small fish abandoned on Songolo beach during the landing and fish guts and remains cutted off when processing products were collected and transported to a feed processing place, and processing by boiling them in hot water -> pressing -> drying into feed for pig (feed from fish remains). Moreover, water after boiling fish is not disposed but mixed with cereal-based feed (wheat germ) and dried, to utilize also as feed for for pig (Feed from cereal mixed with fish boiled water).

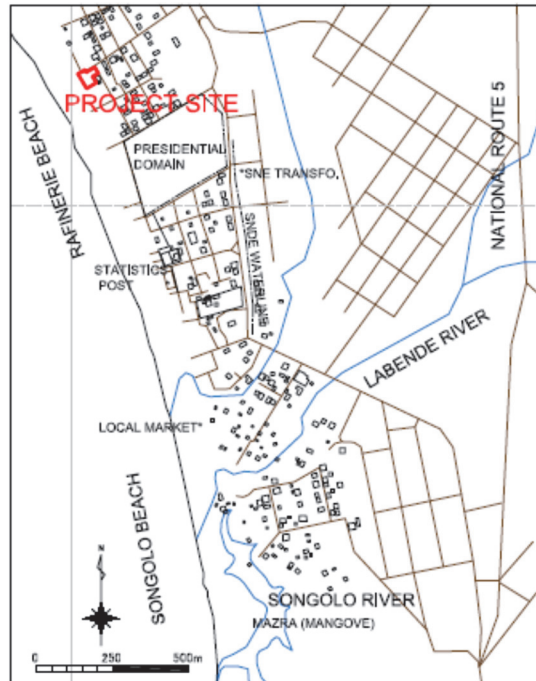
Fish remains and fish-boiled water are good for feed with high protein content. Pigs prefer to eat feed made from fish remains and fish-boiled water, and the feed manufacturers for livestock are also interested in, and these products could be sold only if price and quantity conditions are met. But the quantity of fish remains generated in Songolo beach is about 300 kg per day, which is not sufficient quantity for making a profit and we have considered that it is difficult to make a business as a going concern.

## **(5) Construction of an artisanal fisheries center**

### **1) Selection of the construction site**

The Congolese government decided the construction site of the artisanal fisherr center. The site is a flat sandy land of 2,500 m<sup>2</sup>; located at the North of President's plots and situated on the Raffinerie beach facing the port - a State property belonging to Quartier Mbota-Raffinerie Océan, Arrondissement No.5 Mongo Mpoukou, with neither inhabitant nor economic activity on it.





**Figure 1: Location of the artisanal fisheries centre**

A study on coastal erosion was conducted in October 2012 to analyse erosion risks on the construction site and the neighbouring beaches. Hereafter a summary of the study results:

- The sand beach in front of the project site is composed of sand with extremely fine grains, its configuration changes subtly under the effect of waves, and sand washed ashore is also difficult to stay on the spot. The reduction of littoral drift due to the commercial port development had an enormous impact on the beach, and the beach had been suffered from serious coastal erosion between 1958 and 2011;
- The risk of coastal erosion of the site is deemed « low » actually, but the recession rate of the coastal line is closely related to the commercial port development, and the risk of change of configuration due to the commercial port development remains high. Therefore, a careful monitoring system and dynamic anti-erosion measures in the port development are required for the future;
- As for waves along the coast, it is calm in the south part of the port, but the height of waves increases towards the north as far off the shelter zone of breakwaters of the port. The results of the simulation - based on the digital analysis - suggest that the beach located in front of the site is on the borderline of the wave conditions for manoeuvring pirogues by the local fishers;
- As the sand grains being fine, the beach gradient is also very moderate (1/15 – 1/30 about), which is a configuration to facilitate high waves climbing up the beach, and there is a risk for waves to wash ashore. We forecast that waves might wash up to the limit line of the facilities several times a year. To reduce this risk, the floor level of buildings shall be decided

above the height of E.L. +2,6 m to prevent wash ashoreling of the waves, even in case of abnormal waves (probability once for one hundred years), and the floor level for the installation of equipment shall be 70 cm higher than that level. Moreover, gabion baskets made of very resistant resin net filled with gravel shall be placed subsurface in front of the building adjacent to the shore line, for preventing any unexpected partial erosion.

## 2) Layout plan

For the layout of facilities planned under the project, the zoning per function will be adopted such as sorting, washing and precooling, ice making, preservation, fish selling, sales of products and administration, and considering people's movement, catches and vehicles, we make sure to bring about easy movement with short and clear traffic lines in their activities.

Facilities shall be built with a step back of about 13 m from the border of the land on the shore side, as a measure against coastal erosion risk.

## 3) Environment Impact Assessment (EIA)

For the construction of artisanal fisheries facilities in Pointe-Noire, the Law n° 2009-451 of Congo stipulates to conduct an Environment Impact Assessment (EIA). The study procedure is as follows: the Ministry of Fisheries and Aquaculture - that is the Project implementing agency for Congolese government - submits an application requesting the execution of EIA, draft terms of reference and outlines of the Project to the Ministry of Tourism and Environment, and after its approval, an environmental consultant registered to the Congolese government is selected and conducts the study and submits the EIA report to the Ministry of Tourism and Environment, through the Ministry of Fisheries and Aquaculture to get its approval.

An environmental certificate has been issued for the present pilot project, Construction of Artisanal fisheries Center, as the planned buildings are small-size buildings and is ranked in category B - EIA results showing that the implementation of the project will hardly make negative effect, which can be avoided by appropriate countermeasures.

## 4) Outline of the planned facilities

**Table 1: Structure of each building and floor area of rooms/premises**

Name of the premise / room	Floor area	Structure / Characteristic
<b>(i) Sorting building</b>	<b>612.00</b>	One story building made of reinforced concrete Independent foundations and reinforced-concrete slab foundation, base-slab foundation Timber truss
Sorting and cooling area	333.00	
Electric and machine room	21.00	
Ice making plant area	34.65	
/Cilling storage		
Meeting area	42.00	
Storage for products	28.00	
Storage for materials	28.00	
Ice sales room	3.78	
Retail market	27.00	
Administrative buildings/premises	46.75	

Kitchenette	7.00	
Entrance/corridor	37.25	
Warehouse for office equipment	3.57	
(ii) Public toilet	43.20	One story building made of reinforced concrete Continuous footing, base-slab foundation Timber truss
Men/women toilet	40.24	
Dressing room	2.96	
<b>(iii) Waste Depot/Gas station</b>	<b>19.50</b>	Construction of walk-in made of reinforced concrete Conventional flat foundation, direct foundation Timber truss
Security guard /Fuel station	10.50	
Waste depot, Warehouse	9.00	
<b>(iv) Space for fuel tanks</b>	<b>28.86</b>	Construction with blocks / reinforced concrete slab foundation

**Table 2: Characteristics of outdoor structure and others**

Items	Characteristics	Quantity
Ice making plant	Flake ice, Capacity 2.5t / day	1
Ice stockage	20 feet refrigerating container (equipped with cooler)	1
Refrigerated shed	With insulation boards -5°C (fitted with cooler)	1
Flooring in the premises	Simple flooring with concrete	646 m <sup>2</sup>
Anti-erosion system (the shore side)	Geotextile 3 mm thick, gabion in plastic 2.0 x 0.5 m	Total length of 56 m
Drainage channels around the premises	Made of concrete, partly covered with concrete covers	Total length of 153 m
Exterior walls	Concrete blocks H = 2000 - 2200	Total length of 140m, with 3 steel doors
Deep well	Depth about 80 m, water pipes in PVC dia. 125, submerged pump 2.8 kW (>5 m <sup>3</sup> /h), chlorine instillation device	1 lot
Others	Sorting area / treatment basin by infiltration Public toilets / digester pit / cesspool Emergency generator (50KVA) Outdoor lighting	3 lots 1 lot 1 set 1 set

## 5) Award of contract for construction works

The local bid for the construction works of facilities was organised according to a formula and procedures as those of general public works in Congo.

Since it is required for the local construction companies of capacities to complete the works within the defined period with appropriate quality management, an open type conditional bid, where the examination of the qualification and bids can be made at the same timing, was adopted to examine the capacities, such as size, experiences, capital, etc., of possible service providers at the bid opening. The bid announcement is noticed on 28<sup>th</sup> April 2014 and bids were opened on the 4<sup>th</sup> July 2014.

The representative of JICA Kinshasa office, the representative of the Ministry of Fisheries and Aquaculture, the Consultant and the local engineering firm were in attendance and checked the presence/absence of documents required in Bid documents, then the evaluation committee checked the contents of the documents. Further to the evaluation, 2 companies MIAMBANZILA Sarl and CHINA XINMA ENGINEERING had been judged qualified, and MIAMBANZILA Sarl having made the cheaper proposal, the captioned company was recommended to JICA as the Contractor, and JICA office in DRC signed the contract with the MIAMBANZILA Sarl on the 1st August 2014.

On 16 August 2014, the ground breaking ceremony of works for the construction of artisanal fisheries facilities took place in attendance of the representatives of the Embassy of Japan, JICA office

in DRC and the Ministry of Fisheries and Aquaculture ; construction works started, but the progress was not good and there was a big delay on the schedule, despite the frequent summons of the Consultant and of the local engineering firm; the completion being still unpredictable whereas the date of 30 April 2015 - date of end of the execution period - is fast approaching, JICA decided not to extend the execution period and terminated its contract with the company MIAMBANZILA Sarl.

For the selection of the company taking over the construction works - since it would be about the execution of a bid under special circumstances for taking over works - restricted bid procedure was adopted to choose a company having technical capacities to continue the works and execute them within a limited execution period. The notice of bid was announced on the 8<sup>th</sup> June 2016 and bids were opened on the 11<sup>th</sup> August 2016. After the evaluation, OCEANA was judged to be awarded, made the lowest proposal under the ceiling amount, the company was recommended to JICA as the Contractor, and JICA office in DRC signed the contract with the company on the 23<sup>rd</sup> August 2016. The contract signed between JICA office in DRC and the company OCEANA stipulates the completion date by the 31<sup>st</sup> May 2017; but even though tax to be exempted as to the R/D (Records of Discussion on the project between the Government of Congo and JICA) - as the tax exemption certificate from the Ministry of Finance of Congo had not been issued up to the date when the ice making plant was ordered - the execution period was extended by 4 months, up to the 7<sup>th</sup> October, because the delay had been deemed to be of the case of Force majeure, as the delay due to stalling of the tax exemption procedure. The ice making plant to be imported, however, the money transfer from Congo to overseas being subject to IMF stringent regulation, the fund transfer that should have taken 2-5 days, was made only on the 5<sup>th</sup> October. The manufacturer confirmed the reception of the money in his bank account on the 9<sup>th</sup> October, a vessel was chartered the next day on 10<sup>th</sup> October, and thus the supply of the ice making plant had been significantly delayed. As external causes of the delay of ice-making plant supply, the lack of foreign currencies due to the worsening of the economic situation in Congo, and the extension of the general procedure for money transfer from Congo to overseas, further to the limitation of overseas transfers from all banks in the country stipulated by the Congolese government - thus - the money transfer procedure from Congo to overseas took about 3 weeks. In reference to Force majeure conditions, an amended contract was signed to extend the execution period and the reduction/exemption of the delay penalty, works were completed on the 2<sup>nd</sup> February 2018 and the facility handed over to the Ministry of Agriculture, Livestock and Fisheries of Congo by JICA.

The inaugural ceremony for the Artisanal fisheries Support Centre of Pointe Noire (CAPAP) took place at the centre on 4<sup>th</sup> June 2018 in attendance of the Minister of Agriculture, Livestock and Fisheries, , the Prefect of Pointe-Noire department, the Prefect of Kouilou department, the Mayor of Pointe-Noire, the Mayor of Mongo Mpoukou administrative district, the Director General of Fisheries and Aquaculture, The Director of Pointe Noire Port Authority, etc. and for the Japanese side : Mr. Karube, the Ambassador of Japan in DRC, Mr. Shibata, the Regident Representative of JICA office in DRC, as well as members of the Embassy and JICA office and persons in relation with PECHVAL

project. EU Ambassador, French Development Agency representative (FDA) and FAO representative also attended the ceremony.

#### **6) Bid for equipment supplied from Japan**

Among the equipment of the Artisanal fisheries Support Centre, those not available in Congo is to be procured from Japan and an open general bid was organised in accordance with the procurement guidelines of JICA.

The bid announcement was made on 15 November 2016, and the submission of bid proposals was held on Friday 16 December 2016 at the headquarters of the consultant. A contract for equipment supply was signed on 7 January 2017 with the company Nitto Seimo Co., Ltd. having made the lowest bid proposal. The equipment arrived in April were custom cleared and inspected, but since construction works of the Facility were not completed yet, they were temporarily stored in the warehouses of the construction company, then transported to the CAPAP after completion of the facility.

#### **(6) Management and operation of an artisanal fisheries center**

##### **1) Objectives of the pilot project for the operation of an artisanal fisheries center**

Artisanal fisheries facilities developed under PECHVAL pilot projects, serve as place of activity aiming to check that the improvement of fish products quality can contribute to increasing the income of fishermen, processors, distributors and vendors, and it is essential that they participate by themselves to the operation of these facilities. For that reason, it had been decided to target the tripartite operation of facilities by the AICP, one federation gathering associations of all nationalities carrying out various activities, the Ministry of Fisheries and Aquaculture (MFA), the Pointe-Noire Municipality.

AICP has been established as federation, but its organisation and by-laws are not defined and since its organisational capacities and performances are more vulnerable, it is necessary to draft its statutes so that it can operation properly artisanal fisheries facilities, accordingly to the drafted statutes. The assistance for the drafting of statutes, for organising meetings and for strengthening the organisation, for example training of the executive staff, took place.

AICP, MFA and Pointe-Noire Municipality will create a management body aiming to the autonomous operation and management of artisanal fisheries facilities, and the project provided its support for this creation.

Artisanal fisheries facilities developed under PECHVA project are those unprecedented in Congo, and candidates such as the executive staff in charge of their operation - without previous experience – made a fact finding visit to similar facilities in Senegal, were trained on necessary tasks to develop necessary operation capacities.

## **2) Establishment of the Company for the enhancement of fishery resources of Songolo (SOVAGHAS) as management body of the artisanal fisheries centre**

Under the Congolese law, the categories of a private establishment are classified in Association, Civil society and Commercial Firm. In case of Commercial Firm, tax burden is heavier compared to the scope of activities for the new organization, and in case of an Association, formalities for the creation of the organization and its approval are time consuming. In case of Civil society, the establishment is possible during the PECHVAL project period, and operation under financial burden is compliant to the scope of activities possible after the establishment. So as the operation and management organization for the Artisanal Fisheries Center, the Civil Society, SOVAGHAS ( Société de valorisation de la gestion des produits halieutiques de Songolo ) was to be established.

The capital of SOVAGHAS was decided at 1,000,000 F.CFA; AICP as the main user of the artisanal fish center will subscribe for 500,000 F.CFA, the MFA, as the competent authority, will subscribe for 400,000 F.CFA and Pointe-Noire Municipality, the local government to which belong the artisanal fish center will subscribe for the remaining 100,000 F.CFA. The Executive board is composed of representatives of contributors, the AICP, the MFA and Pointe-Noire Municipality. The following figure shows the organisation chart of SOVAGHAS. The Director of the centre and other staff were to be recruited upon the completion of facilities.

PECHVAL had supported the drafting of the statutes and the internal rules of SOVAGHAS, and contributors' representatives, the AICP, the MFA and Pointe-Noire Municipality, had agreed on them and endorsed. Signed statutes and by-laws were submitted to Pointe-Noire Commercial court, and the establishment of SOVAGHAS was authorized on 29 December 2015. Registration formalities of the company were made for the completion of facilities.

## **3) Training abroad for the operation and management of facilities**

In Congo, there was no artisanal fisheries facilities, organizing of fishermen's association remains sluggish, and no experience on autonomous operation of facilities by means of an independent management body.

To make the SOVAGHAS Management board members and representatives of stakeholders acquire the knowledge and experiences on the role of the management organisation and tangible operation activities, a training in the Republic of Senegal (hereinafter referred to as « Senegal ») was organised. Under this framework, they had visited Lompoul Fishery Centre, Kayar Artisanal fisheries Centre, Kaolack and Dakar Fish markets, that are fishery facilities financed by Japan and were provided lectures such as (1) Role and importance of the management organisation, (2) Responsibilities and functions to provide for, and (3) Necessary knowledge to fulfil the responsibility and for the supervision of activities, provided by the responsible personnel of the operation and management of each establishment.

#### 4) Shifting from company to public establishment

Before completion of Fisheries Center, a request for covering initial operation cost of the Center was made to the Ministry of Agriculture, Livestock and Fisheries, and negotiations on that issue took place with the Minister of Agriculture, Livestock and Fisheries, and the Director of the General Directorate of Fisheries and Aquaculture, but since the coverage of operation cost of a civil society by public funds was difficult, SOVAGHAS, the Civil society was decided to change into administrative corporation, Artisanal fisheries Support Centre, upon request of the Congolese party. The two points above were mainly referred to for this change.

(1) In case of civil society, the government can hardly grant a subsidy in case of balance sheet deficit, which is possible in case of an administrative corporation.

(2) In case of civil society, it is difficult to dispatch officials of the Ministry of Agriculture, Livestock and Fisheries (responsible for statistics or responsible for quality control, etc.), which is possible in case of administrative corporation.

The approval and endorsement of the decree by the Office of the President of the Republic is necessary for the establishment of a administrative corporation, a procedure that takes about 6 months. The statutes and the internal rules necessary for establishment of the CAPAP were submitted to the Ministry of Agriculture, Livestock and Fisheries at the end of March 2018. After verification by the legal officer at the Ministry of Agriculture, Livestock and Fisheries and endorsement by the Ministry of Agriculture, Livestock and Fisheries, the Ministry of Finance and Budget and the Ministry of Sustainable Development, formalities for government approval will end up with the decision of the President’s Office.

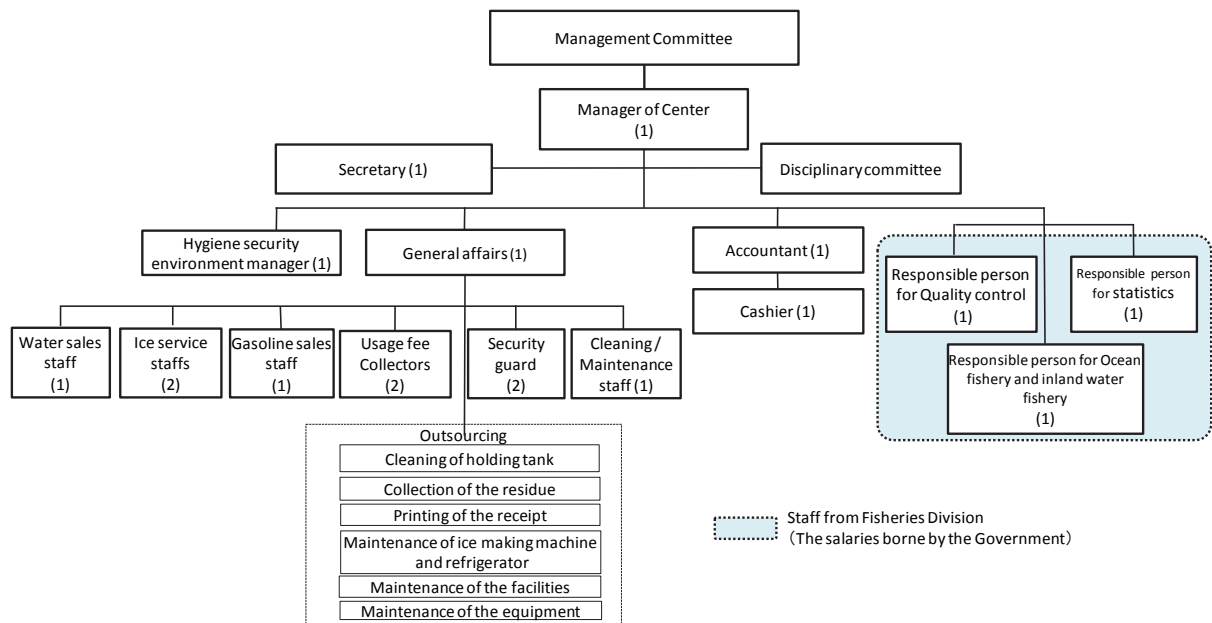


Figure 2: CAPAP Organization chart

### **5) Training on fresh fish handling in CAPAP facilities**

After CAPAP opening, PECHVAL used the facilities for training on fresh fish handling and freshness keeping from 23rd June to 5th July 2018.

At the opening of the centre - due to wholesalers' suspicion, dissatisfaction and despise towards the administration in general - the centre had bad reputation and was barely frequented, but thanks to public relation and awareness-raising efforts of Fisheries Directorate and the Centre staff, wholesalers little by little came to meet at the centre, fish started being landed in front of the center and consumers' visit at the centre have gradually become more frequent.

PECHVAL instructed a team of 4 agents of CAPAP, after PECHVAL explained them the content of the pilot project for keeping the freshness (Improvement of fish quality), and lectured on the theory for keeping the freshness, to sensitize directly consumers, wholesalers, fish cutters and fishermen who come to CAPAP to the importance of sanitary management and freshness management (wash well the fish, maintain the fish at low temperature), to organise regularly meetings with wholesalers and fish cutters, and to exchange their viewpoints.

Since, wholesalers were not actually motivated for washing the fish and the preservation in ice, a demonstration sale took place under PECHVAL, in order to show wholesalers the correct fish handling, enabling to supply high quality fish to customers, and make consumers became aware.

The training on accounting and management of CAPAP agents had entrusted to a local consultant took place from 17 September to 31 October 2018.

### **6) Training workshop of CAPAP officials**

The training was about the treatment of the cash flow and the accounting management with accounting software, supervision of accountants and training to routine activities of the director, accountant, cashier, ice-making plant agents, secretary of the Centre according to their professional code of conduct. But since the official endorsement of CAPAP by presidential decree was not made until the training was provided, and that the official recruitment of agents was impossible, making a public announcement for the recruitment of agents by using a local consultant was abandoned, the positions of agents were revised, further to the change of status as Civil society: SOVAGHAS into administrative corporation: CAPAP, and training was provided on that basis.

Moreover, for candidates of the member of the steering committee, workshop on organisation management related to CAPAP operation, internal audit, etc. was conducted.



### **3. Current condition and issues of Fisheries Administration by the Congolese government**

#### **(1) Identification of the current condition of coastal artisanal fisheries**

In formulating the plan for Improvement of artisanal fish products value chain in Pointe Noire, it is requisite to evaluate the current condition and issues of the fishery administration of the Congolese government and include them in the improvement plan in order to institute a sustainable fishery value chain.

With the « FishMAT software : Fishery Management Assessment Tool), a tool for the fishery management assessment in developing countries »<sup>2</sup>, a tool developed to seize simply and objectively the current situation of fishery management (what is done) and challenges (what is not achieved) fishery management in developing countries, we will examine carefully fishery administration problems in Congo from a macroscopic viewpoint by using indexes of measures made by the government for artisanal fisheries management, hoping that it will contribute to the establishment of a master plan for the improvement of fish products value chain in artisanal fisheries indicating the way forward.

FishMAT divides into 8 categories essential measures for fishery management, and after having weighted each factor of fishery management in each category, checks the existence of activities in the country, and gives as index the current situation of fishery management measures per category in the country.

In order to assess the capacity of the implementation of strategic plans of fishery and management capacities of the government, there are another criteria by ranking the various management items according to MCSA code (M : Monitoring, C : Control, S : Surveillance, A : Management activities), in which the various results of activities will be assessed and evaluated item by item.

With FishMAT, we have analysed fishery management in Congo and assessed fragile areas by combining the 8 categories and MCSA rankings aforesaid and we aim to identify the higher priority areas for cooperation in fishery management.

#### **(2) Assessment of the current situation of Congolese fisheries administration**

For the assessment of the current situation of Congolese fisheries administration, after having analysed fishery management status before the implementation of PECHVAL project, we have examined which areas are changed with PECHVAL project activities, so that we could confirm the impact of the PECHVAL projects and reflect on the improvement plan of Congolese fishery management.

---

<sup>2</sup> Baseline report on fishery resources management abroad of 2014, Marinfoforum 21, Japan, March 2015

### **1) Related basic information to understand the current situation**

As for the factor « data on the number of fishing boats and fishermen », which are renewed every year, as there is the related registration system and quotas of catches shall be defined on that basis. Data collectors assigned to the Songolo and Base Agip beach - that is the prime landing beache – should collect the data on fish species and volumes of catches (the number of fish boxes) at each landing of boats on their return from fishing trip. Data collection on artisanal fishing catches, has started only in 2010. There would be certainly missing data, mainly for landings early morning and late night, but the estimation method of these data is being established in collaboration with FAO. However, the information on consumer fish prices, consumptions of fish products, as well as the information on distribution out of markets is not collected at all. For the « data on resource management actions undertaken by fishermen », the Beninese fishermen group makes an self-imposed restraints on fishing during pelagic fishing peak season - but which - in fact doesn't target resources management, but rather aims to taking measures against fish price slump, due to the excess supply on markets.

### **2) Items on the Maintain/Rehabilitation of the Ecosystem**

Environment preservation, for example run-off of sediments, sewage from households and industries, and waste treatment, etc. is ruled by the law, but its surveillance is still poor. In the fishery area, the surveillance of industrial fishing vessels is made by surveillance boats or by satellite using the VMS system (Vessel Monitoring System) to prevent IUU fishery (illegal, unreported and unregulated fishing), but there is only one single surveillance boat due to the lack of budget, thus surveillance activities are inadequate. Furthermore, activities for the restoration of resources haven't started. Rules and the law do exist, but surveillance and control means are lacking.

### **3) Items on the Resource management (Input-Control)**

The law and decrees on fishery rules fishing on the sea within 6 miles off the coast for artisanal fishing and from 6 to 200 miles for industrial fishing. The mesh size of net is also regulated by decree. The registration system of fishing boats had been started with industrial fisheries vessels, but registration is now also imposed to artisanal fisheries boats by type of fishing (3 types: pelagic fishing, demersal fishing and shark fishing). A quota system per fishing boat is imposed for artisanal fishermen. There is no regulation or special limitation defining the period, duration of fishing trip, and fishing hours. The surveillance of illegal fishing in fishing grounds where is forbidden to industrial fisheries vessels is made by one single surveillance boat, which is inadequate, there are constantly conflicts between industrial fishing boats and artisanal fishermen on - among others – mal-operations conducted by industrial fishing boats in the fishing grounds allocated to artisanal fishermen within 6 miles off the coast, entail damages on fishing gears, etc.

#### **4) Items on the Resource management (Output-Control)**

The data on catches are collected per boat, but not those on the size of catches (length of the fish, unit weight). There is a ceiling of catches per quota for individual fishermen, and not by origin of country or region, and since volumes of quotas for artisanal fishing are set much higher than volumes of actual catches, the quota seems to be most destined to the collection of registration and licence fees rather than the preservation of resources. The neighbouring area of Gabon border being reserved to the Natural Marine Park, this zone is totally forbidden to fishing. However, there is neither limitation of catches, nor surveillance system. Awareness-raising activities for fishermen are rarely conducted.

#### **5) Items on the Improvement of business structure**

Nothing is done yet in the 10 items of this category. There is no activity on the reduction of fishing cost, support to fishermen's association activities, the micro-financing system, keeping freshness and valorization or diversification of processing products, etc. and guidelines are not established. The improvement of administration management capacities is required.

#### **6) Items on the Improvement of processing and distribution for fish products**

In this category, activities on boats and after landing are presented separately. Fishing boats (canoes) targeting demersal fish use second hand domestic refrigerators as cold storage for their fishing trips of 3-4 days. Hygiene standards on boats are defined by the decree for industrial vessels, but nothing is determined for artisanal fishing, which complies with industrial fishing standards. Fish handlings onboard the industrial vessels are deplorable, and fish quality is already significantly deteriorated before the landing. Also, in this category, even though there are rules or standards, the problem is that those frameworks go unheeded.

Furthermore, hygiene and quality standards are not defined for fish handling on shore, and there is no tangible activity for the improvement of landing places, fish processing, distribution, etc. There is no special market for fish. Stalls for fish products are installed in allocated areas in public markets. Hygienic conditions degradation in markets is an issue and public central markets of Brazzaville and Pointe-Noire are under construction.

#### **7) Items of the Reinforcement of human resource and organizations**

It is important for sustainable fishery management to have a system to develop human resources and to strengthen organisational factors. For transferring to fishers of techniques and knowledge acquired from technical assistance with international donors and developing assistance organisations, it is necessary to have extension specialists having hand-on knowledge on fishing, but currently there is neither extension specialist, nor system to train them. The Ministry of Fisheries has its headquarters in Brazzaville, and contacts with the departmental directorate in Pointe-Noire which control maritime fishery are relatively well secured. The cooperation with police is also ensured for the control of illegal

fishing, but there is nearly no liaison with fishers and NGOs. The absence of extension specialist at the Ministry of Fisheries and regional directorates is one of the important causes of their modest communication with fishers. Moreover, in Congo, there is no educational/training establishment for fishery and the education-training system for fishery is not developed. Training for fishing and fish processing has not been done in Congo. Currently, group trainings in Japan organised by JICA and third country trainings are the main training possibilities for the officials of the Ministry of Fisheries.

## **8) Items of the Reinforcement of Capabilities for assessment and analysis**

In Congo, there is no organization to conduct study or assessment of fishery resources, and there has not been done such study and assessment. While the insufficiency of fish supply is feared, fish supply depends considerably on imports, and the low self-sufficiency rate comes up for the strategic plan, actions towards increase in fish production should be undertaken, but the assessment of resource volumes based on the scientific information, studies necessary to determine the sustainable maximum yield (SMY) and basic fish data collection (age, size, sex) are not conducted. No cooperation is granted in this area by various donors or international organisations. One sole result was noticed in this category that is «the socio-economic research by Congolese researchers and research institutes», but it's not a specific research in fishery. There is neither fishery higher education institution nor research institute.

### **(2) Results of FishMAT analysis**

#### **1) Results of FishMAT analysis**

Among the 8 fishery management categories, 5 categories, namely «Resource management (Output-Control)», «Improvement of business structure», «Improvement of processing and distribution for fish products», «Reinforcement of human resource and organizations» and «Reinforcement of Capabilities for assessment and analysis» have a percentage inferior to 50%, which shows that there are several fields in which fishery management activities operated by the Congolese government shall be reinforced and more support should be provided to Congolese government activities. In particular, the mark given to «Improvement of business structure» is null, which indicates that there is no activity in this area. Moreover, the rate for «Reinforcement of Capabilities for assessment and analysis» is 14%, a very low level, with namely the mark for A (management activities) of 0. As for «Improvement of processing and distribution for fish products», its level is also low with a rate of 20%, and in this area, we gain only one point out of 11 for A (management activities). As for «Reinforcement of human resource and organizations», the rate is also low, of 27%, which shows the delay in Monitoring activities (M) and Management activities (A). The rate of «Resource management (Output-Control)» is of 44% in total, but the mark for Management activities (A) in this area is null by lack of awareness-raising activities of fishermen on the various controls and regulation of catches, actions undertaken by the administration of fishermen associations, etc.

On the other hand, in the MCSA code, the Monitoring level (M) and Management activities (A) are both low enough, 36% and 14% respectively, which indicates apathetic activities for securing sustainability of fishing. In particular, we see that no effort is made in the area of Reinforcement of human resource and organizations, neither in the analysis capacity building and evaluation of the current situation. As a whole, there are many challenging issues to solve in the fishery management area in the future.

## **2) 1 Impact of PECHVAL pilot projects**

Further to FishMAT analysis - reflecting PECHVAL pilot projects activities - besides management activities of the Congolese government, the mark for the 2 categories « Improvement of processing and distribution for fish products» mainly which level was low in the analysis of fishery management activities by the Congolese government, was largely enhanced, which shows that PECHVAL project contributed on time in appropriate areas. For other categories also, the activity level raised from 42 to 54% contributed by PECHVAL activities.

With the help of PECHVAL project, the mark according to MCSA code increased from 14 to 43% mainly for A (Management activities), which level was low under Congo government management activities, strengthening is still necessary. As for Monitoring (M), which was also low, PECHVAL project didn't provide its support and in the future support for these activities shall be reinforced.

## **3) Comparison of FishMAT analysis results of Congo with other countries**

Little time has passed since FishMAT development, examples of analysis are still very few, but we made a comparison of results of artisanal maritime fishery of the Republic of Congo with those of Tanzania (continental fishery) and Senegal (artisanal maritime fishery) chosen among the results of FishMAT studies conducted until now by MarinoForum 21, Japan.

Among the above 3 countries, Senegal presents a relatively well balanced graph. As for Congo, levels are very low in the 3 categories; « Basic information to understand current situation», « Reinforcement of human resource and organizations» and « Reinforcement of Capabilities for assessment and analysis », and its graph is deformed. Besides, for « the Analysis of resource situation and socio-economic situation, and evaluation capacity building » and « Resource management (Output-Control) », Congo's level is the lowest of the 3 countries. Furthermore, about « Reinforcement of human resource and organizations » and « Improvement of processing and distribution for fish products », had we not considered PECHVAL pilot projects activities, Congo's level would have been the lowest of the 3 countries. Strengthening the fishery management system and the Congolese government activities in these specific areas is an emergency, and a strong support shall be provided to that effect.

Based on FishMAT analysis results according to MCSA code, Congo's level is very low compared to the two other countries as for the Monitoring (M), and evaluation of Congolese management

activities (A) would also be inferior to two other countries without assistance of PECHVAL pilot projects under « Reinforcement of human resource and organizations » and « Improvement of processing and distribution for fish products » ; that shows the current situation of insufficiency of basic information on fishery and the absence of researches and scientific studies in the fishery sector, including the oceanography, of Congolese researchers. Congo has only 170 km of coastline, and maritime fishery bases are concentrated in Pointe-Noire, so much so that the delay in Management activities (A) is important in this country, despite a relatively high evaluation for MSCA code elements: Control (C) and Surveillance (S). Moreover, these regulations and surveillance concern only industrial fishery, and to increase the effectiveness of regulations and surveillance, strengthening Management activities (A) is requisite. As for artisanal fisheries, all relating activities just started, including collection of statistical data, and the strengthening of all the four elements of MSCA code, namely Monitoring (M) Control (C), Surveillance (S) and Management activities (A), is vital.

#### **4. The Plan for Improvement of artisanal fish products value chain in Pointe Noire**

##### **(1) Strategy of the value chain improvement plan**

The PECHVAL project aims to draft a master plan and action plans for the improvement of fishery products value chain in artisanal fisheries in Pointe-Noire, to contribute to the food security, economic growth and poverty reduction.

Among actions to be undertaken for the improvement of fish products value chain in artisanal fisheries that were identified by the internal and external environmental survey of artisanal fisheries in Pointe-Noire, most urgent issues « actions for analysing weaknesses and improving them » are the starting point for value chain improvement. In other words, maintaining the quality of the fish caught being a matter of principle to enhance the value of catches, it is essential to prevent the loss of freshness and prevent the contamination of catches. These points are nearly not taken into consideration for the handling of catches of artisanal fisheries in Pointe-Noire, but the value chain will not be improved without their improvement. « Actions for analysing weaknesses and improve them » for the improvement of fish products value chain for artisanal fisheries are mainly subdivided into action for the « elimination of any kind of contamination of fishery products in artisanal fisheries all along the production and distribution process and prevention of freshness loss and quality decrease of fish products », action aiming to « the development of basic infrastructures in artisanal fisheries to increase volumes of fish products in artisanal fisheries distributed by the reduction of losses in catches, losses in processing, losses in distribution of artisanal fisheries », action aiming to « the establishment of support system for the organisation of associations of stakeholders in artisanal fisheries » , and extension/strengthening of the financial assistance to artisanal fisheries stakeholders and associations », and action aiming to « strengthening fishery administrative functions and systems, namely those related to measures taken by the Ministry of Agriculture, Livestock and Fisheries of Congo for the management of artisanal fisheries, which are falled behind to other African government commitments ».

The Master plan for the improvement of fish products value chain in artisanal fisheries in Pointe-Noire is composed of « basic concepts » indicating the basic lines for improvement, for « improvement measures » at each stage of the value chain for the achievement of the basic concept, a « roadmap » indicating the objectives to reach by the times axes and « action plans » for improvement measures to be taken at first and foremost.

**Basic concept 1 : Eliminate any contamination of fish products in artisanal fisheries all along the production and distribution processes and prevention of freshness loss and deterioration of the quality of fish products**

The quality of fish products depends largely on their freshness. Thus, it is essential to prevent the loss of freshness and contamination for improvement of the value chain but in Pointe-Noire, the handling of fishery products in artisanal fisheries from catching to processing and to distribution seems not to take into consideration these points; the improvement of these points being the most urgent, it will be the highest priority.

Development objective:

- Supply safe and clean fish food products to Congolese populations

**Basic concept 2 : Develop basic infrastructures in artisanal fisheries to increase distribution volumes of fish products of artisanal fisheries by the reduction of loss in catches, loss in processing, losses in distribution**

Preventing the loss of freshness of fish products and their contamination will enable extending the time for the distribution of fish products and increasing distributed volumes. Fish products, sources of animal proteins with high nutritional quality, are indispensable items for Congo population's food supply. However, domestic fish production covers only about 60% of the national demand, and the remaining is secured by imports. Potential for the development of marine pelagic resources and inland fresh-water fish resources is considerable, but given the high average annual population growth of 3.13%, even by promoting increment of fish production, it will be necessary from now on to secure optimal imports. It is indispensable to improve the distribution and processing, for domestic and imported fish products be consumed rationally without waste and since losses in catches, processing and distribution are particularly important for artisanal fisheries, it is necessary to eliminate these obstacles and increase volumes distributed and strive to provide for the security of fish products necessary to the population. The development of basic infrastructures for artisanal fisheries, and the augmentation of volumes of fish products distributed by the reduction of loss in catches, loss in processing, losses in distribution of artisanal fisheries will contribute to that effect.

Development objective:

- Secure the stable national supply of fish products of artisanal fisheries

**Basic concept 3 : Establish a support system for organisation of stakeholders in artisanal fisheries, and broaden financial supports to stakeholders in artisanal fisheries and their associations**

Financial bases of fishers, processors, traders, etc. supporting Congolese artisanal fisheries are very fragile, and even minimum investment and/or the employment of manpower to prevent loss of freshness and contamination of catches are difficult. Stakeholders working in the artisanal fisheries value chain are generally impeded obtaining a loan from financial institution by low social credibility. There is a traditional mutual assistance system among foreign fishermen, but the funds are confined. Even though processors can obtain fresh fish (raw materials) in abundance during the peak season, they don't have enough funds to expand their processing facilities or buy fresh fish, and thus lose the opportunity to increase their production. Few shipowners amortize their expensive equipment such as canoes or outboard engines, and in case of loss of such equipment by an accident, many are obliged to abandon. In case of processors selling processed products to remote vendors, if the repayment of the sales amount were deferred, procurement of fresh fish for processing becomes impossible and they are sometimes compelled to give up. For building capacities of artisanal fisheries production and stable exploitation of fishers, it is essential to strengthen the financial bases of these artisanal fisheries stakeholders. In so doing, strengthening the financial assistance to stakeholders of the artisanal fisheries via the creation/expansion of micro-credit for the organisation of these actors and financing of their associations is indispensable.

Development objective:

- Augment the fish volume of production and distribution in artisanal fisheries by reinforcing fish production capacities and maintaining stable operations

**Basic concept 4 : Invigorate functions and systems in the administration for artisanal fisheries management of the Ministry of Agriculture, Livestock and Fisheries of Congo, which seems to be falled behind compared to other African governments commitments**

The support and involvement of the government are very important for all activities for improvement of fish products value chain in Congo artisanal fisheries. Among measures taken by the Ministry of Agriculture, Livestock and Fisheries of Congo for artisanal fisheries, the involvement of the Congolese government in following measures must be reinforced in order to promote effectively the improvement of the value chain of fish products in artisanal fisheries : the establishment of the legal system and control of violations for the « resource conservation » determining the quality and quantity of catches, the support to fishers' associations, the support for « management structure improvement » including the micro-credit system, etc., technical training aiming to « the improvement of handling, processing



and distribution », the improvement of market facilities and introduction of food products control, the « focus on human and organisational factors » necessary for the achievement of aforesaid measures, the development of fish statistics, and the « analysis of resources status, the socio-economic situations, and evaluation capacity building » necessary to sustainable management of resources based on the scientific survey of resources, etc.

Development objective:

- Sustainable fishery resource management

## **(2) Roadmap towards improvement of the fish products value chain in artisanal fisheries in Pointe-Noire**

Many and various stakeholders are involving in the fish products value chain in artisanal fisheries in Pointe-Noire, and each segment of that value chain is very fragile, its improvement should take some time. Also, all the stakeholders involved in artisanal fisheries should have common understanding of the guidance for the improvement of fish products value chain in artisanal fisheries, in order to enable solving each of problems under the arbitrated priority order.

For the improvement of fish products value chain in artisanal fisheries, it is essential to pave the way for each fundamental axis according to the time frame, and continue all actions while checking the progress. Considering the time required to achieve the development objective of each fundamental axis as the maximum time, this time was divided into several sections and the establishment of milestones and definition of roadmap for its realization were carried out.

The year 2020 being chosen as baseline year, the first two consecutive years will be devoted to the establishment of foundations to send back to the beginning all flawed components of the value chain. Specifically, the reduction of garbage on landing beaches and distribution places, capturing the information on fish resources and the creation of a legal and organizational system will begin; simultaneously, practical technical trainings on the field of fishers and processors, which should take much time and energy, will start, as well as the training of the core human resources in charge.

In the following two years, the reduction of garbage on the landing beaches and main distribution places will be attained, the quality of fresh fish will be improved and the financial support as regard to stabilisation of fisher's finance will begin. The development of basic data on human resources will also start, which will strengthen the functions of resources study.

Then 5 years later, fishing capacities will be improved thanks to tax exemption on fishing equipment, and production capacities will be improved thanks to the amelioration of fishing techniques and processing capacity by organisation and cooperation for utilisation of processing equipment. The awareness on safe fish products will then be strengthened among fishers, vendor and consumers. The controls of fish resources conservation will also be intensified, and the fish resources surveys will begin.

Moreover, 10 years later, the technical trainings on the various sites by fishery extension specialist should enable further development of production capacity. The living environment of fisher's communities will also be improved, fresh fish sales will be made in a clean environment and the development of distribution points in the country will increase the volumes of fish products distributed domestically. With the acquisition of information on increasing resources, it will be possible to estimate the exploitable volumes of main fish species.

15 years after the target year (baseline year), the production will have increased thanks to the introduction of a new type of canoe, freshness will be kept, and none contaminated fish products in artisanal fisheries will be marketed on modern and hygienic fish markets, through artisanal fisheries support centres. Conflicts between artisanal fisheries and industrial fishery will also come to an end, the management of fishers and traders will be improved and stable production will continue. The government will have proposed measures for the sustainable resources management and will go for their achievement.

Tableau – 3 : Milestones up to the improvement of fish products value chain of artisanal fisheries

Basic concepts	From 2020 to 2021	From 2022 to 2023	5 years later	10 years later	15 years later	Development objective
Eliminate any contamination of fish products in artisanal fisheries all along the production and distribution processes and prevention of freshness loss and deterioration of the quality of fish products	The garbage collection will be carried out periodically on the landing beaches.	Clean water will be provided in fisher's communities.	Air pollution caused by the smoke from smoking kilns will disappear.	The living conditions of fisher's communities will be improved.	Contamination free fish products will be widely available.	Supply safe and clean fish food products to Congolese populations
	Installation of water supply networks and hygienic drainage facilities will be started in the existing markets.	Ice for keeping fish fresh is widely used and the quality of fresh fish for processing will be improved.	Awareness-raising for consumers to "Safe fish food products" will be carried out widely.	Fish sales will be made on clean vending stalls and in a clean environment.	Modern and hygienic fish markets will be constructed.	
Develop basic infrastructures in artisanal fisheries to increase distribution volumes of fish products of artisanal fisheries by the reduction of loss in catches, loss in processing, loss in distribution	The technical guidance and training for fishers in pelagic and demersal fisheries will begin.	The periodical inspections of outboard engines will be compulsory.	Much effective fishing techniques will be introduced.	Fisheries extension specialists will be posted on the prime fisher's communities	New type of fishing boats with better production capacity will be launched.	Secure the stable national supply of fish products of artisanal fisheries
	Short term practical training programs will start at the existing fishery centre.	Improved smoking kilns will be wide spread.	Processing capacity of workshops (or facilities) will be reinforced by joint operations of processors and/or by organization of processors.	The distribution system to Brazzaville for fresh fish will be established.	Artisanal fisheries centres will be established on the prime landing beaches.	
Establish a support system for organisation of stakeholders in artisanal fisheries, and broaden financial supports to stakeholders in artisanal fisheries and their associations	Establishment of a support policy of the MAAF of guidance to organize associations of fishery sector stakeholders.	Assignment of a responsible devoted to organize them within the Fisheries Directorate.	Revitalization of existing associations of artisanal fisheries stakeholders and strengthening of their organization	Establishment of mutual insurance system within associations.	Most of stakeholders involved in artisanal fisheries will join in an association.	Augment the fish volume of production and distribution in artisanal fisheries by reinforcing fish production capacities and maintaining stable operations
	Stakeholders of artisanal fisheries have enjoyed credit for fishing boats and processing facilities.	Management of artisanal fisheries have been stable thanks to tax deduction on fuel, boats and fishing gear.	Tax deduction on fisheries have attracted investments in fishing boats and gear.	Savings and credit activities of associations will be expanded.	Financial management of fishers and processors will be improved, and continuous stable production will be secured.	

Basic concepts	From 2020 to 2021	From 2022 to 2023	5 years later	10 years later	15 years later	Development objective
<p>Innovate functions and systems in the administration for artisanal fisheries management of the Ministry of Agriculture, Livestock and Fisheries of Congo, which seems to be falled behind compared to other African governments commitments</p>	Sanctions on industrial fishing boats fishing illegally in fishing grounds for artisanal fishing have been strengthened.	The registration system of fishing boats and fishers will be refined, and data will be digitized.	The control of mesh size of fishing nets will be intensified.	Surveillance-rescue boats will secure the surveillance 24 hours a day.	Conflicts between artisanal fisheries and industrial fisheries will be dissolved.	Sustainable fishery resource management
	A system of extension specialists on fishing techniques have been established.	Trainings of extension specialists on fishing techniques in neighbouring countries will begin.	A fisheries training school will be established to improve the fishing techniques of artisanal fishers.	Extension specialists will give the technical guidance and practical training on the landing beaches.	Fishers will learn new techniques and will conduct effective fishing.	
	The development of statistical data on fishing will start.	The functions of research and study on URRM will be strengthened.	Scientific fishery resources surveys will be launched.	Exploitable volumes of main fish species will be identified.	A policy for sustainable fishery resource management will be established.	
	The re-training of officials of Fisheries directorate by using the internship system in international organisations will be instituted.	The staff and facilities/equipment of the Surveillance and Control centre of the quality of fishery products will be strengthened.	The quality control of the fish landed by industrial fishing vessels will be enforced.	The functions of control and test of food products of the URRM will be developed.	In the markets, there will be no food products other than safe and clean products.	

Roadmap aiming to the improvement of fishery products value chain of small-scale fishing in Pointe-Noire

	From 2020 to 2021	From 2022 to 2023	5 years later	10 years later	15 years later	Development objective						
Milestones	<p>The garbage collection will be carried out periodically on the landing beaches.</p> <p>Installation of water supply networks and hygienic drainage facilities will be started in existing markets.</p> <p>The technical guidance and training for fishers in pelagic and demersal fisheries will begin.</p> <p>Short term practical training programs will start at the existing fishery centre.</p> <p>Establishment of a support policy of the MALF of guidance to organize associations of fishery sector stakeholders.</p> <p>Stakeholders of artisanal fisheries have enjoyed credit for fishing boats and processing facilities.</p> <p>Sanctions on industrial fishing boats fishing illegally in fishing grounds for artisanal fishing have been strengthened.</p> <p>A system of extension specialists on fishing techniques have been established.</p> <p>The development of statistical data on fishing will start.</p> <p>The re-training of officials of Fisheries Directorate by using the internship system in international organisations will be instituted.</p>	<p>Clean water will be provided in fisher's communities.</p> <p>Awareness-raising for consumers to "Safe fish food products" will be carried out widely.</p> <p>Much effective fishing techniques will be introduced.</p> <p>Processing capacity of workshops (or facilities) will be reinforced by joint operations of processors and/or by organization of processors.</p> <p>Revitalization of existing associations of artisanal fisheries stakeholders and strengthening of their organization.</p> <p>Tax deduction on fisheries have attracted investments in fishing boats and gear.</p> <p>The control of mesh size of fishing nets will be intensified.</p> <p>A fisheries training school will be established to improve the fishing techniques of artisanal fishers.</p> <p>Scientific fishery resources surveys will be launched.</p> <p>The quality control of the fish landed by industrial fishing vessels will be enforced.</p>	<p>The living conditions of fisher's communities will be improved.</p> <p>Fish sales will be made on clean vending stalls and in a clean environment.</p> <p>Fisheries extension specialists will be posted on the prime fisher's communities.</p> <p>The distribution system to Brazzaville for fresh fish will be established.</p> <p>Establishment of mutual insurance system within associations.</p> <p>Savings and credit activities of associations will be expanded.</p> <p>Surveillance-rescue boats will secure the surveillance 24 hours a day.</p> <p>Extension specialists will give the technical guidance and practical training on the landing beaches.</p> <p>Exploitable volumes of main fish species will be identified.</p> <p>The functions of control and test of food products of the URRM will be developed.</p>	<p>Contamination free fish products will be widely available.</p> <p>Modern and hygienic fish markets will be constructed.</p> <p>New type of fishing boats with better production capacity will be launched.</p> <p>Artisanal fisheries centres will be established on the prime landing beaches.</p> <p>Most of stakeholders involved in artisanal fisheries will join in an association.</p> <p>Financial management of fishers and processors will be improved, and continuous stable production will be secured.</p> <p>Conflicts between artisanal fisheries and industrial fisheries will be dissolved.</p> <p>Fishers will learn new techniques and will conduct effective fishing.</p> <p>Management of fishers and processors will be improved, and continuous stable production will be secured.</p>	<p>Supply safe and clean fish food products to Congolese populations</p> <p>Secure the stable national supply of fish products of artisanal fisheries</p> <p>Augment the fish volume of production and distribution in artisanal fisheries by reinforcing fish production capacities and maintaining stable operations</p> <p>Sustainable fishery resource management</p>							
Improvement plans	<p>Eliminate any contamination of fish products in artisanal fisheries all along the production and distribution processes and prevention of freshness loss and deterioration of the quality of fish</p> <p>Develop basic infrastructures in artisanal fisheries to increase distribution volumes of fish products of artisanal fisheries by the reduction of loss in catches, loss in processing, loss in distribution</p> <p>Establish a support system for organisation of stakeholders in artisanal fisheries, and broaden financial supports to stakeholders in artisanal fisheries and their associations</p>	<p>Innovate functions and systems in the administration for artisanal fisheries management of the Ministry of Agriculture, Livestock and Fisheries of Congo, which seems to be failed behind compared to other African governments commitments</p>	<p>Improvement plan of hygienic environment of landing beaches/ Improvement plan of the environment of fisher's communities</p>	<p>Improvement plan for processing of fish products</p>	<p>Development plan for strengthening the quality control of fish products</p>	<p>Improvement plan of the quality of fish products/Development plan of markets for fish products</p>	<p>Development plan of fishing techniques/Development plan of fishing canoes improvement/Plan for construction of fishery training school</p>	<p>Development plan for management of artisanal fisheries centers/Establishment plan of artisanal fisheries centers</p>	<p>Plan for strengthening the organization of artisanal fishers</p>	<p>Financial support plan for artisanal fisheries</p>	<p>Plan for strengthening the capacity of surveillance and control against illegal fishing</p>	<p>Development plan of fish statistics/Fish resource survey / Plan for sustainable management of fish resources</p>
	<p>Improvement of the hygienic environment of landing beaches and prevention of contamination of fish products</p> <p>Improvement of smoking kilns/Improvement of hygienic environment in the processing workshops</p> <p>Development of human resources in charge of the quality control of food products in markets</p> <p>Improvement of hygienic conditions on public markets for fish products</p> <p>Development of fishing techniques (prevention of the post-harvest loss)</p> <p>Nurturing of extension specialists and Extension and training for the improvement of fishing techniques</p> <p>Guidance for the operation and management of the artisanal fisheries center of Pointe Noire (CAPAP)</p> <p>Establishment of a support system for artisanal fishers and stakeholders. Strengthening of the organization of fishery stakeholders' associations</p> <p>Training for control of illegal fishing strengthening of the surveillance and control system, and penalties</p> <p>Establishment of a database of fishing boats and fishers</p> <p>Training of agents for fish statistics</p>	<p>Improvement of the environment of fisher's communities</p> <p>Establishment of a market for processed fish products</p> <p>Strengthening the awareness-raising on food security</p> <p>Enforcement of strict quality control of fish products of the Centre for controlling fish</p> <p>Improvement of the quality of processed products</p> <p>Improvement of the food security of fish products</p> <p>Short term practical training system for artisanal fishers</p> <p>Improvement of the capability of fishing boats by introduction of improved canoes</p> <p>Building capacities for the management of artisanal fisheries centres</p> <p>Promotion of investments by expansion and strengthening of micro-credit programs for fisher's association, and stabilisation of fisher's financial management</p> <p>Development of artisanal fisheries by the reduction of taxes and granting of subsidies</p> <p>Arrangement of surveillance-rescue boats</p> <p>Development of a management system of fishery statistics</p> <p>Strengthening of study and research functions for fish resources</p>	<p>Strengthening of processing capacity of workshops by joint operations of processors and/or by organization of processors (Augmentation of quantities distributed in the country by increasing the production of processed products)</p> <p>Establishment of the central fish market in Pointe-Noire</p> <p>Establishment of a fishery training school</p> <p>Establishment of artisanal fisheries centers</p>	<p>Strengthening of URRM functions of inspection and control for fish food products</p>	<p>Identification of the exploitable volume of major fish species and development of the sustainable management plan</p>							



### **(3) Action plans**

#### **1) 5-5-1 Improvement plans which will be implemented during the first two years (2020-2021)**

##### **A. Project for development of the hygienic conditions of landing beaches Improvement plans (Based on Basic concept 1 & 2)**

###### **(1) Construction of sorting spaces and workshops for primary treatment**

The development of hygienic fisheries facilities on two prime landing beaches of Pointe-Noire and Kouilou departments, namely, places for landing/sorting on concrete floor and roof, primary treatment spaces and deep wells for clean water supply to the working space, will enhance the hygienic conditions of the landing beach and prevent the contamination of fish.

###### **(2) Environmental improvement of fisher's communities and landing beaches**

Garbage bins will be installed in the communities and a garbage collection system will be organised, it is also planned to raise the awareness of fishers and their families to the promotion of the improvement of the hygienic conditions of the communities and landing beaches, by periodical cleaning activities on beach by fishers who use it as a landing beach.

##### **B. Project for strengthening the awareness on food security (Based on Basic concept 1)**

Awareness-raising of fishers, traders and vendors to keep fish fresh and to secure the food shall therefore be emphasized. Consumers' awareness-raising to the safety of food will also be strengthened.

##### **C. Project for Improvement of processing of fish products (diffusion of improved smoking kilns and improvement of the hygienic conditions of smoking workshops) (Based on Basic concept 2)**

###### **(1) Dissemination of improved smokehouses**

The dissemination of the kiln, which effectiveness was proved by the pilot project will target reduction of losses in processing, increase of the production capacity, improvement of the quality of products and reduction of smoking pollution. The dissemination activities will be targeting the reduction of the production cost and to support a greater number of processors introduce the improved smoking kiln.

###### **(2) Development of the hygienic conditions in processing workshops**

To ensure the reduction of losses in processing and improve processing capacities by the improvement of the working environment, the model smoking facilities including deep wells, storages for utensils, and storages for products will be established in the 3 districts of Mazula, Songolo and Phoea, and the trainings of the smoking practice will be made by group trainings. The organization of processors' associations will be nurtured through

group training, and the support to the existing micro-credit fund such as MUCODEX, etc. will enable the provision of funds for the expansion of improved smoking kilns, procurement of fresh fish and expanding the production capacity of smoked products.

**D. Project for intensifying of the quality control of fish food (training program for inspectors of food products in the markets) (Based on Basic concept 2)**

After industrial vessels land fish at Pointe-Noire, the quality inspectors of the Quality control centre of fish products of the Fisheries directorate of Pointe-Noire provide the sensory analysis at landing for the quality of catches, however, the fresh fish distributed in the city are of poor quality, which makes their value lower in the following distribution process. It is essential that quality inspectors have detailed knowledge for judgement with the freshness score, he/she is able to give instructions to fishers for correct fish handling and he/she have the legal authority to prohibit distribution of poor quality products. It is necessary for quality inspectors to have enough knowledge and capacities to make an impartial judgement. The strengthening of the quality control system of fish food products is required, and the training and retraining of quality inspectors shall be undertaken.

**E. Project for development of hygienic conditions in public markets (Based on Basic concept 2)**

The project plans the installation of water supply networks, improvement of water drainage facilities in the fish selling sections, construction of public toilets and installation of garbage dumps in the six public markets.

**F. Project for improvement of fish quality (improvement of fishing techniques, prevention of the freshness loss of fish catches) (Based on Basic concept 2)**

Practical guidance and training of pelagic and demersal fishers be provided on fishing techniques to prevent the loss of freshness of catches?

**G. Project for extension of fishing techniques (training of fisheries extension specialists) (Based on Basic concept 2)**

To improve artisanal fishing techniques, the most effective way is to carry out the hand-on trainings by working directly with the fishers. However, there is no fisheries educational institution in Congo, and there is lack of specialists capable of providing guidance and training to fishers on fishing techniques in the Ministry of Agriculture, Livestock and Fisheries. It is necessary to establish an extension specialists system for artisanal fisheries within the Ministry of Agriculture, Livestock and Fisheries, and send trainees to neighbouring countries to train as the extension specialists.



**H. Project for guidance of operation and management of the artisanal fisheries center (Based on Basic concept 3)**

To make operation and management of the CAPAP (artisanal fisheries centre at Songolo), inaugurated in June 2018, a model for artisanal fisheries centers to be established in future, an expert will provide the guidance on the operation and management of artisanal fisheries facilities, and will develop management capacities of officials assigned to the Center at intervals.

**I. Project for strengthening the organization of stakeholders in artisanal fisheries (Based on Basic concept 3)**

The Ministry of Agriculture, Livestock and Fisheries will establish its policy to support the organization of stakeholders in artisanal fisheries and appointed full time staff(s) devoted to the organizing associations for stakeholders in artisanal fisheries will be assigned in the departmental fisheries directorates. In addition, the Ministry will also support associations to have a credit line for purchasing fishing boats, fishing equipment, processing gear, funds for procurement of fish, funds for procurement of fish products, etc., while using the existing micro-credit system. The expert will work with the appointed staff to support for strengthening organizations and activities of artisanal fisheries associations

**J. Project of training for surveillance and control of illegal fishings (Based on Basic concept 4)**

As counter measures against illegal fishings, it is planned in the future to arrange boats for surveillance and control at Pointe-Noire, with the VMS for effective and severe control. Agents for surveillance and control will be sent to a neighbouring country as an internship to improve their surveillance and control capacities for future deployment.

**K. Project for development of fishery database (Based on Basic concept 4)**

The development plan of the fishery database necessary to sustainable fishery resources development will be established in collaboration with the FAO and/or another fishery sub-regional organization.

**L. Project for training of agents for fishery statistics**

Fishery statistical agents who collect fishery statistics on the field will be sent to internship in a neighbouring country for their training.

**(2) Improvement Plans which implementation is scheduled during the following 2 years  
(2022-2023)**

**A. Development plan of the environment of fishers's village communities (Based on Basic concept 1)**

Inhabitants of fishers's village will have access to clean drinking water thanks to boreholes and running water installations built in the vicinity of villages. Water drainage channels will be developed for rainwater and sewage not to stagnate anymore in villages and a sanitary environment will be put in place. The development of roads to the village will enable preventing the contamination of fish products and improve the productivity. A facility for information diffusion on sea conditions and meteorology will also be developed to prevent all accidents at sea.

**B. Construction plan of a market for processed fish products (Based on Basic concept 2)**

In the vicinity of the CAPAP dealing with fresh fish from artisanal fisheries, will it be possible to build a market for processed fish products enabling processors artisanal fisheries to negotiate smoked products and salted-dried products.

**C. Development plan of the Quality control centre for fish products (Based on Basic concept 2)**

Control facilities and equipment of the Quality control centre for fish products of Pointe-Noire port will be constructed to enhance the quality control level of fish products distributed, or even to secure the safety of fishery food products to consumers.

**D. Improvement plan of fishing techniques (Based on Basic concept 2)**

Fishing effectiveness will be promoted by the introduction and dissemination of very advanced and effective fishing techniques. Training on outboard engines repair will also be provided to small-scale fishers to ensure the security during sailing.

**E. Capacity building plan for the operation and management of artisanal fisheries support centres (Based on Basic concept 3)**

Artisanal fisheries support centres established as public establishment will be privatised and functions and capacities of the agents of centres, users' organizations and management committee will be built to enable the autonomous management of centres by artisanal fisheries actors.

**F. Financial support plan of artisanal fisheries (Based on Basic concept 4)**

The organization of fishery actors' associations will be promoted, the expansion of micro-credit to organized groups strengthened, and the expansion/strengthening of production facilities of fishery actors and the acquisition of fresh fish (materials) at low prices, etc.

will enable the expansion of the production.

#### **G. Implementation plan of fishing control vessels (Based on Basic concept 4)**

To ensure the sustainable utilisation of fishery resources and ordered fishing activities, a boat for fishing control will be assigned to Pointe-Noire to control illegal fishing conducted by IUU fishing (Illegal, unreported, unregulated), industrial vessels and artisanal fisheries boats.

#### **H. Development plan of a management system of fishery statistical data (Based on Basic concept 4)**

The statistics of catches by fish species, which constitute the resources management basis, will be developed.

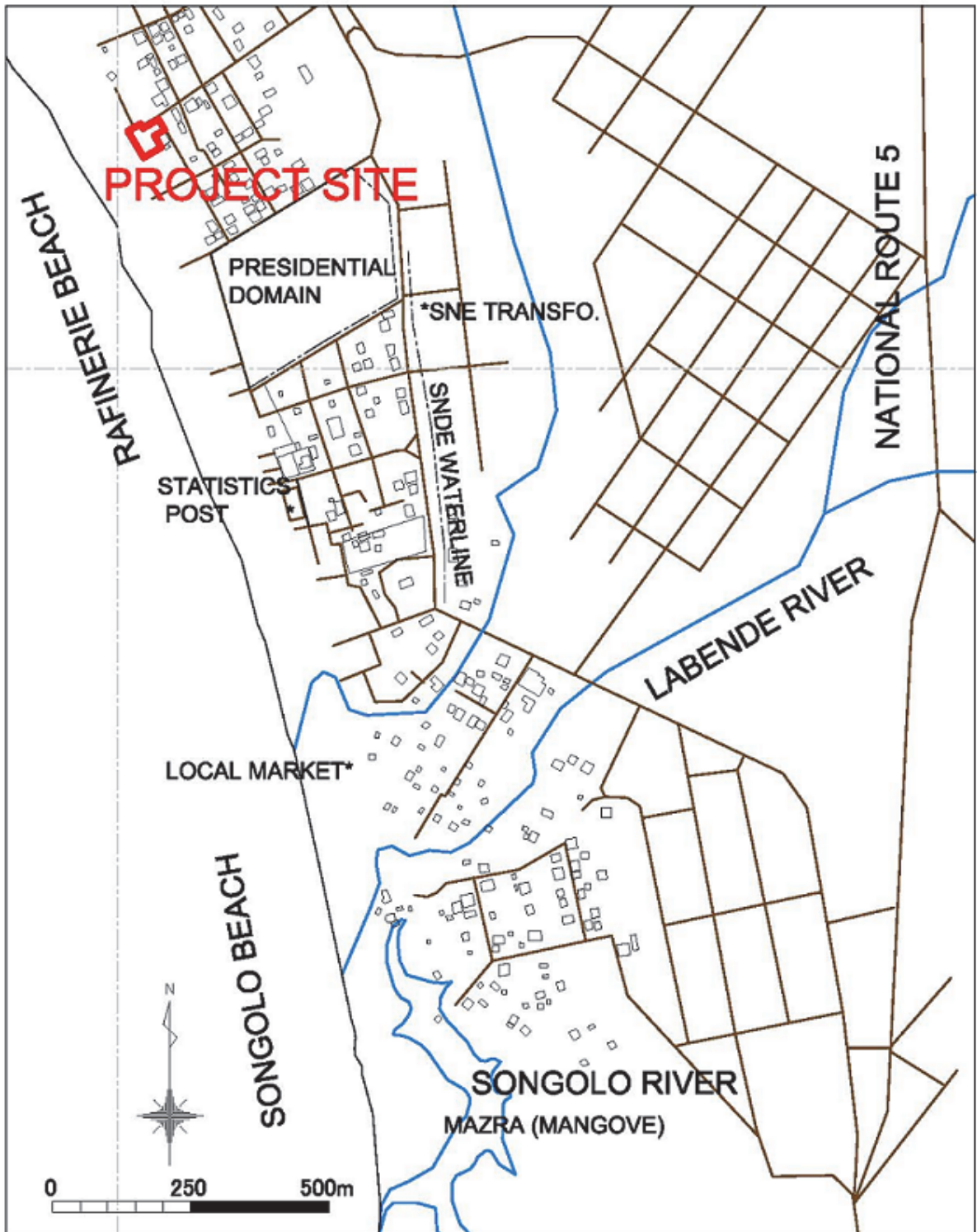
#### **(3) Plans which implementation will begin 5 years later (from 2024)**

- A. Project for expansion/strengthening of joint processing workshops (Based on Basic concept 2)
- B. Project for training of artisanal fishers (Based on Basic concept 2 & 3)
- C. Project for development of improved canoes (Based on Basic concept 2)
- D. Project for financial supporting for artisanal fisheries development (Based on Basic concept 4)
- E. Project for strengthening research and studies for fish resources (Based on Basic concept 4)

#### **(4) Plans which implementation will begin 10 years later (from 2030)**

- A. Project for implementation of URRM functions for food products copntrol (Based on Basic concept 2)
- B. Project for construction of a fish market in Pointe-Noire (Based on Basic concept 2)
- C. Project for establishment of a fishery training school (Based on Basic concept 2)
- D. Project for establishment of artisanal fisheries support centres (Based on Basic concept 2)
- E. Project for resources survey (Based on Basic concept 4)
- F. Project for establishment of a sustainable resource management plan (Based on Basic concept 4)





Location map



## Photo (1st Year)



Workshop (2012.10)



Public hearing from fishers (2013.2)



Meeting of fishers (2013.4)



Trial of Beach Cleaning (2013.4)



Workshop (2013.5)



Briefing session of the result of public markets research (2013.5)





JCC (2013.7)



Situation of fish landing at Base Agip



Situation of fish landing at Songolo



Situation of selling at a public market



**Photo (2nd Year)**



General Assembly of AICP (2013.10)



General Assembly of AICP (2014.5)



AICP Officers Training (2013.12)



AICP Officers Training (2014.5)



Garbage container as grant from Chamber of commerce (2014.5)



Garbage container as grant from Chamber of commerce (2014.5)





Bid for construction of facilities (2014.7)



Construction of water supply facilities by Congo government (2014.6)



Pilot project (2013.12)



Pilot project (2014.4)



Pilot project (2014.2)



Pilot project (2014.3)



Pilot project (2014.6)



Pilot project (2014.6)



Pilot project (2014.1)



Beach cleaning



JCC (2014.7)



**Photo (3rd Year)**



CAPAP



CAPAP



CAPAP

鮮魚販売所

鮮魚販売所



JCC (2018.12)



JCC (2018.12)

## List of Figures & Tables

Table 1-1: Projected Congo Population (if the average population growth rate is 3.13%) .....	1-3
Table 1-2: Fish Demand Forecast in Congo (Unit: ton).....	1-3
Table 1-3: Volumes of the EEZ and Inland Fishery Resources and Volumes of Resources Used .....	1-4
Table 1-4: Percentage of Meat and Fishery Products Purchased in the Budget of Congolese Families .....	1-4
Table 2-1: Average Fishing Balance Sheet per Sea Trip - Artisanal Pelagic Fishing .....	2-7
Table 2-2: Percentage of the Crew Members' Production Amount Share and Average Income for Each Fishing Trip.....	2-8
Table 2-3: Unit Prices of the Main Fish Species on the Beach .....	2-9
Table 2-4: Average Balance Sheet Per Sea Trip - Artisanal Fishing of Demersal Species.....	2-9
Table 2-5: Production Amount Share and Average Income of Artisanal Demersal Fishing Boats' Crew Members for Each Fishing Trip .....	2-10
Table 2-6: Average Balance Sheet of Daily Processing by Smoking .....	2-12
Table 2-7: Average Balance Sheet of a Processing by Salt-drying Session.....	2-14
Table 2-8: Daily Average Balance Sheet of Fish Trade .....	2-15
Table 2-9: Average Daily Balance Sheet of Vendors by Type of Products (Study Period: December 2012 - February 2013) .....	2-16
Table 2-10: Value Added Rates in the Retail Price of Artisanal fisheries Products .....	2-21
Table 2-11: Average Annual Incomes of the Artisanal fisheries Stakeholders.....	2-23
Table 3-1: Pilot Projects.....	3-1
Table 3-2: Content of the Pilot Project for Fish Quality Improvement.....	3-4
Table 3-3: Estimate of the Profit Resulting from Preservation in Ice.....	3-10
Table 3-4: Sorting Standards of Smoked Products.....	3-11
Table 3-5: Comparison of the quality of smoked products based on the preservation practice of fresh fish..	3-12
Table 3-6: Comparison of Smoked Products per Preservation practices of Materials.....	3-13
Table 3-7: List of sales points of fish products in the public markets of Pointe-Noire .....	3-17
Table 3-8: Follow-up of the Practical Processing Training.....	3-30
Table 3-9: A. Follow-up of the hygiene training lecture .....	3-32
Table 3-10: Results of water analysis .....	3-34
Table 3-11: Number of participants to beach cleaning .....	3-38
Table 3-12: Management rules of the beach proposal by the Mayor of Mongo Mpoukou .....	3-39
Table 3-13: Results of the nutrition analysis.....	3-42
Table 3-14: Plan of components of the facilities' .....	3-43
Table 3-15: Structure of each building and floor area of rooms/premises .....	3-46
Table 3-16: Characteristics of outdoor structure and others .....	3-46
Table 3-17: Characteristics of equipment .....	3-51
Table 3-18: Equipment procured from Japan.....	3-54
Table 3-19: Result of the bid for equipment procurement .....	3-55

Table 3-20: Comparison of the type of organization .....	3-59
Table 4-1: Main categories of resource management activities by objective and their content .....	4-2
Table 4-2: Items on the Basic information to understand current situation .....	4-2
Table 4-3: Items on the Maintain/Rehabilitation of the Ecosystem .....	4-3
Table 4-4: Items on the Resource management (Input-Control) .....	4-3
Table 4-5: Items on the Resource management (Output-Control) .....	4-4
Table 4-6: Items on the Improvement of business structure .....	4-4
Table 4-7: Items on the Improvement of processing and distribution for fish products .....	4-4
Table 4-8: Items of the Reinforcement of human resource and organizations .....	4-5
Table 4-9: Items of the Reinforcement of Capabilities for assessment and analysis .....	4-5
Table 4-10: Results of FishMAT analysis for Congolese fishery management .....	4-9
Table 4-11: Results of FishMAT considering PECHVAL pilot projects .....	4-10
Table 5-1: Strengths and weaknesses of internal environment of the artisanal fisheries in Pointe-Noire .....	5-3
Table 5-2: Artisanal fisheries external environment in Pointe-Noire .....	5-5
Figure 1-1: Breakdown of National Fish Consumption (2000-2010) Unit: Ton .....	1-1
Figure 1-2: Evolution of the Fishery Production and Imported Fish Volumes Unit: ton .....	1-1
Figure 1-3: GDP per Capita of Congo and Neighbouring Countries (US\$) .....	1-2
Figure 1-4: Demographic Evolution of Congo (2000-2009) .....	1-2
Figure 1-5: Breakdown of the Congo population (2009) .....	1-2
Figure 1-6: Consumer Prices in 2000-2009 (BZV) .....	1-5
Figure 1-7: Consumer Prices in 2000-2009 (PNR) .....	1-5
Figure 1-8: Monthly Catches of Pelagic Fish .....	1-7
Figure 1-9: Monthly Catches of Demersal Fish .....	1-7
Figure 1-10: Volumes Distributed in the Domestic Markets by Supply Source (2010, in percentage) .....	1-7
Figure 1-11: Breakdown of Imported Fish by Species and Processing Type (2010) .....	1-7
Figure 1-12: Pelagic Fish Distributed in Congo, in Percentage and by Supply Source (2013) .....	1-8
Figure 1-13: Demersal Fish Distributed in Congo, in Percentage and by Supply Source (2013) .....	1-8
Figure 1-14: Percentage by Species of Imported Fish (2013) .....	1-8
Figure 1-15: Percentage by Species of Imported Salt-dried Fish (2013) .....	1-8
Figure 1-16: Volumes Distributed in the Markets per Fish Species and Supply Source (Pelagic Fish: (2013) .....	1-9
Figure 1-17: Comparison of the Pelagics Consumer Prices (PNR) .....	1-9
Figure 1-18: Unit Price of Imported Frozen Horse Mackerels (unit: US\$/kg) .....	1-9
Figure 1-19: Imports of Frozen Horse Mackerels (unit: ton) .....	1-9
Figure 1-20: Volumes Distributed in the Markets per Species and Supply Source (Demersal Fish: (2013) ...	1-10
Figure 1-21: Demersal Fish Consumer Price (PNR) .....	1-10
Figure 1-22: Consumer Price Index Evolution (PNR and BZV) .....	1-10
Figure 1-23: Consumer Prices of Fishery Products (PNR) .....	1-10

Figure 1-24: Consumer Prices of Defrosted Horse Mackerels (PNR and BZV) .....	1-11
Figure 1-25: Prices of Fresh and Salt-dried Bass (PNR and BZV).....	1-11
Figure 1-26: Prices of Fresh Bass and Price Differences (PNR and BZV).....	1-12
Figure 1-27: Prices of Salt-dried Bass and Price Differences (PNR and BZV) .....	1-12
Figure 1-28: Monthly Producer Price of Sardinella and its Monthly Fluctuation (March 2014 - February 2015) .....	1-12
Figure 1-29: Horse Mackerel Price and Price Differential Ratio (PNR et BZV) .....	1-13
Figure 2-1: Main Fishing Grounds of the Artisanal fisheries .....	2-2
Figure 2-2: High Season of Pelagic and Demersal Fish, Temperatures and Rainfalls .....	2-2
Figure 2-3: Destination of the Artisanal fisheries Pelagic Fish .....	2-3
Figure 2-4: Destination of the Artisanal fisheries Demersal Fish .....	2-3
Figure 2-5: Item-by-Item Breakdown of the Average Balance of Artisanal Pelagic Fishing (in percentage) ..	2-7
Figure 2-6: Item-by-Item Breakdown of the Purse-Seine Fishing Balance Sheet of Senegal (2007, in Percentage) .....	2-8
Figure 2-7: Item-by-Item Breakdown of the Purse-Seine Fishing Balance Sheet of Guinea (1996, in Percentage) .....	2-8
Figure 2-8: Breakdown of the Balance Sheet of the Senegalese Gillnet/Line Fishing Boats (2007, in Percentage) .....	2-11
Figure 2-9: Correlation Between the Unit Price of Materials and Unit Price of Finished Products (smoked products) .....	2-12
Figure 2-10: Breakdown of the Balance Sheet of the Processing by Smoking (in Percentage).....	2-12
Figure 2-11: Correlation Between the Fresh Fish Unit Price and Price of (Salt-Dried) Products .....	2-13
Figure 2-12: Breakdown of the Balance Sheet of the Processing by Salt-drying (in Percentage) .....	2-14
Figure 2-13: Correlation Between the Unit Purchase Price and Unit Sales Price .....	2-15
Figure 2-14: Breakdown of the Average Balance Sheet of Fish Trade (in Percentage) .....	2-15
Figure 2-15: Breakdown of the Average Balance Sheet of Vendors by Type of Products .....	2-16
Figure 2-16: Breakdown of the Retail Sale Average Balance by Type of Fishery Products (in Percentage) ..	2-17
Figure 2-17: Purchase Price by Species, Retail Price and Gross Profit Rate (PNR) .....	2-18
Figure 2-18: Retail Price Structure of Fresh Pelagic Fish .....	2-19
Figure 2-19: Retail Price Structure of Fresh Demersal Fish .....	2-20
Figure 2-20: Retail Price Structure of Smoked Products .....	2-20
Figure 2-21: Retail Price Structure of Salted and Dried Products .....	2-21
Figure 2-22: Average Turnover, Amount of Expenditures and Profits of Vendors per Product and Day .....	2-22
Figure 2-23: Average Incomes per Capita and per Day of Artisanal fisheries Stakeholders (Estimate).....	2-23
Figure 3-1: Problems in the Pelagic Fish Value Chain, Improved Points and their Effects .....	3-3
Figure 3-2: Problems in the Demersal Fish Value Chain, Improved Points and their Effects .....	3-3
Figure 3-3: Correlation Between the Freshness Score and Accumulated Temperature of sardinella .....	3-6
Figure 3-4: Correlation Between the Freshness Score and Accumulated Temperature of Demersal Fish .....	3-7
Figure 3-5: Expected Evolution of the Freshness Score in the different conditions of preservation .....	3-8

Figure 3-6: Histogram of Catches per Fishing Trip .....	3-10
Figure 3-7: Fishing Trip Duration and Fish's Body Temperature.....	3-14
Figure 3-8: Change in the relative price according to the handling time by ambient temperature .....	3-15
Figure 3-9: Findings of the Study of the Sales of the PP's Target Vendors in the Central Market.....	3-20
Figure 3-10: Comparison of Freshness with the Sales Incomes (per Hour) of the PP's Target Vendors in the Central Market .....	3-21
Figure 3-11: Results of the Survey After Tasting the Products .....	3-31
Figure 3-12: Beach environment (Survey) .....	3-38
Figure 3-13: Improvement of awareness on cleaning activities .....	3-40
Figure 3-14: Location of the artisanal fisheries centre .....	3-43
Figure 3-15: Zoning plan.....	3-45
Figure 3-16 : SOVAGHAS Organization chart.....	3-57
Figure 3-17: CAPAP Organization chart.....	3-60
Figure 4-1: Results of FishMAT analysis (Congolese government and PECHVAL project) .....	4-11
Figure 4-2: Results of FishMAT analysis according to MCSA code (Congolese government and PECHVAL project) .....	4-11
Figure 4-3: Comparison of FishMAT analysis results of various countries.....	4-12
Figure 4-4: Comparison of FishMAT analysis results according to MCSA code between the various countries ..	4-12
.....	4-12



## Abbreviations

AFD	L'Agence Française de Développement
AfDB	African Development Bank
AICP	Association Pour l'Auto promotion des Initiatives Communautaires des Pêche de la Base Agip
BDEAC	La Banque de Développement des Etats de l'Afrique Centrale
BZV	Brazzaville
CAPAP	Centre d'Appui a la Pêche Artisanale a Pointe-Noire
CEMAC	La Communauté économique et monétaire de l'Afrique centrale
CNSEE	Le Centre national de la statistique et des etudes économiques
COPEC	Coopérative d'Epargne et de Crédit
DDPNR	Direction Departmental a Pointe-Noire
DFID	Department for International Development (UK)
DPA	Direction de Pêche et Aquaculture
DRSP	Document de Stratégie de Croissance de Réduction de la Pauvreté 2008-2010
DSCERP	Document de Strategie de Croissance des Emplois et de Reduction de la Pauvreté
EIA	Environment Impact Assessment
EU	European Union
F. CFA	Franc de la Coopération financière en Afrique Centrale
FAO	Food and Agriculture Organization of the United Nations
FishMAT	Fishery Management Assessment Tool for Developing Country
FishStatJ	Fishery statistical application and datasets by FAO
GDP	Gross Domestic Product
IFAD	International Fund for Agricultural Development
IMF	International Monetary Fund
IRD	L' Institut de recherche pour le développement
IUU	Illegal, Unreported and Unregulated
MCSA	Monitoring, Control, Surveillance, Activity
MF法	membrane filter method
MPA	Le Ministère de la Pêche et l'aquaculture
MSY	Maximum Sustainable Yield
MUCODEC	Les Mutuelles congolaises d'épargne et de crédit
NGO	Non-governmental Organization
PDARP	Développement Agricole et de Réhabilitation des Pistes Rurales (PDARP) 2008-2011
PECHVAL	Projet d'Etude pour l'amélioration de la chaîne de valeurs des produits halieutiques de Pointe-Noire
PNR	Pointe-Noire
RLU	Relative Light Unit
SNDE	Société nationale de distribution d'eau
SOVAGHAS	Société de Valorisation et de Gestion des produits Halieutiques
TOR	Terms of Reference
UNDP	United Nations Development Programme
UNHABITAT	United Nations Human Settlements Programme
UNICEF	United Nations Children's Fund
URRM	Unité de Recherche sur les Ressources Microbiennes
VMS	Vessel Monitoring System
WFP	World Food Program

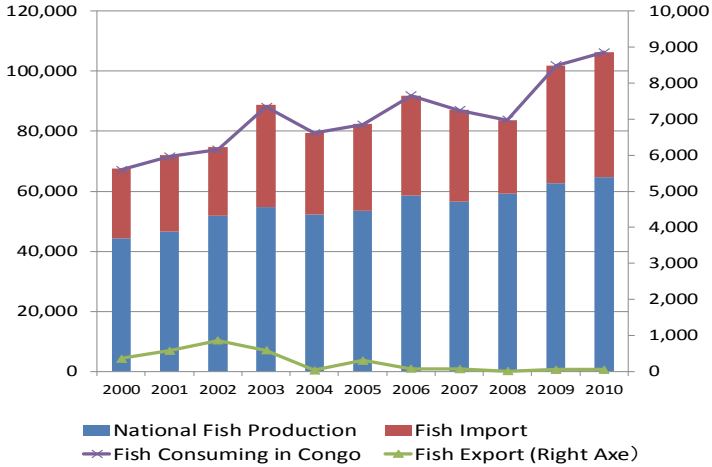


# CHAPTER 1. SITUATION OF FISH PRODUCT SUPPLY AND DEMAND IN THE REPUBLIC OF CONGO

## 1-1 Fish consumption in the Republic of Congo

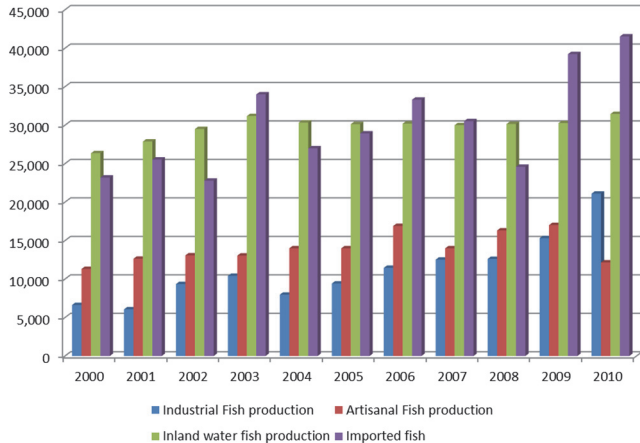
### 1-1-1 Fish consumption in the Republic of Congo

The fish demand in the Republic of Congo is very strong. The consumption of fish has been continued to grow rapidly, from 67,000 tons in 2000 to 106,000 tons in 2010, which corresponds to a 58% increase in 10 years. On the other hand, during the same period, the fish production was in the order of: 5,000 tons for freshwater fishery, 6,000 tons for the artisanal maritime fishery and 9,000 tons for the industrial maritime fishery. The total national fish production only increased by 48%, from 44,000 tons in 2000 to 64,000 tons in 2010. With the exception of shrimps and crabs exported, which is estimated at less than 1,000 tons, almost all national fish products are for domestic consumption. The gap between production and consumption is filled by the import of a large volume of fish.



**Figure 1-1: Breakdown of National Fish Consumption (2000-2010) Unit: Ton**  
 Source: Statistical Yearbook of Congo, 2000-2004, 2007, 2009 and documents of the Ministry of Fisheries and Aquaculture

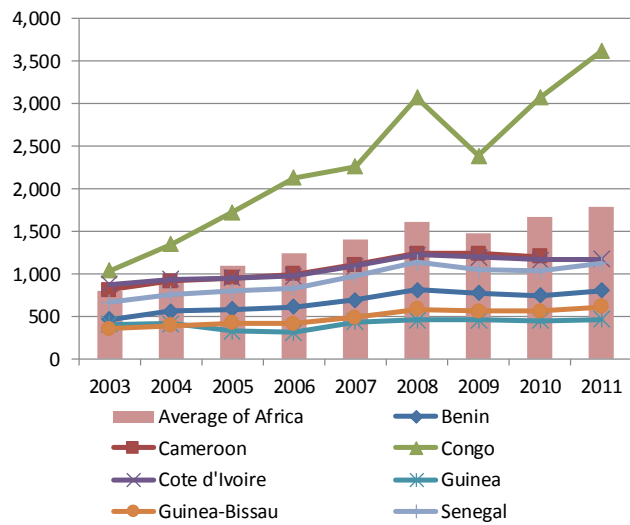
The volumes of imported fish increased from 23,000 tons in 2000 to 41,000 tons in 2010, i.e. a 79% increase. Fish import exceeded the national production in 2009 (industrial and artisanal fisheries). In 2010, 39.1% of fish consumed in the country were imported.



**Figure 1-2: Evolution of the Fishery Production and Imported Fish Volumes Unit: ton**  
 Source: Statistical Yearbook of Congo, 2000-2004, 2007, 2009 and documents of the Ministry of Fisheries and Aquaculture

### 1-1-2 Fish Consumption-Increasing Factors

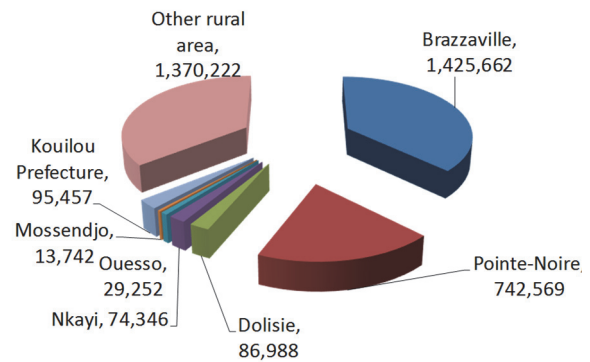
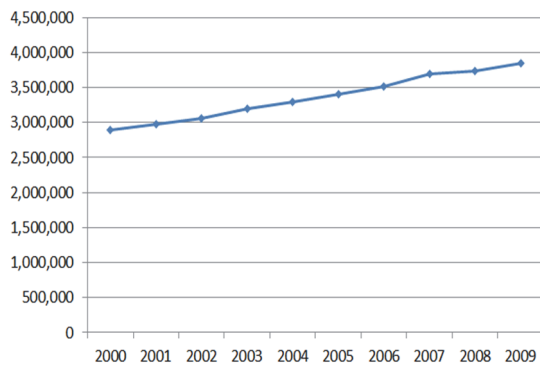
Factors increasing the demand for fish in African countries are considered to be the increase in the real income and population growth<sup>3</sup>. The GDP per capita of Congo is 3,611 US\$/capita (2011); which is 3.48 times higher than the 1,039 US\$ in 2003, with a rapid average annual growth of 16.85%. This GDP per capita is much higher than that of neighbouring countries, except for Gabon, and exceeds the average of African countries as far as the amount and growth rate are concerned.



**Figure 1-3: GDP per Capita of Congo and Neighbouring Countries (US\$)**

Source: Statistical Yearbook for Africa 2012, African Development Bank

The population of Congo increased from 2,9 million in 2000 to 3,8 million in 2009, i.e. a 33% increase. The average annual population growth rate is 3.13%<sup>4</sup>. The concentration of the population in the cities is also high, and the cities of Brazzaville with 37.1% and Pointe-Noire with 19.3% gather 56.4% of the country's population. In 2009, the population of the Kouilou Department was 95,457 inhabitants, and the two departments of Pointe-Noire and Kouilou had 838,000 inhabitants<sup>5</sup>.



**Figure 1-4: Demographic Evolution of Congo (2000-2009)**

Source: Statistical Yearbook of Congo 2004, 2007 & 2009, CNSEE

**Figure 1-5: Breakdown of the Congo population (2009)**

Source: Statistical Yearbook of Congo 2009, CNSEE

<sup>3</sup> Fish Production, Consumption, and Trade in Sub-Saharan Africa: A Review Analysis, Ann Gordon et al., 2013, WorldFish

<sup>4</sup> Calculated on the basis of the Statistical Yearbook of Congo 2004, 2007 & 2009, CNSEE

<sup>5</sup> Statistical Yearbook of Congo 2009, CNSEE

## 1-2 Fish Demand Forecast in Congo

If the average Congolese population growth (2000-2009) is still maintained, the Congolese population will be as follows.

**Table 1-1: Projected Congo Population (if the average population growth rate is 3.13%)**

Years	2015	2020	2025
Population of the Country	4,617,998	5,387,517	6,285,265

The average annual consumption of fish per capita is 26.52 kg/person. This results from the division of the volume of fish consumed throughout the country in 2009 by the total population. Consequently, if we consider the average annual fish consumption per capita as invariable, the volumes of fish to be required in Congo for 2015, 2020 and 2025 are respectively estimated at 189.2%, 220.8% and 257.5%. If the national fish production, which was 64,720 tons in 2010 does not increase in the abovementioned years, 57,749 tons, 78,157 tons and 101,965 tons of fish shall be respectively imported to balance the fish supply and demand.

**Table 1-2: Fish Demand Forecast in Congo (Unit: ton)**

Years	2015	2020	2025
Projected National Fish Demand	122,469	142,877	166,685
National Fishery Production (2010)	64,720	64,720	64,720
Insufficient Quantity to Be Provided	57,749	78,157	101,965

On the other hand, for the maritime resources of the *EEZ* and Congo's inland waters, FAO estimates that the maximum sustainable production in these water areas will be between 158,000 tons and 178,000 tons<sup>6</sup>. Among these resources, 56,000 tons represent the quantity of the resources exploited by the fishery sector. However, the development possibilities are still valuable for pelagic resources and inland freshwater fish resources. If these resources are exploited more effectively, the domestic fish demand could practically be met even in 2025, without resorting to imports. But the demersal fish resource development possibilities are limited, and the future developments shall be considered carefully by conducting resource studies.

<sup>6</sup> Review of the Fisheries and Aquaculture Sector: Congo, FAO, Feb. 1995

**Table 1-3: Volumes of the EEZ and Inland Fishery Resources and Volumes of Resources Used****(Unit: ton)**

	Species	Maximum Sustainable Production	Volumes Used	Development Possibility
EEZ	Pelagic Fish	70,000 – 85,000	15,403	54,600 – 69,600
EEZ	Demersal Fish	8,000-13,000	9,198	Δ1,200 – 3,800
Inland	Freshwater Fish	70,000 - 80,000	31,456	38,500 – 48,500
Total		148,000 – 178,000	56,057	91,900 – 121,900

(Note: For maritime fishery, the 2013 industrial fishery production is referred to the Activity Report of the first half of 2013 and that of the 2<sup>nd</sup> half of 2013 published by the Pointe-Noire Departmental Directorate of Maritime Fishery and Aquaculture, Ministry of Fisheries and Aquaculture. For artisanal fisheries, the activity report of the second half of 2013, documents of the departmental Directorate of the Ministry of Fisheries and Aquaculture in Pointe-Noire, and estimation made for June 2014 were used to determine the production of the 2<sup>nd</sup> half of 2013, production of the 1<sup>st</sup> half (except for June) of 2014 and the estimated production of 2013-2014. As the inland fishery production, the documents of the Ministry of Fisheries and Aquaculture were referred in order to determine the 2010 production.)

### 1-3 Structure of the Fish Product Markets in Congo

#### 1-3-1 Preference for Fish Products in Congo

Congolese have always loved fishery products. The study INSEE carried out between 1958 and 1959 indicates that the percentage of Congolese households' expenditures on fish products is on average 28.5% of their incomes, which is much higher than the percentage invested in meat estimated at 8.8%. And this percentage is relatively high regardless of the occupation of the head of the family. <sup>7</sup>

**Table 1-4: Percentage of Meat and Fishery Products Purchased in the Budget of Congolese Families**

Occupation of the Family Head	Percentage of Meat Purchases in the Budget (%)	Percentage of Fishery Product Purchases in the Budget (%)
Civil Servants	10.1	26.1
Traders	10.7	27.7
Farmers	5.9	27.0
Drivers	12.2	29.0
Employment in the Construction Sector	6.6	29.4
Guards/Maids	8.2	29.5
Craftsmen	7.4	27.7
Unemployed	7.4	29.6
Average	8.8	28.5

(Source: DHONT *op. cit.*)

The volume of fish products consumed in Brazzaville and Pointe-Noire corresponds to approximately 80%<sup>8</sup> of the total consumption of Congo. This is due to the fact that the country's

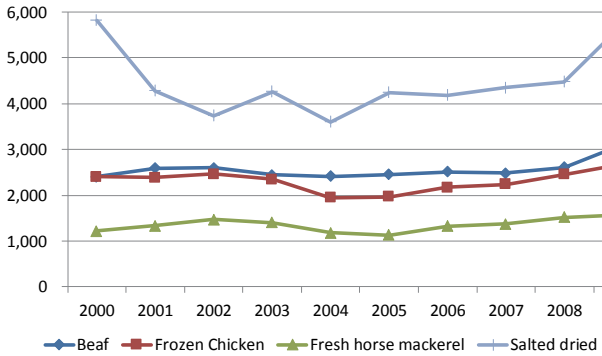
<sup>7</sup> FISHING IN POINTE-NOIRE AND DEVELOPMENT POSSIBILITIES, Yves DHONT, ORSTOM, 1963

<sup>8</sup> DHONT *op. cit.*

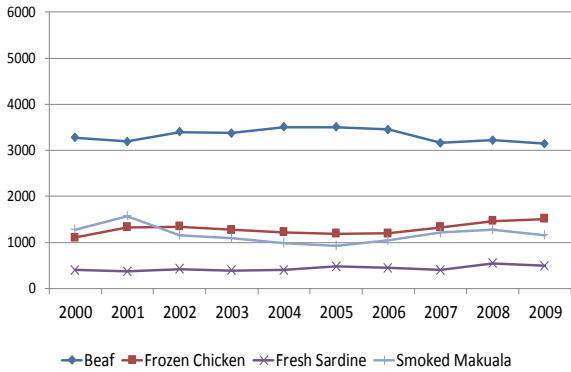
population is concentrated in these 2 cities and consumption of fish products<sup>9</sup> is also increasing rapidly because of the rapid population growth in urban areas.

**1-3-2 Fish Products Appreciated by the Congolese Families**

A study carried out in the early 1970s among 70 families in Pointe-Noire revealed that the average frequency of weekly consumption of animal proteins by households is 1.3 times for meat, against 3.2 times for the fresh fish, 1.6 times for smoked fish and 1.0 time for salted and dried fish<sup>10</sup>. This shows the overwhelming superiority of fish products. Moreover, this consumption frequency and price are considered to be inversely proportional<sup>11</sup>; thus, many households choose fish products and fresh fish in particular, which are cheaper than meat. The findings of the study carried out by CNSEE on the prices of fish products meant for consumers also revealed that there is a wide price gap between fresh fish, meat and processed fish products.



**Figure 1-6: Consumer Prices in 2000-2009 (BZV)**  
 Source: Statistical Yearbook of Congo 2004, 2007 & 2009, CNSEE



**Figure 1-7: Consumer Prices in 2000-2009 (PNR)**  
 Source: Statistical Yearbook of Congo 2004, 2007 & 2009, CNSEE

**1-3-3 Consumer Preferences Relating to Freshwater Fish and Sea Fish**

In Congo, the populations generally prefer freshwater fish to the marine fish: 46% of the populations prefer freshwater fish, and 24% marine fish. As for the processing practices, 40% of the populations prefer fresh fish, 35% smoked fish and 25% salted and dried fish<sup>12</sup>. The Brazzaville inhabitants generally prefer freshwater fish to marine fish, and many people buying marine fish say they do it for financial reasons: freshwater fish is too expensive.

However, the demand for marine fish is more important than that for freshwater fish in Pointe-Noire, and most of fish landed in Pointe-Noire is consumed locally<sup>13</sup>. The marine fish consumption area is limited to the cities along the railway line in southern Congo and cities along

<sup>9</sup> DHONT *op. cit.*  
<sup>10</sup> Ditto  
<sup>11</sup> Ditto  
<sup>12</sup> Ditto  
<sup>13</sup> Ditto

a national road for which the shipment by trucks is possible<sup>14</sup>. The frozen or refrigerated sardinella unloaded by industrial vessels are distributed in Pointe-Noire, the other fish are mainly demersal fish that are frozen on board or in a cold store ashore and then shipped to Brazzaville by train in refrigerated containers or in big refrigerated trucks<sup>15</sup>.

#### **1-3-4 Pelagic and Demersal Fish Market Mechanism**

Supply and demand, as well as the market mechanism are different for the pelagic and demersal fish in the Congolese fish product market.<sup>16</sup> The unloaded volumes of pelagic fish fluctuate significantly with the seasons. During the high season, the market is saturated and prices drop, and if excessive production continues, a feeling of disgust develops among consumers at some point. As a result, it takes some time for demand to resume even after the end of market saturation period<sup>17</sup>. Artisanal fishermen restrict themselves their fishery activities during the high season to avoid the market saturation. The recent data on the volumes of pelagic fish unloaded in Pointe-Noire (2013 for industrial fishery, July 2013 - June 2014 for artisanal fisheries<sup>18</sup>) indicates that the most important quantity is recorded in February with 2,000 t/month, and the lowest one in September with 500 t/month, which four times smaller than in February. The volumes unloaded by industrial vessels amount to some 1,800 tons in February, while the artisanal fisheries supplies amount only to 187 tons. These volumes are very limited even if the reduction by self-limitation is taken into account; which suggests that volumes landed by the artisanal fisheries do not have a significant influence on the saturated markets. This self-limitation seems rather to be a way of avoiding loss-making activities as much as possible. The main pelagic species are the round and flat sardinella of the herring family, which are characterised by a rapid deterioration of their quality if they are not properly kept after catching. Pointe-Noire and its surroundings remain the only distribution areas because of the absence of preservation tools and infrastructures in the dugout canoes and appropriate transport means after the fish landing. Several options are possible to avoid seasonal saturation of the pelagic fish market: A seasonal limitation of the market supply with frozen or refrigerated fish unloaded by industrial vessels, the promotion of distribution in the markets of inland towns and cities that lack marine fish, or the development of the distribution of processed products (smoked and salt-dried products) in a different period or in the distant inland markets.

---

<sup>14</sup> Economic Study of the Maritime Fishing and Fish Marketing in the Popular Republic of Congo, LE GAL and RETIJEAN, ORSTOM, 1975

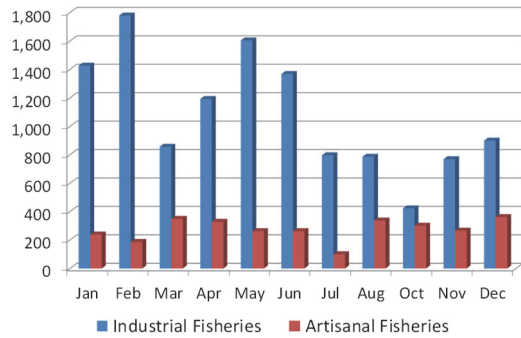
<sup>15</sup> DHONT *op. cit.*

<sup>16</sup> Book by LE GAL and RETIJEAN, *op. cit.*

<sup>17</sup> Ditto: Abovementioned Book

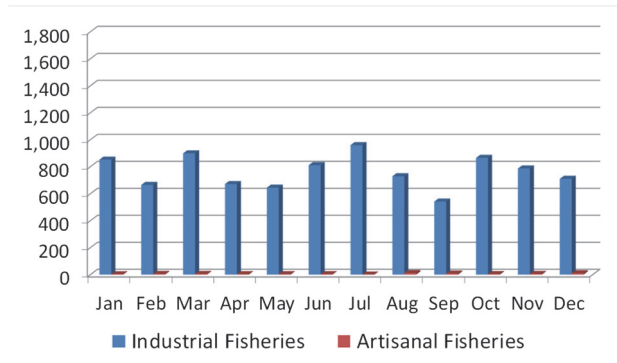
<sup>18</sup> Activity Report of the first half of 2013; DDPNR does not have records of volumes produced by the small-scale fishing, catches from January to June 2013 being unknown, the volumes recorded from January to May 2014 were used (DDNPR). Catches of June 2014 were estimated by writer of this report.





**Figure 1-8: Monthly Catches of Pelagic Fish** (2013 for Industrial Fishery, July 2013- June 2014 for the Artisanal fisheries)

Source: DDPNR 2013 Activity Report and DDPNR Documents (The Artisanal fisheries catches in June 2014 are estimated by the writer of this report.)



**Figure 1-9: Monthly Catches of Demersal Fish** (2013 for Industrial Fishery, July 2013- June 2014 for the Artisanal fisheries)

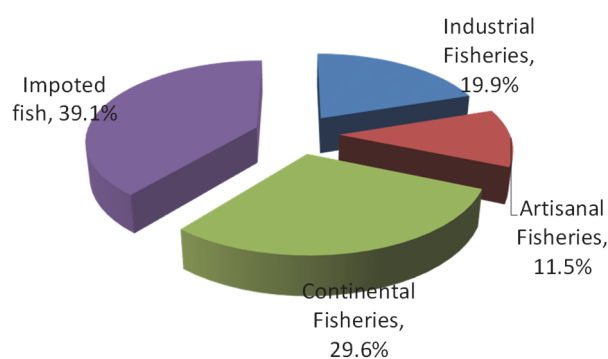
Source: DDPNR 2013 Activity Report and DDPNR Documents (The Artisanal fisheries catches in June 2014 are estimated by the writer of this report.)

Furthermore, the prices of demersal fish remain high because the landed volumes of these products are lower than the demand.<sup>19</sup>

## 1-4 Imported Fish Species

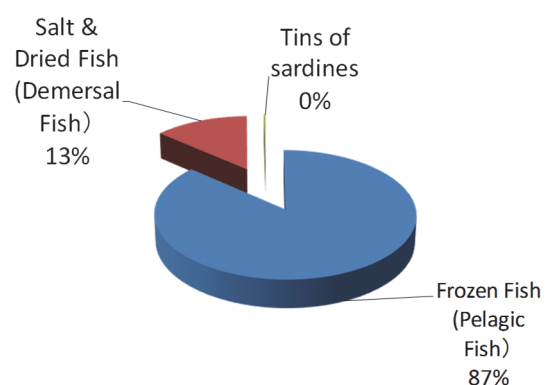
### 1-4-1 Volumes of Imported Fish and their Percentage in the National Consumption

Previously, the market supply with fish caught in the national territory and EEZ was important and dominant in Congo, but in recent years, the volumes of imported fish have exceeded the national production of marine fish, and the influence of this import is increasing. In 2010, the percentage of imported fish for the national consumption was 39.1%. The types of imported fish are subdivided into 87% of frozen fish, mainly pelagic fish, and 13% of salted and dried fish, mainly demersal fish.



**Figure 1-10: Volumes Distributed in the Domestic Markets by Supply Source (2010, in percentage)**

Source: DDPNR 2010 Activity Report



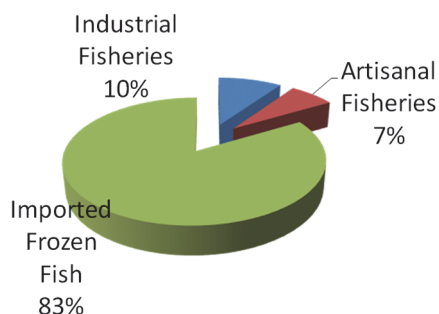
**Figure 1-11: Breakdown of Imported Fish by Species and Processing Type (2010)**

Source: DDPNR 2010 Activity Report

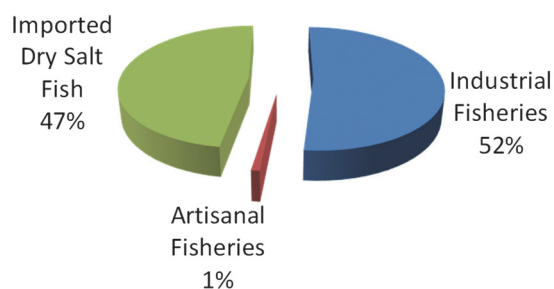
<sup>19</sup> Ditto: Abovementioned Book

For the pelagic fish, if we consider the volumes distributed in the Congolese market by supply source, imported frozen fish represent 83% of the market share. Industrial fishery covers only 10% and artisanal fisheries 7%.

For the distributed demersal fish volumes, industrial fishery accounting for 52%, exceeds the salted and dried fish import, which stands for 47%, and catches of artisanal fisheries are limited to 1% only.



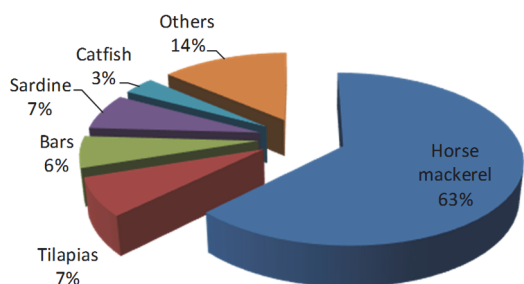
**Figure 1-12: Pelagic Fish Distributed in Congo, in Percentage and by Supply Source (2013)**  
Source: DDPNR 2013 Activity Report



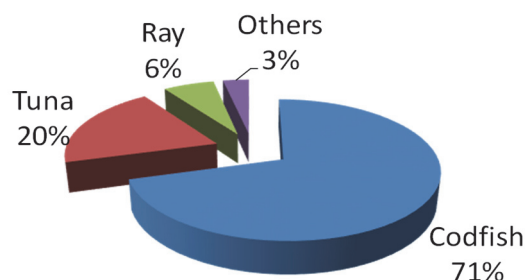
**Figure 1-13: Demersal Fish Distributed in Congo, in Percentage and by Supply Source (2013)**  
Source: DDPNR 2013 Activity Report

### 1-4-2 Imported Fish Domination in the Markets

The detailed information by species of imported frozen fish (2013), indicates that horse mackerels dominate the markets with 63%. They are followed by tilapias (7%), sardinella (7%), bass (6%) and catfish (3%). Among imported salted and dried fish (2013), cod accounts for approximately 3/4 (71%), followed by tuna (20%), and skate (6%).



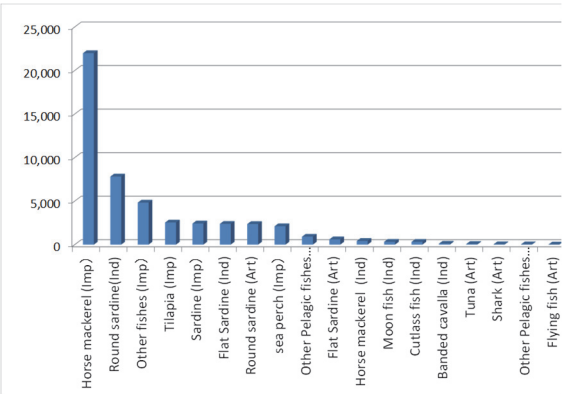
**Figure 1-14: Percentage by Species of Imported Fish (2013)**  
Source: DDPNR 2013 Activity Report



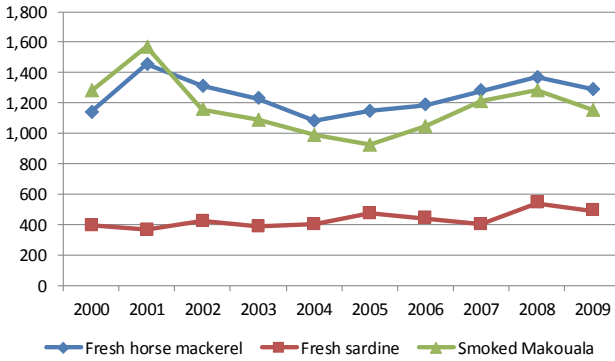
**Figure 1-15: Percentage by Species of Imported Salt-dried Fish (2013)**  
Source: DDPNR 2013 Activity Report

Considering the volumes distributed in the Congolese market by supply source and species, it turns out that for the pelagic fish, the import of horse mackerel alone, reached about 22,000 tons. This corresponds to 2.1 times the production of both round and flat sardinella generated by industrial fishery, which is 10,200 tons, and 7.4 times that of Sardinella caught by artisanal fisheries which is 3,000 tons. Their influence on prices is important for this reason. According to the consumer price survey carried out in Pointe-Noire, a strange phenomenon occurred. The

smoked round sardinella price, which should be influenced by the fresh sardinella price, which is the raw material, has a more important correlation with the imported frozen horse mackerel price. On the other hand, the fresh sardinella price is not influenced by the frozen horse mackerel price fluctuation and remains around 1/3 of the frozen mackerel price. Sardinellas are essential for consumers as a source of inexpensive proteins.

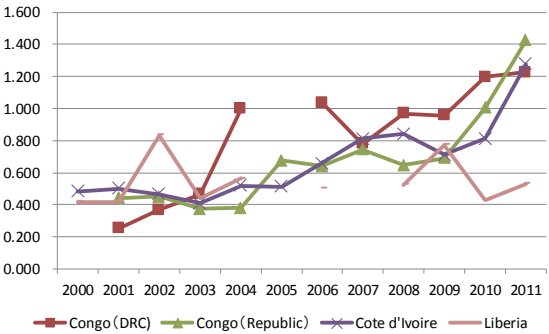


**Figure 1-16: Volumes Distributed in the Markets per Fish Species and Supply Source (Pelagic Fish: 2013)**  
 Source: DDPNR 2013 Activity Report (Unit: ton)

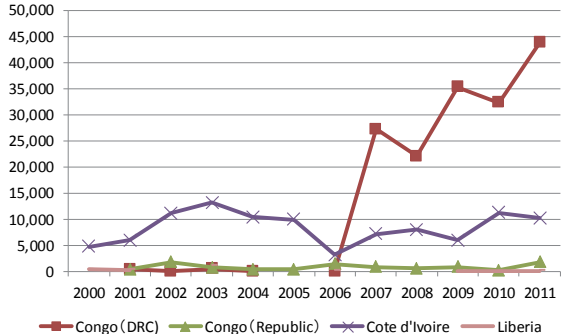


**Figure 1-17: Comparison of the Pelagics Consumer Prices (PNR)**  
 Source: Statistical Yearbook of Congo, 2004, 2007 & 2009, CNSEE (Unit: FCFA/kg)

Compared to other food products distributed in Congo, there are cheap fish species and imported fish species with a relatively high unit price at international level. The frozen horse mackerels are very appreciated by consumers, and 200 to 1,900 tons are imported every year; but in 2011, the unit price of imported horse mackerels was 1.43 US\$/kg in Congo. It exceeded the prices in the Democratic Republic of Congo (1.23 US\$/kg) and Côte d'Ivoire (1.28 US\$/kg).



**Figure 1-18: Unit Price of Imported Frozen Horse Mackerels (unit: US\$/kg)**  
 Source: Based on FishStatJ, FAO (March 2015)

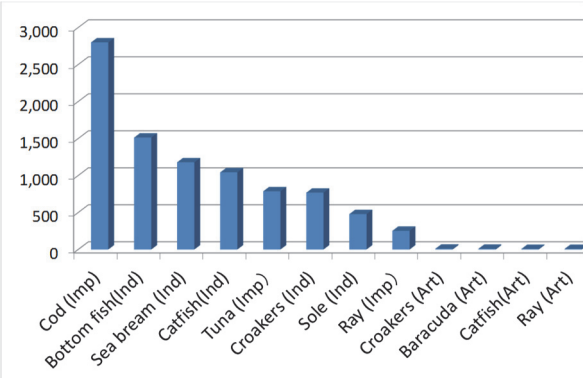


**Figure 1-19: Imports of Frozen Horse Mackerels (unit: ton)**  
 Source: Based on FishStatJ, FAO (March 2015)

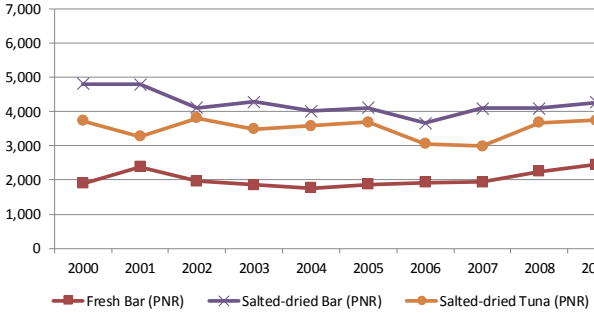
Furthermore, as regards the demersal fish, cod imports (2,800 t) largely exceed those of the other species, but this concerns salt-dried fish and their distribution channel is different from that of fresh and frozen fish. With regard to fresh and frozen fish, small demersal fish (1,500 t), sea breams (1,200 t) and sea catfish (1,000 t) caught by industrial vessels are widely distributed species. For artisanal fisheries, there are 12 tons of bass, the species with the biggest numbers of

productions, while the productions of bass caught by industrial fishery amount to 769 tons, and those of sea catfish total 1,044 tons against 9 tons only for artisanal fisheries. This shows that the influence of demersal fish production from artisanal fisheries on the markets is limited.

The influence on the imported fish price is not so important for demersal fish, unlike pelagic fish. There is no strong correlation between the salt-dried bass price and the imported salt-dried tuna price. The particularity is that the price of fresh fish and salt-dried products is rather stable in the long term.



**Figure 1-20: Volumes Distributed in the Markets per Species and Supply Source (Demersal Fish: 2013)**  
Source: DDPNR 2013 Activity Report (Unit: ton)

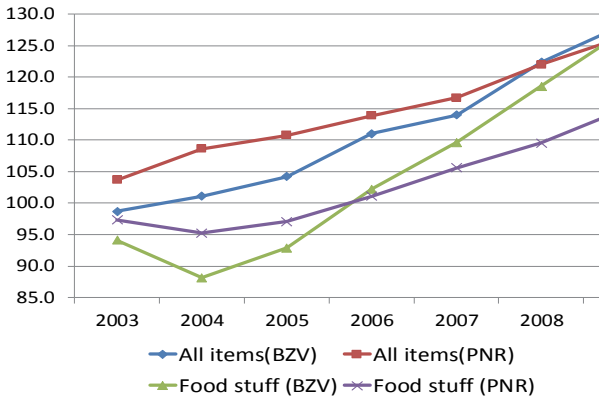


**Figure 1-21: Demersal Fish Consumer Price (PNR)**  
Source: Statistical Yearbook of Congo, 2004, 2007 & 2009, CNSEE

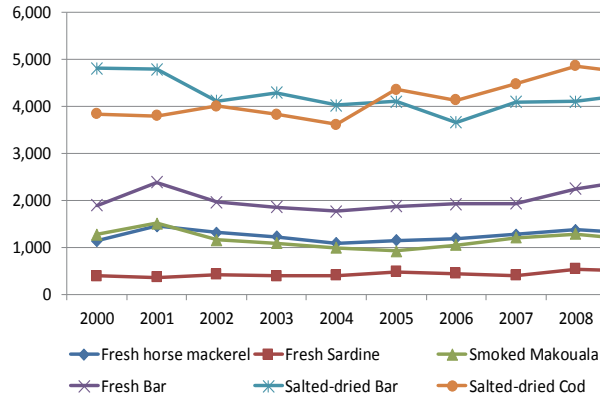
### 1-5 Prices of Fishery Products

#### 1-5-1 Prices of Fishery Products and Prices of Other Food Products

In Congo, the price of fish products is generally stable compared to that of other products. Between 2003 and 2009, food prices increased by more than 20%, but the price of fish products increased gradually. This is probably one of the reasons why the consumption of fish products increased.



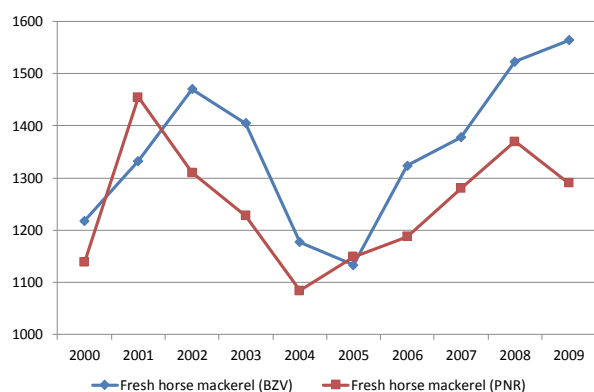
**Figure 1-22: Consumer Price Index Evolution (PNR and BZV)**  
Source: Statistical Yearbook of Congo, 2004, 2007 & 2009, CNSEE



**Figure 1-23: Consumer Prices of Fishery Products (PNR)**  
Source: Statistical Yearbook of Congo, 2004, 2007 & 2009, CNSEE (Unit: FCFA)

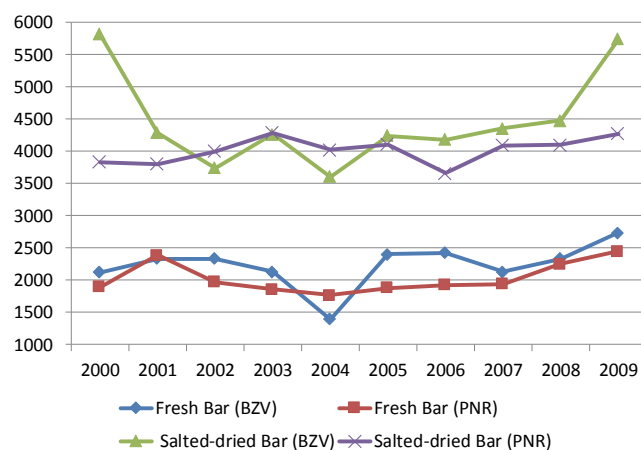
### 1-5-2 Differences Between the Consumer Prices of Fish Products in Brazzaville and Pointe-Noire

The price of fishery products is generally higher in Brazzaville than in Pointe-Noire. But these are special years, because the civil war that broke out in Congo from 2004 to 2005 affected Brazzaville severely. This difference can be explained by the fact that all (artisanal and industrial) marine fish catches are landed in Pointe-Noire. Imported fish are also cleared in Pointe-Noire, the port of import, and then shipped to Brazzaville.



**Figure 1-24: Consumer Prices of Defrosted Horse Mackerels (PNR and BZV)**

Source: Statistical Yearbook of Congo, 2004, 2007 & 2009, CNSEE (Unit: FCFA)



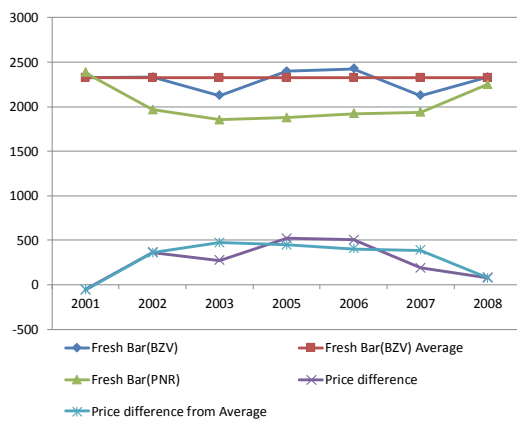
**Figure 1-25: Prices of Fresh and Salt-dried Bass (PNR and BZV)**

Source: Statistical Yearbook of Congo, 2004, 2007 & 2009, CNSEE (Unit: FCFA)

However, it is difficult to establish that this price difference really reflects the cost of transport and overheads. In Congo, the retail fishmongers are not strongly influenced by the wholesale purchase price or transport cost. They sell retail and set their prices at levels consumers can afford.<sup>20</sup>

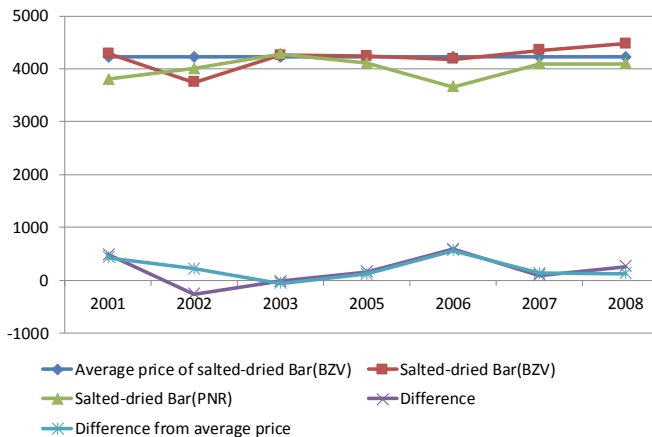
The figures below indicate the bass consumer price in Brazzaville and Pointe-Noire, except for the special years (2001 to 2008), and the price difference between both cities as well as the average price in Brazzaville during this period. However, there are few mutual relationships between the consumer prices in Brazzaville and Pointe-Noire. During this period, the consumer price in Brazzaville tends to align with the average consumer price in Brazzaville. The price difference of each of these years, for fresh fish and salt-dried fish, is almost the same as the price difference between the average consumer price in Brazzaville during these 7 years and the consumer price of each year in Pointe-Noire. In other words, the average consumer price of these 7 years can be considered as the target price at which fishery products are sold to consumers by vendors, and as the maximum price acceptable by the Brazzaville consumers.

<sup>20</sup> The study carried out in the first half of the 1970s indicates that the wholesale and retail prices in the Brazzaville market are both about twice higher than those in Pointe-Noire, but the retail prices of the neighbourhood fishmongers are the same (LE GALL and PETIJEAN). Fish retailers undoubtedly reduced their prices because at that time, there was almost no purchasing power difference between the Brazzaville and Pointe-Noire consumers.



**Figure 1-26: Prices of Fresh Bass and Price Differences (PNR and BZV)**

Source: Statistical Yearbook of Congo, 2004, 2007 & 2009, CNSEE (Unit: FCFA)

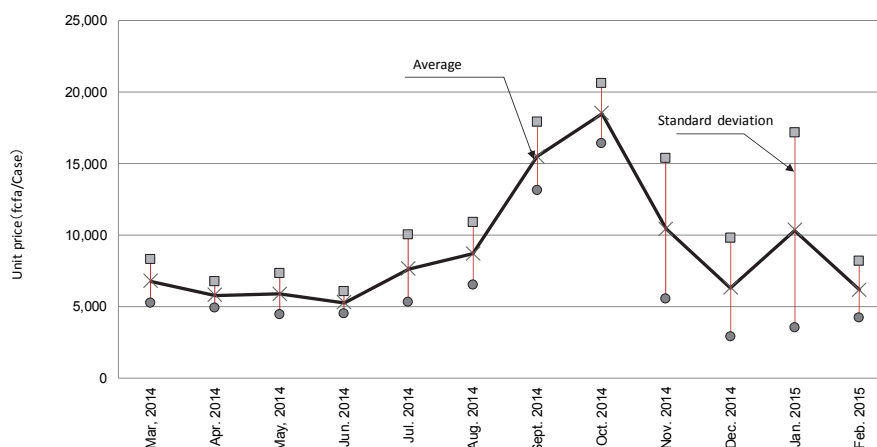


**Figure 1-27: Prices of Salt-dried Bass and Price Differences (PNR and BZV)**

Source: Statistical Yearbook of Congo, 2004, 2007 & 2009, CNSEE (Unit: FCFA)

### 1-5-3 Seasonal Fluctuations of Fishery Product Consumption Prices

The sardinella unit price is low during the high season (March-August) on the Pointe-Noire beach and stabilizes at a high price during the off-season in September-October. Moreover, the unit price differences tend to increase from November.



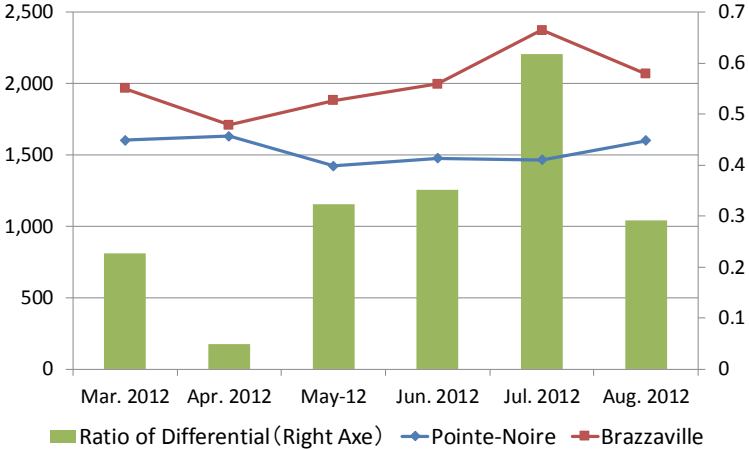
**Figure 1-28: Monthly Producer Price of Sardinella and its Monthly Fluctuation (March 2014 - February 2015)**

(Source: PECHVAL)

Moreover, if we consider imported fish, the horse mackerel consumer price<sup>21</sup> in Pointe-Noire fluctuated by about 14% between March and August 2012, which was almost stable, but this fluctuation was 20% in Brazzaville and even greater depending on months. The price differential ratio between Brazzaville and Pointe-Noire was 5% in April, but reached 62% in July. Since the period from March to August usually corresponds to the sardinella high season in Pointe-Noire

<sup>21</sup> The officially announced monthly statistics of consumer prices are limited, and since we could not get the statistics throughout the year, we resorted to the statistics of March to August 2012, HARMONIZED CONSUMER PRICE INDEX (August 2012) [http://www.cnsee.org/index.php?option=com\\_content&view=article&id=172:indice-harmonise-des-prix-a-la-consommation-aout-2012&catid=41:articles-statistiques&Itemid=49](http://www.cnsee.org/index.php?option=com_content&view=article&id=172:indice-harmonise-des-prix-a-la-consommation-aout-2012&catid=41:articles-statistiques&Itemid=49)

and the volumes to be distributed are secured, the imported horse mackerel price also turns out to be stable. However, in Brazzaville where the distributed volumes of sardinella are not significant, the consumer price of fishery products is undoubtedly strongly influenced by the distributed volumes of freshwater fish.



**Figure 1-29: Horse Mackerel Price and Price Differential Ratio (PNR et BZV)**

Source: HARMONIZED CONSUMER PRICE INDEX (August 2012), CNSEE

## **CHAPTER 2. VALUE CHAIN OF FISH PRODUCTS OF THE ARTISANAL FISHERIES IN POINTE-NOIRE**

### **2-1 Status of the Artisanal fisheries in Pointe-Noire**

#### **2-1-1 Fishery Industry in Pointe-Noire**

In Pointe-Noire, the Base Agip beach was regarded as the major production and processing centre for artisanal fish products; but it received an expropriation order in November 2010 following the development of the facilities of the Pointe-Noire autonomous port, and many artisanal fishermen were forced to go to the Songolo and Raffinerie beaches. Artisanal fishermen are divided into two categories based on differences of nationalities, used fishing techniques, target fish, fishing boats, etc.

Artisanal fishermen called Villi are inhabitants who were initially farmers in the coastal area of Congo, and used to fish only for family consumption. They are involved in demersal fishing and use relatively small dugout canoes with low-power outboard motors, bottom gill-nets or fish by line. The unloaded fish are distributed fresh, but mainly salt-dried or dried. The demersal fish are more expensive than pelagic species and the demand for fresh and salt-dried fish is high.

Artisanal fishermen called Popo use relatively big canoes with relatively high-power outboard motors and drift gillnets to catch sardinella mainly. Sardinella is a relatively popular fish, which is distributed fresh. It is also an essential material for processing into smoked product, the national dish of Congo. They are ancestor of foreign fishermen (mainly from Benin) who settled there in the late 1950s, but there are sometimes Congolese fishermen on board boats. Catch fish are distributed fresh or processed into smoked fish by the family of the shipowner or crew members.

In the past, both were totally independent, but now they have partly merged. This chapter deals separately, based on target fish species, with fishermen of pelagic fish using Popo-type canoes, fishing mainly sardinella, the flying fish and sharks, and fishermen of demersal fish using Popo or Villi-type canoes and fishing demersal fish.

#### **2-1-2 Pelagic Fishing**

12 to 15 m-long Popo-type canoes, equipped with outboard motors of 25 to 40 HP are used to fish pelagic species in Pointe-Noire.

Among the fishing methods used for pelagics, sardinella drift-net fishing, which provides the most important catches, is generally undertaken in the evening and then catches are landed the following day between dawn and 10 a.m. The fishing trip may be extended until the following evening depending on the volume of catches. Many fish processors (smokers) are waiting at the landing beach and buy fish in a box directly from fishermen.



Since sardinella drift gill-net fishing is a short-duration fishing carried out during a relatively cold time slot from night to morning, its catches are not kept in ice. From February to March where the ambient temperature and that of sea water are high, the freshness of the catches deteriorates rapidly and unsold fish are thrown out into the sea.

The Beninese shipowners who are the majority of pelagics fishermen, have limited themselves from their fishing activities in the high season since 2010 to avoid the price collapse caused by temporary excessive fishing during the seasonal arrival of migratory pelagic fish and market saturation. They are divided into two groups and go to sea every other day.

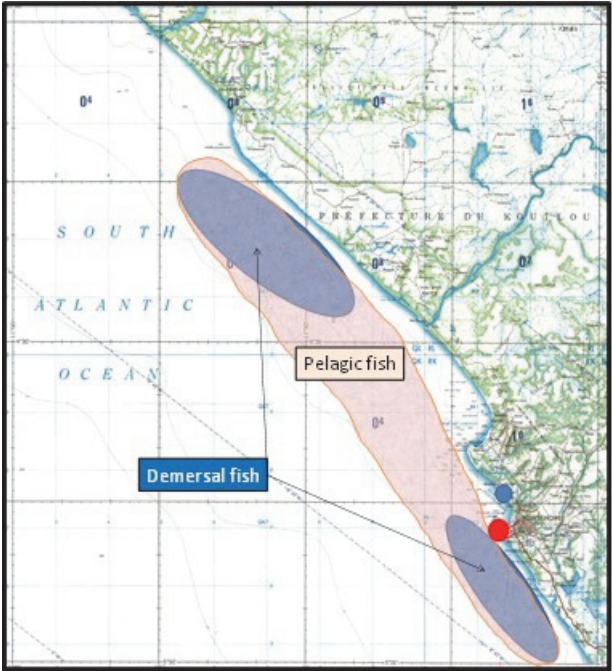


Figure 2-1: Main Fishing Grounds of the Artisanal fisheries

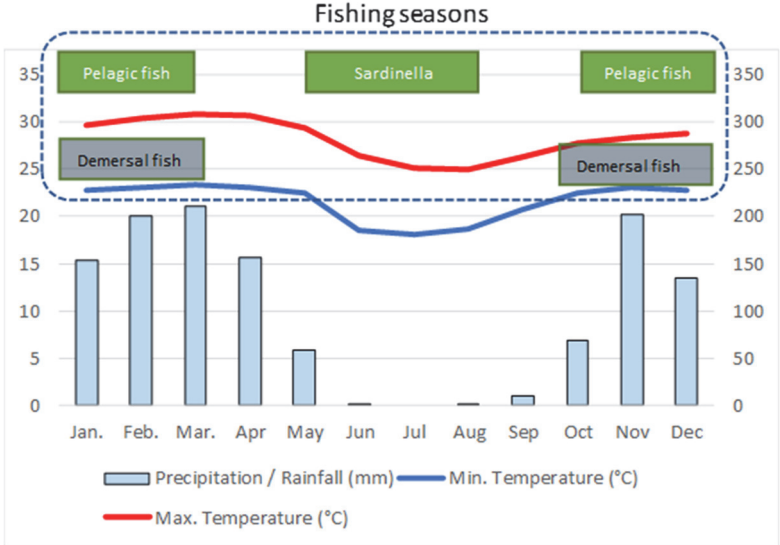


Figure 2-2: High Season of Pelagic and Demersal Fish, Temperatures and Rainfalls

They fish mainly with gillnets (gillnets for flying fish, gillnets for sharks, bottom gillnets, etc.), but there are shipowners who fish with purse seines if they come across a large shoal of sardinellas. Since purse seine fishing allows caught fish to be brought up faster and therefore preserves fish freshness better than gillnet fishing, frozen fish processing companies that require very fresh fish buy almost all its catches.

Fishing flying fish requires a 2 or 3-day sea trip. It is longer than sardinella fishing, but the problem of

freshness loss is not important as isothermal boxes and ice are taken on board during the trip and catches are frozen.

81% of pelagic fish caught by artisanal fishermen are to be smoked, 10% of them are sold fresh and 9% are processed into salted and dried products.

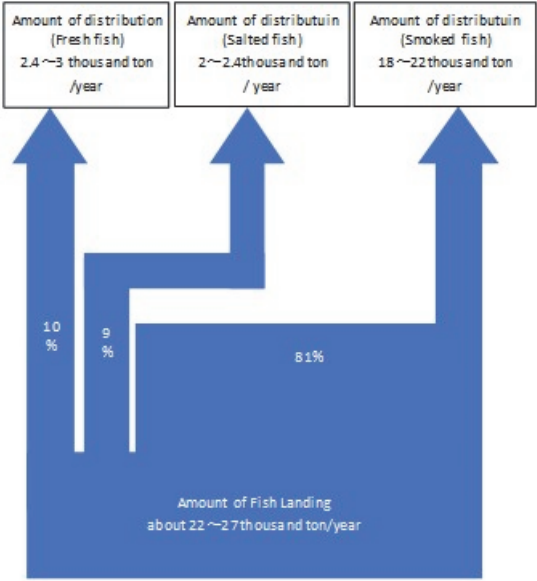


Figure 2-3: Destination of the Artisanal fisheries Pelagic Fish  
Source: PECHVAL

**2-1-3 Demersal Fishery**

About 10 m-long Villi-type canoes, equipped with outboard motors of 15 to 25 HP placed on a rear support are mainly used to fish demersal species in Pointe-Noire. Popo-type canoes are also used for demersal fishing. The ordinary crew needed for bottom gill-net or line fishing consists of 2 or 3 persons using a Villi-type canoe, whereas the ordinary crew of a Popo-type canoe consists of 6 or 7 persons. The regulatory area of artisanal fisheries is located 10 nautical miles off the beach.

The duration of a trip is 3 to 5 days. Fishermen take isothermal boxes on board canoes in which they keep fish to preserve their freshness. In Villi-type canoes, superannuated refrigerators or freezers are sometimes used instead of isothermal boxes. However, their ability to preserve freshness is insufficient, which leads to the ice melting after 3 days. This leads to a gradual freshness loss of catches kept in these boxes.

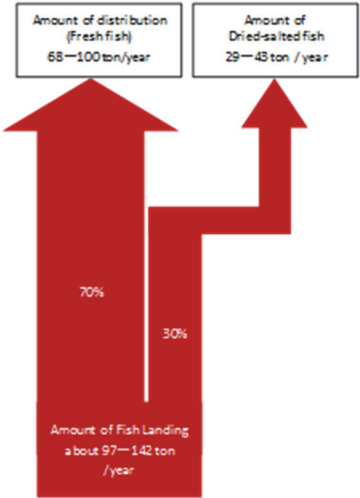


Figure 2-4: Destination of the Artisanal fisheries Demersal Fish  
Source: PECHVAL

The duration of a demersal fishing trip using Popo-type canoes is also 3 to 5 days, but their load capacity is higher than that of the Villi-type canoes. This allows them to load bigger and more efficient boxes that can keep ice at least until the return and preserve fish freshness until their landing.

Fishermen usually sail out to sea in the afternoon in order to arrive at fishing places at night; the fishing activity including change of fishing places takes place both in the day time and at night.

Landing is usually done from sunrise to late morning. The canoes returning from fishing at night anchor

offshore until sunrise. Trading is carried out by box (approx. 25Kg) when fish is landed. Fish wholesalers waiting for unloads, purchase the largest volumes and resell them on the spot, in the markets or to big restaurants. When a canoe lands fish, the specialists deal with the price negotiation with fish wholesalers and the canoe owner pays them commissions after the sale.

The demand for demersal fish is quite high. They are consumed fresh or processed into salted and dried fish, and many salt-dried fish processors also come to the landing beach to buy fish.

70% of catches of demersal species are consumed fresh, and 30% are processed in salt-dried fish.

#### **2-1-4 Processing by Smoking**

The biggest quantity of smoked products is made of sardinellas. However, a study on the preferences of consumers has revealed that they also like skate and flying fish.

The raw material (fresh fish) is mainly purchased from the beach of Songolo-Base Agip. However, the purchase from industrial fishing companies is also possible when the landed volumes are insufficient. The central market or head offices of industrial fishing companies are the main purchase spots. During the days of inactivity of the central market, trucks of industrial fishing companies sell fish in Songolo.

Many processing workshops are individually built by groups of processors in the backshore. There are two types of smoking kiln: cylindrical and cubic ones. The cylindrical smoking kiln can smoke in one cycle 4 boxes of fish (about 100 kg) and the cubic smoking kiln can smoke 6 boxes.

After rinsing, fresh fish are stacked in the kiln into 6 levels, with grid and wood stems in between them. The eucalyptus logs are appreciated, and log companies supply them for sale. The first smoking phase takes approximately 3 to 4 hours and then fire is allowed to burn out. When the fish are completely cooled down, they are transferred into another smoking kiln, and smoked again for the same duration. During this transfer, fish are turned over, the order of levels is also changed in order to make fish same colouring and cooking. This process can be repeated to improve the preservation quality.

Processors have no warehouse, the smoked products are kept in the kiln and sold the following days.

Temperature is high from February to April and most fish (sardinellas) lose their freshness during their landing, and it is difficult to get a good quality of raw material. These fish quickly burn to shreds, which results in the loss of approximately 20% to 30% for each operation.

Processors sell their products by themselves on a wholesale or retail basis in the public or makeshift markets. Some ship their products by train or truck to Brazzaville and other remote areas after packaging them carefully. For shipped products, payment is often done after the sale. While waiting for the payment, processors are not afford to get raw material supplies easily, due to the lack of financial resources. Therefore, it is hard for them to ensure a sustainable production.

### **2-1-5 Processing by Salt-Drying**

Until 2011 when the Base Agip beach was the artisanal fisheries base, there were drying stalls for salt-dried products near landing places, but processors have now installed the drying stalls in the courtyards of their houses (in the city) or in plots of land, leased for the circumstance, that are far away from the beach. As a result, the transport from the raw material purchase place to the processing workshop can take several hours. Moreover, since ice is not used during this transport to preserve their freshness, fish deteriorates significantly.

The raw material are procured from fish landed at the Songolo-Raffinerie beach as well as from industrial fishing catches at the central market and in other sales points.

The salt-drying process takes about one week after the fresh fish acquired, i.e. 2 to 3 times longer than the smoking process. Despite this huge work, it is not easy for artisanal processors to get the working capital in order to purchase fresh fish before cashing the payment of their first commodity. It is rather difficult for them to continue stable production.

### **2-1-6 Fish Trade**

Fish wholesalers mainly purchase demersal fish by box or unit from fishermen when fish are landed on the beach. They resell them wholesale, on the spot, to processors as well as secondary and thirdly fish merchants; and on a retail basis to final consumers in the public markets and major local restaurants. The secondary and thirdly fish merchants sell their products on the beach and in the streets, under the direct sun without protection or any freshness preservation measure. Sold in these conditions, fish quickly lose their freshness.

### **2-1-7 Overview of Public Markets**

In November 2012, Pointe-Noire had 16 legal public markets. There are also many makeshift markets and sales points that are open spontaneously. These markets have approximately 15,000 stalls, including nearly 1,400 stalls used to sell fresh fish and 2,300 for the processed fish.

The major problem of these markets is that hygiene conditions in the handling of food products are not at all ensured. Garbage generated by markets is not well managed; there are heaps of garbages near the food sales areas. There is almost no running water in most markets, as a result the water used to rinse and clean fish and other food products is insufficient. The sanitation system in the markets is not very effective, passages are always wet because of the lack of pipes, meant to drain waters from food products and rain, as well as the mud that has accumulated there.

The quality of fresh fish on the stalls deteriorates not only because fish are kept without ice but also because of the contamination by flies, the bad smells, the polluted air etc. On the other hand, in the public markets there are stalls of cloth and accessories, vegetables, meat, etc., mixed with fish stalls. The proximity of fish with wild meats in particular leads to fears a risk of cross contamination with fish.

### **2-1-8 Retail Sale**

Almost all vendors are smallish. They buy, from the central market where the catches of Songolo beach and industrial vessels are brought in and from the warehouses of industrial fishing companies, the volume of fish they can carry away (approx. 2 boxes), take them to their stalls in the market to sell them to consumers.

Persons coming to buy fresh fish caught by artisanal fishermen and products processed on the Songolo beach or Base Agip beach use a taxi or minibus. Many people also come near the landing beach with these transport means, go to the locations where the entry of vehicles is authorized, and then walk up to the stalls. Many people also go there by walking through the sandy beach located between Base Agip and Songolo. Many people also come with a wheelbarrow or a basin on their head to transport their purchases. Nobody has or uses of a refrigerated van, and purchases are usually transported by taxi<sup>22</sup>.

There is a significant freshness loss between the purchase time and resale since vendors do not have the facilities needed, like ice boxes, to preserve the freshness of their products. The unsold fish is kept in private cold chambers and resold the next day or processed into salt-dried products by the vendors themselves.

### **2-1-9 Consumers**

The minimum freshness degree required by consumers when they choose fishery products in Pointe-Noire is that they're not rotten. Or they do not rot before reaching their kitchen.

In the case of demersal fish, as they are distributed at ambient temperature from landing to their delivery to consumers, and a large quantity is damaged in this process. Many consumers ask for frozen fish because of their relatively slow deterioration. The fish temperature is kept low from defrosting to their delivery to consumers.

The average monthly income of an ordinary household in Pointe-Noire is 100,000 to 150,000 CFAF and the amount spent on the daily fish purchase is about 2,500 CFAF. They mainly buy fresh or processed sardinella, demersal fish are rarely consumed in these households because they are expensive.

## **2-2 Current State of the Value Chain of Artisanal Fish Products**

### **2-2-1 Pelagic Fishing**

We asked fishermen (shipowners), smoked product processors, salt-dried product processors, fish wholesalers and vendors to fill account books showing their expenditures and incomes and we studied these books.

During our study of the account books of pelagic species fishing, the crew of fishermen that went to sea for artisanal pelagic species fishing consisted of 6.75 persons, on average. The average amount generated by landed catches stood at 224,071 CFAF. The maximum quantity landed was 70 boxes (38 kg/box), the minimum quantity being 1 box and the average 23.3 boxes.

---

<sup>22</sup> Report of the Feasibility Study of Congo, 2007, INFOPECHE

A unit sales price of pelagic fish is set after acquiring the information on the situation of other pirogues' catches provided through telephone communications made by the pirogue that first landed its fish on that day. It is a kind of market price that depends greatly on the situation of catches.

Expenditures such as fuel, lubricating oils, food and transport costs are almost the same for each trip; but the crew members' payments vary significantly depending on the earnings generated by the catch and the shipowner's financial situation. This payment includes a basic amount plus the production share, and the basic amount is in principle fixed, but it can be increased/decreased according to the amount of the previous catch. As for the production share, the balance after deduction of overheads that includes the costs of fuel, lubricating oils, food expenditure and transport costs, is shared between the shipowner and crew members. It significantly increases/decreases according to the catch amount. There is no payment if the fishing is in deficit.

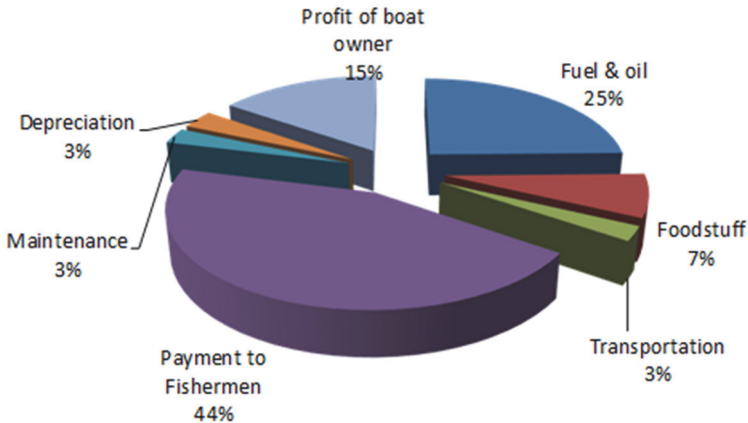
The following table indicates the breakdown of the average balance sheet of the pelagic fishing per canoe and fishing trip.

**Table 2-1: Average Fishing Balance Sheet per Sea Trip - Artisanal Pelagic Fishing**

Expenditures		Receipts	
Fuel	56,589 CFAF	Amount of Catches Landed	266,531 CFAF
Lubricating oils	10,056 CFAF		
Food Expenditures	19,714 CFAF		
Transport Costs	6,630 CFAF		
Payments of Crew Members	119,735 CFAF		
Total Expenditures	212,724 CFAF		
Fishing Profit	53,807 CFAF		

(Source: PECHVAL)

The fuel costs are the highest ones in the overheads, they represent approximately (25%) of the fishing trip turnover. The income of the shipowner is the balance after deduction of the depreciation and equipment maintenance costs (pirogue, outboard motor, nets and others). This comes to 41,307 CFA francs (53,807 CFA francs -12,500 CFA francs = 41,307 CFA francs) or 15% of the fishing balance sheet.



**Figure 2-5: Item-by-Item Breakdown of the Average Balance of Artisanal Pelagic Fishing (in percentage)**

(Source: PECHVAL)

**2-2-2 Incomes of Pelagic Fishermen**

The payments to crew members is the most important item (approximately 44%) of the pelagic fishing balance sheet. The table below shows roughly the percentage of the catch amount share and average income of crew members for each fishing trip.

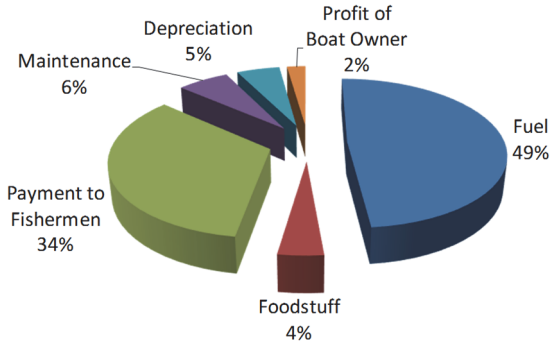
**Table 2-2: Percentage of the Crew Members’ Production Amount Share and Average Income for Each Fishing Trip**

Positions	Share Percentage	Average Income (per Fishing Trip)
Chief Officers (2 pers., Captain and Chief Mechanic)	50%	30,000 CFAF/pers.
Net Operators (2 pers.)	25%	15,000 CFAF/pers.
Others (2-4 pers.)	12.5~25%	7,500 CFAF/pers.

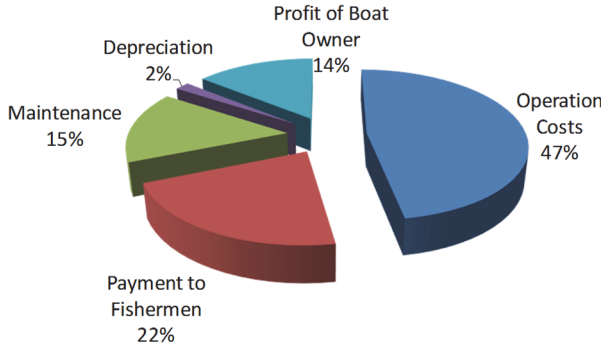
(Source: PECHVAL)

**2-2-3 Comparison with Similar Fishery in Other Countries**

If we compare the percentages in the breakdown of the pelagic fishing balance sheet of Congo with the purse-seine fishing of Senegal; it turns out that in Senegal the fuel costs are important (49%) and have a strong impact on the shipowner’s profit, which is only 2%, whereas in Congo, the percentage of the fuel and oil costs is relatively lower (25%), which generates a 15% profit for the shipowner. In the purse-seine fishing carried out in Senegal, a lot of fuel is used for the return trip to the fishing ground and search for fish shoals. For the case of purse-seine fishing in Guinea, the shipowner gets a 14% profit, but the total percentage of the fishing costs and repair costs standing at 62% is more important than that of Congo (38%), which decreases the crew members’ share. The breakdown of overheads required for a purse-seine fishing trip in Guinea is not clear, but fuel costs seem to represent the biggest part of costs. The importance of repair costs is undoubtedly due to the tough use of the outboard motor for the return trip to the fishing ground and search for fish shoals. Comparison of the similar fishing of these two countries allows us to say that fishery resources and situation of the Pointe-Noire fishing grounds still have good fishing conditions.



**Figure 2-6: Item-by-Item Breakdown of the Purse-Seine Fishing Balance Sheet of Senegal (2007, in Percentage)**  
 Source: Study of the Costs and Incomes of the Main Senegalese Artisanal Fishing Units, Moustapha Deme, 2010, CRODT/ISRA



**Figure 2-7: Item-by-Item Breakdown of the Purse-Seine Fishing Balance Sheet of Guinea (1996, in Percentage)**  
 Source: Artisanal Fishing Costs and Incomes: Methodology and Lessons Learned from Case Studies, Turay & Verstralen. FAO, May 1997

## 2-3 Demersal Fishery

### 2-3-1 Demersal Fishing Incomes

The findings of the study of demersal species fishing account books have revealed that the average number of crew members is 2 persons, the average number of days at sea is 4.39 days, the catch volumes vary between 21 and 290 kg, that is an average of 134.1 kg.

The unit price of demersal fish on the beach fluctuates a lot: 1,600 to 4,000 CFAC/kg. The table below indicates the unit prices of the main fish species on the beach. These prices information were collected through an interview survey.

**Table 2-3: Unit Prices of the Main Fish Species on the Beach**

Species	Unit Prices (FCFA/kg)
Bass	2,000~ 4,000
Captain	2,500~ 4,000
Black Sea Bream	2,500~ 4,000
European Horse Mackerel	1,000~ 1,200
Arius Gambensi	1,500~ 2,000
Tuna	1,500~ 2,000
Shark	1,500~ 2,000

(Source: PECHVAL)

In the artisanal demersal fishing, when fishermen sell the fish to fish wholesalers, they often turn to a dealer specialized in price negotiation. They give the dealer a fee of approximately 5,000 F.CFA and sometimes a bonus in case of large amount of incomes. As regards the other expenditures, such as those of the artisanal pelagic fishing, the amounts of the fuel and lubricating oil costs as well as food expenditures and transport costs are almost the same for each fishing trip, but the crew members' payment vary significantly according to the money amount generated by the catch and the shipowner's financial situation. The table below indicates the average balance sheet per fishing trip of a demersal fishing boat.

**Table 2-4: Average Balance Sheet Per Sea Trip - Artisanal Fishing of Demersal Species**

Expenditures		Incomes	
Fuel	43,625 CFAC	Amount of Catches Landed	272,111 CFAC
Lubricating oils	7,753 CFAC		
Food Expenditures	13,300 CFAC		
Ice Purchase	14,056 CFAC		
Costs of Transport, Miscellaneous Costs	8,944 CFAC		
Payment to Crew Members	88,981 CFAC		
Fees of the Dealer	7,144 CFAC		
Total Expenditures	183,336 CFAC		
<b>Fishing Profit</b>	<b>88,775 CFAC</b>		

(Source: PECHVAL)



The income of the shipowner is the balance after deduction of the depreciation and equipment maintenance costs (piroque, outboard motor, nets and others). This comes to 59,935 (88,775 CFAF-28,840 CFAF = 59,935 CFAF) CFAF.

In the balance sheet of the artisanal fishing of demersal species, the payment to the crew and gross fishing margin (depreciation, maintenance costs and profit of the shipowner) respectively account for 1/3 and overheads, half of which consist of fuel costs, are the rest. The percentage of fuel costs is lower than that of the artisanal pelagic fishing.

**2-3-2 Incomes of Demersal Fishery Stakeholders**

The table below shows roughly the production amount share and average income of artisanal demersal fishing boats’ crew members for each fishing trip.

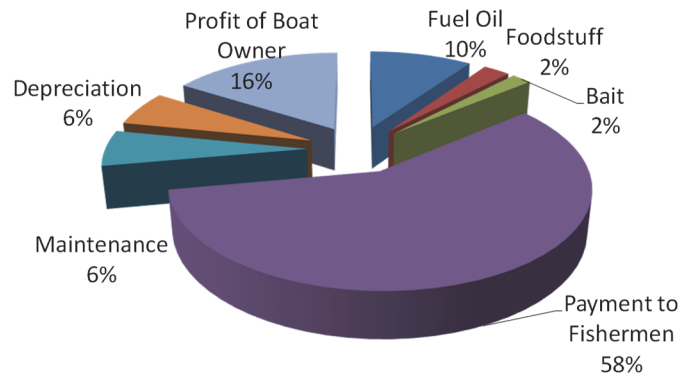
**Table 2-5: Production Amount Share and Average Income of Artisanal Demersal Fishing Boats’ Crew Members for Each Fishing Trip**

Positions	Share Percentage	Average Income (per Fishing Trip)
Captain (1 pers.) :	60%	30,000 CFAF/pers.
Pilot (1 pers.) :	40%	15,000 CFAF/pers.

(Source: PECHVAL)

**2-3-3 Comparison with Similar Fishery in Other Countries**

If we compare the balance sheet of the Congolese demersal fishing boats with the balance sheet of the Senegalese gillnet/line fishing boats, it turns out that the fuel costs of Congolese demersal fishing boats account for 19%, those of Senegalese gillnet/line fishing boats are only 10% because the fishing grounds are closer. However, the crew members’ share accounts for more than half of the fishing balance sheet, i.e. 58%, since there are many fishermen in Senegal. The profit rate of the demersal fishing boats’ owners in the Congo is 22% for each fishing trip, while it is 16% for Senegalese gillnet/line fishing boats; which exceeds the 15% of the pelagic fishing in Congo. However, given the long fishing trip duration (3 to 6 days) and the limited number of annual trips, the annual profit is lower than that of the multiple trip fishing carried out from night to morning.



**Figure 2-8: Breakdown of the Balance Sheet of the Senegalese Gillnet/Line Fishing Boats (2007, in Percentage)**

Source: Study of the Costs and Incomes of the Main Senegalese Artisanal Fishing Units, Moustapha Deme, 2010, CRODT/ISRA

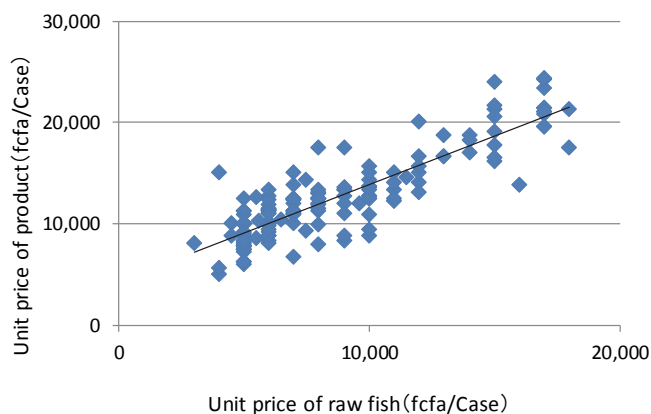
#### 2-3-4 Balance Sheet of the Smoke Processing

The findings of the study of the smoking processor's account books have revealed that for each smoking session, the average volume of purchased fresh fish is 8.3 boxes (approx. 320 kg), the average cost of overheads is 89,008 CFAF and the turnover is on average 107,711 CFAF.

Sardinella is by far, the main fresh fish (as the materials) processed by smoking; but the flying fish, skipjack and shark are also used. Processors normally buy sardinellas from artisanal pelagic fishermen, but in case of poor fishing, they sometimes buy fish from industrial fishing companies. The fish box sales price is the same for the artisanal fishing and industrial fishing, but the content of the box differs: approx. 38 kg for artisanal fishing and approx. 20 kg for industrial fishing, which almost doubles the unit price of materials to be processed.

Manual carriers waiting on the beach are often resorted to, for the transport of fresh fish from the purchase places to the processing workshops. Taxis are used to carry fish to sales points. Assistants are hired during the high season of sardinellas to ease the workload in the processing workshops. Logs used as fuel are purchased from one of the log sales warehouses in the Songolo district. Second-hand cardboard boxes and wrapping paper are bought and used for shipment.

The average sales amount of products smoked together during the study period of the smoke processors' account books was 107,711.3 CFAF. The unit purchase price of fish used as materials was 1,029.6 CFAF/kg at most and 197.4 CFAF/kg at least. This shows that the unit sales amount of products is in close correlation with the purchase price of materials (Correlation coefficient:  $r = 0.9351$ ), the price of the finished products corresponding to approximately 145% of the price of materials.



**Figure 2-9: Correlation Between the Unit Price of Materials and Unit Price of Finished Products (smoked products)**  
(Source: PECHVAL)

The table below indicates the average balance sheet of the daily session of sardinella processing by smoking.

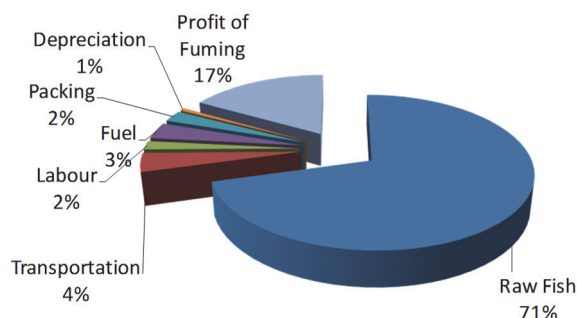
**Table 2-6: Average Balance Sheet of Daily Processing by Smoking**

Expenditures		Incomes	
Fresh Fish Purchase	76,138 CFAF	Sales amount of finished Products	107,711 CFAF
Manual Transport	1,366 CFAF		
Transport (taxi)	3,030 CFAF		
Assistants	2,025 CFAF		
Logs	3,827 CFAF		
Packaging Materials	2,619 CFAF		
Total Overheads	89,008 CFAF		
Operating Profit	18,702 CFAF		

(Source: PECHVAL)

The incomes of processors using the smoking techniques corresponds to the balance after deduction of the smoking equipment depreciation costs, namely aluminium bowls used for smoking and kilns and their accessories (grid, wood stems, etc.) from the operating profit, i.e. 18,000 CFAF.

In the balance sheet of the processing by smoking, the purchase costs of fresh fish used as materials account for the largest share (71%), the overheads for approximately 12% and the profit of smokers for 17%.



**Figure 2-10: Breakdown of the Balance Sheet of the Processing by Smoking (in Percentage)**  
(Source: PECHVAL)

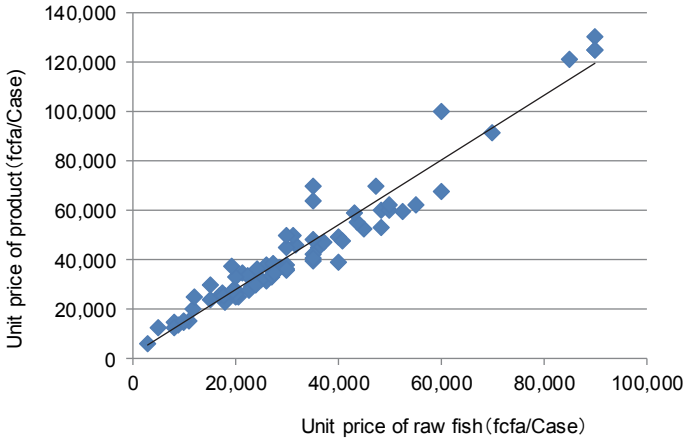
**2-4 Balance Sheet of the Processing by Salt-drying**

The findings of the study of account books conducted among processors using the salt-drying techniques have revealed that the average volume of fresh fish purchased for a salt-drying session is 4.6 boxes (approx. 92 kg), the average overheads stand at 187,446 CFAF and the average turnover at 213,893 CFAF.

The bass, Arius Gambensi, shark and moray are mainly appreciated in the form of salt-dried fish. The unit price of fresh fish fluctuates according to the species and market price. It roughly stands at 1,800 to 2,000 CFAF/kg. The demersal fish price in Pointe-Noire is 7 to 8 times higher than that of sardinella, and the production capacity of processors is often limited by the financial constraints for fresh fish purchase. The purchase is effected per box, but the weight of the box is 20 kg, which is different from the sardinella.

Taxis are used for the transport of fresh fish used as materials since salt-drying workshops are scattered in residential areas of the of Pointe-Noire suburb. Taxis are also used to transport the finished products to the markets. The costs of taxis are higher than those paid for processing by smoking. Assistants are hired for salting and drying only when big volumes of demersal fish are purchased at low prices. A salt weight corresponding to 30% of the fresh fish weight is used for salting. Some processors also sprinkle their finished products with ground salt. The finished products are not packed up in cardboards, but simply wrapped with paper.

There is a strong correlation (correlation coefficient:  $R = 0,9426$ ) between the unit price of the raw material (fresh fish) and the finished product price. The finished product price corresponds to approximately 130% of the raw material unit price.



**Figure 2-11: Correlation Between the Fresh Fish Unit Price and Price of (Salt-Dried) Products**

(Source: PECHVAL)

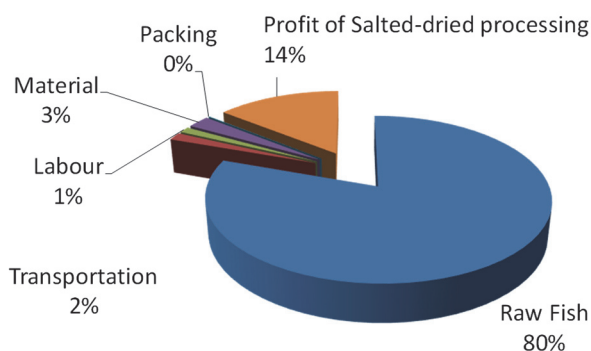
The following table indicates the average balance sheet of a processing by salt-drying session.

**Table 2-7: Average Balance Sheet of a Processing by Salt-drying Session**

Expenditures		Incomes	
Fresh Fish Purchase	172,000 CFAF	Sale amount of finished Products	213,893 CFAF
Manual Transport	1,464 CFAF		
Transport (taxi)	1,893 CFAF		
Assistants	2,607 CFAF		
Salt	5,429 CFAF		
Packaging Materials	149 CFAF		
Total Overheads	183,542 CFAF		
Operating Profit	30,351 CFAF		

(Source: PECHVAL)

The fresh fish purchase costs represent 80% of the operational costs of the processing by salt-drying; which is higher than those of processing by smoking. As a result, even if overheads are low (at least 6%), i.e. half of those of smoking, the profit of the processing by salt-drying accounting for 14% is lower than that of smoking, which is 17%.



**Figure 2-12: Breakdown of the Balance Sheet of the Processing by Salt-drying (in Percentage)**

(Source: PECHVAL)

## 2-5 Operating Balance Sheet of Fish Trade

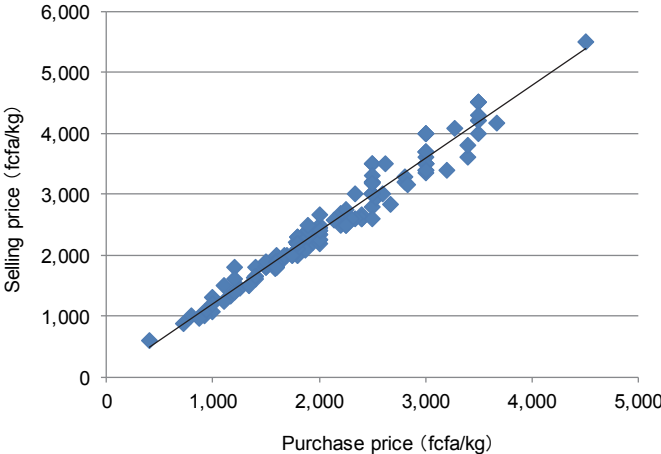
The findings of the study of the account books of fish wholesalers have revealed that the average volume of fresh fish purchased per day is approximately 44 kg, the purchase price of fresh fish is approximately 72,186 CFAF, and their average turnover per day is 84,046 CFAF.

The fish trade activities consist in purchasing fish from demersal fish fishermen on the beach and selling them on the beach. Moreover, fish wholesalers do not spend money for transport except for the costs of transport themselves from their home to the beach. The unit price of demersal fish in Pointe-Noire fluctuates according to their species and market price. It roughly stands at 1,500 to 2,000 FCFA/kg. However, in the case of poor fishing and soaring prices, it can exceed 2,500 CFAF.

The daily capital budgeted for the purchase of fish varies from 100,000 to 200,000 CFAF. Cash settlement is the rule for both purchase and resale on the beach. The price is negotiated with the customer, but there is no significant price drop. The demand for fresh fish is high and there are few remainder. But as

time goes by, fish loses its freshness and the customers are scarce, fish merchants try to sell fish by gradually lowering their prices. A price may be negotiable but criteria such as freshness and fishing conditions are taken into account. The study carried out as part of PECHVAL shows that if the freshness degree goes one notch down, the price decreases by more than 1/3. Concretely, if the ambient temperature is 30°C, it turns out that the price drops by approximately 5% per hour in line with the deterioration of freshness.

There is a strong correlation (Correlation coefficient:  $r = 0.9812$ ) between the purchase price and resale price, the resale price corresponding to approximately 120% of the purchase price.



**Figure 2-13: Correlation Between the Unit Purchase Price and Unit Sales Price**

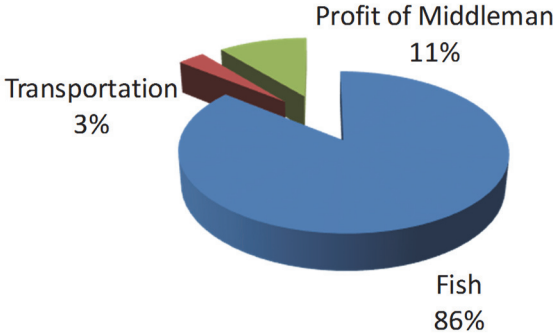
(Source: PECHVAL)

The table below indicates the daily average balance sheet of fish trade during the study period of account books.

**Table 2-8: Daily Average Balance Sheet of Fish Trade**

Expenditures			Incomes	
Fresh Purchase	Fish	72,186 CFAF	Sale Amount of Fresh Fish	84,046 CFAF
Transport		2,770 CFAF		
Total Overheads		74,956 CFAF		
Operating Profit		9,090 CFAF		

(Source: PECHVAL)



**Figure 2-14: Breakdown of the Average Balance Sheet of Fish Trade (in Percentage)**

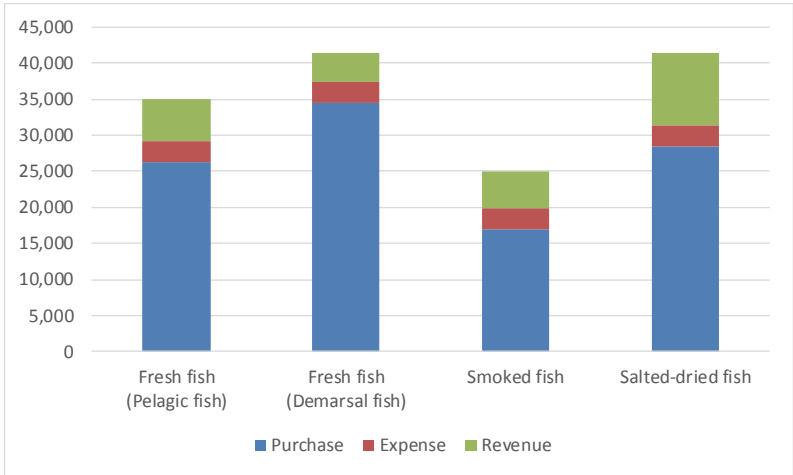
(Source: PECHVAL)

**2-6 Retail Sale**

Vendors are small traders who buy fresh fish from fishermen or fish merchants, and processed products (salt-dried and smoked ones) from processors and resell all kinds of products in the markets. According to an interview survey, the consumer can often have approximately 800-1,500 CFAF a day for the purchase of fish products. It is based on this price range that vendors sell their products.

**Table 2-9: Average Daily Balance Sheet of Vendors by Type of Products (Study Period: December 2012 - February 2013)**

	Purchases	Expenditures	Turnover	Incomes
Fresh Pelagic Fish	26,300 CFAF	2,920 CFAF	35,000 CFAF	5,780 CFAF
Fresh Demersal Fish	34,500 CFAF	2,920 CFAF	41,400 CFAF	3,980 CFAF
Smoked Products	17,000 CFAF	2,920 CFAF	25,000 CFAF	5,080 CFAF
Salt-dried Products	28,410 CFAF	2,920 CFAF	41,400 CFAF	10,070 CFAF



**Figure 2-15: Breakdown of the Average Balance Sheet of Vendors by Type of Products** (Source: PECHVAL)

Vendors of fresh pelagic and demersal fish in general do not grant any importance at all to the temperature in order to preserve freshness and hygiene. This is why the fish freshness loss is very significant. As a result, there could be remnants. These are losses for vendors.

The Retail fish sales in the markets is one of the few income-generating activities for women in Pointe-Noire. It is very coveted but the competition is tough and there are no free stalls in busy markets. Many vendors have very scarce financial resources and the amount they could spend for buying fish varies between 20,000 and 50,000 CFAF per day. This does not allow them to purchase significant volumes. Their expenses include the sales stall management costs/fees for the right to use a market place (including cleaning costs) standing approximately at 3,000 to 4,000 CFAF per month, and the transport costs including the fish transport after purchase.

## 2-6-1 Retail Prices and Gross Profit Rates

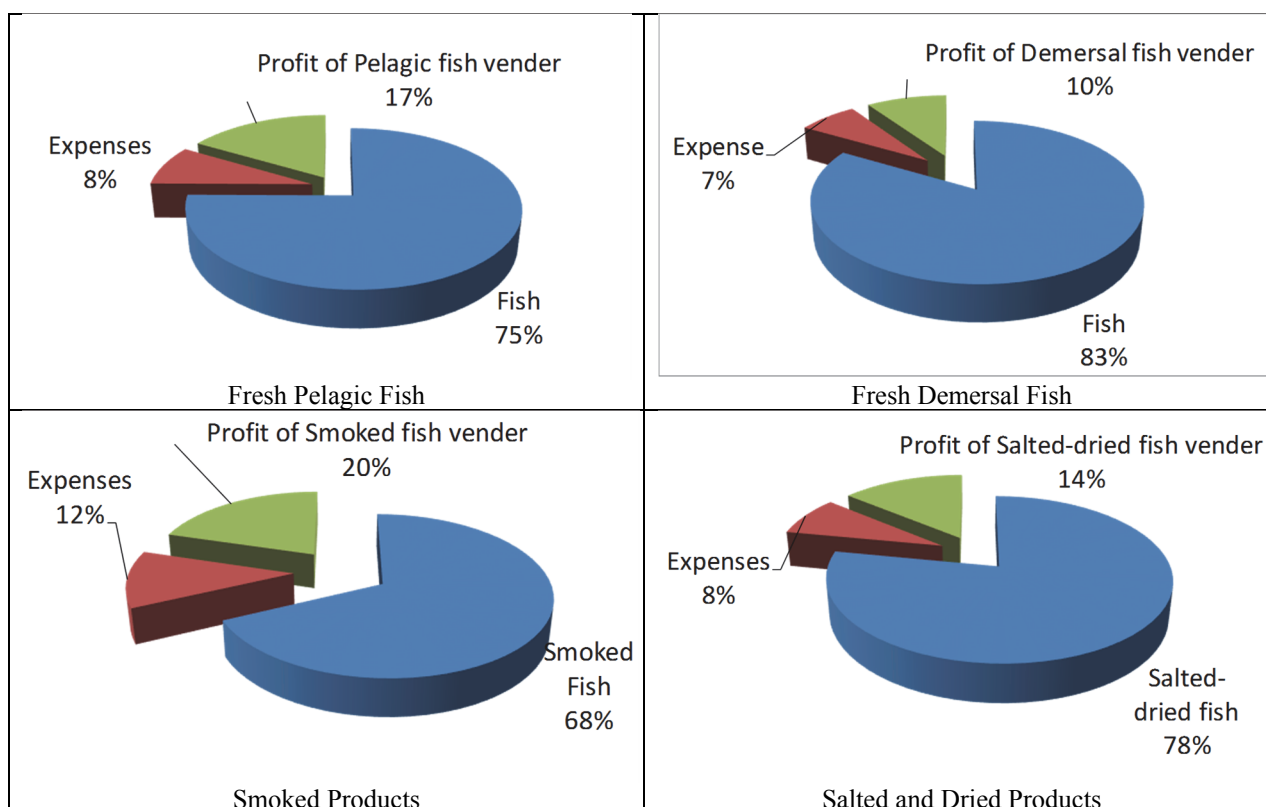


Figure 2-16: Breakdown of the Retail Sale Average Balance by Type of Fishery Products (in Percentage)

(Source: PECHVAL)

The supply cost represents the biggest part of expenditures in the retail sale of fishery products. The highest percentage is that of the retail sale of fresh demersal fish accounting for 83%, followed by that of salted and dried products with 78%, then that of fresh pelagic fish accounting for 75%, and finally that of smoked products with 68%. The highest supply cost is that of fresh and salt-dried demersal fish. On the other hand, their profitability in the retail sale is low, 14% for salted and dried products and 10% for fresh fish. The profitability of the smoked product retail sale is 20% and 17% for the fresh pelagic fish.

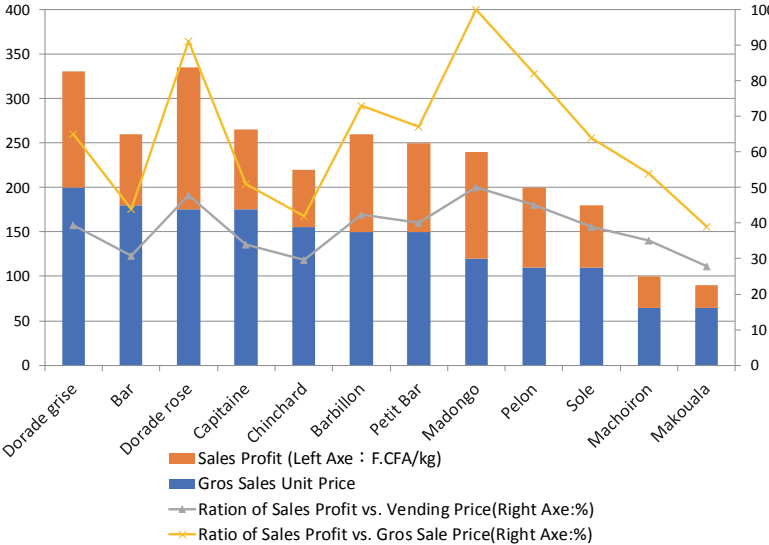
It is generally believed that the gross margin for the demersal fish is important, but its rate is not necessarily set according to purchase price evolution. Records are old, but the data of the study<sup>23</sup> of the purchase price and retail sale price per fish species in the markets of Pointe-Noire, show that the relationship between the purchase amount and gross profit varies significantly according to the fish species. The gross profit rate for the bass and Nile perch, that are demersal fish, is limited. The gross profit rate for the horse mackerel, a pelagic fish, is at the same level as that of bass, but as the purchase price is high, the retail price is higher than that of the sole. The purchase price of arius gambensi is the same as that of makouala, but the gross profit rate differs, because the retail price, influenced by the preference of consumers, also differs. The retail

<sup>23</sup> Economic Study of the Maritime Fishing and Fish Marketing in the Popular Republic of Congo, LE GAL and RETIJEAN, ORSTOM, 1975



price of these two fish is lower than that of demersal fish. The gross unit profit rate is not high but big volumes can be sold and generate profits for vendors.

If the gross margin rate is compared to the supply price, the difference by fish species turns out to be very important and ranges from 40 to 100%. But compared to the retail price, the range is between 30% and 50%. The retail price is not set by adding mechanically the gross margin rate to the purchase price, vendors make arrangements to buy fish at prices that can cover their gross margin, even in case sales price drop, while taking into account the purchasing power of consumers.



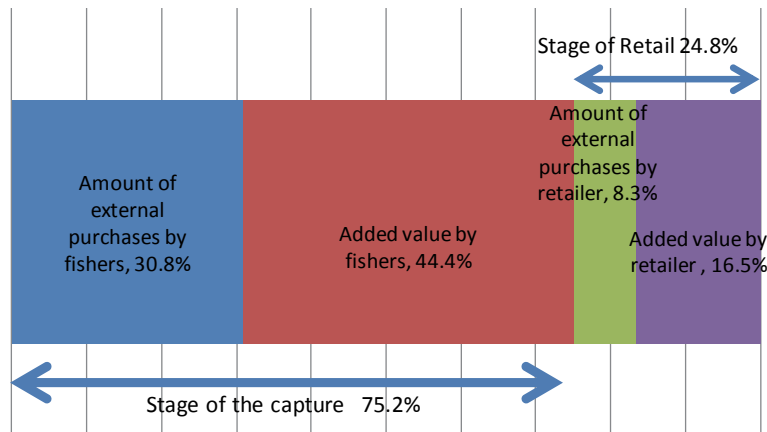
**Figure 2-17: Purchase Price by Species, Retail Price and Gross Profit Rate (PNR)**

Source: Economic study of Maritime Fishery and the marketing of fish in the Popular Republic of the Congo, the GAL and RETIJEAN, ORSTOM, 1975

**2-7 Value Added of Fresh Pelagic Fish**

The distribution of fresh pelagic fish is done by direct sale of catches landed by pelagics fishermen to vendors, who resell them to consumers. The following figure shows the percentage of the amount of external purchases and value added during the catch and retail phase in relation to the sardinella price. The value added represents the total of staff costs, profit, rental price (shop, stall), taxes and duties. The sale amount, after deduction of the value added is the amount of external purchases.

75.2% of the retail price consists of the amount of fish purchases and value added. As regards the retail sale, the amount of external purchases and value added (supply price not included) represent 24.8%. The amount of external purchases cost account for 30.8% of the retail price, that of the value added is 44.4%. The vendor’s overheads are estimated at 8.3%, the retail sale value added is 16.5%. The total value added of the fisherman and vendor is 60.9%.



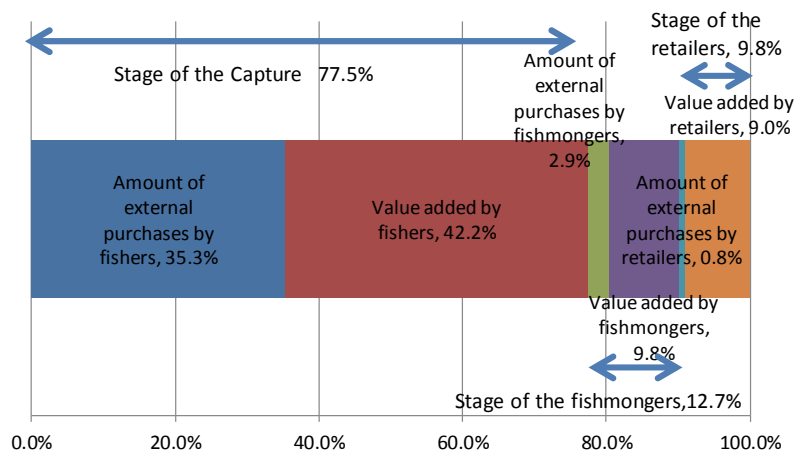
**Figure 2-18: Retail Price Structure of Fresh Pelagic Fish**

(Source: PECHVAL)

## 2-8 Value Added of Fresh Demersal Fish

For the fresh demersal fish distribution, fish caught and landed by fishermen of demersal fish are sold to fish wholesalers through the dealer when fish is landed and the fish wholesalers sell these fish to vendors, who carry them to the markets etc. to resell them to consumers. The following figure indicates the percentage of the amount of external purchases (supply amount during the catch, fish trade, and retail stages is not included) and value added in relation to the demersal fish retail price.

77.5% of the retail price consists of the amount of fish purchases costs and value added. The total external purchases and value added (supply amount not included) is 12.7% during the fish trade stage. The total external purchases and value added during the retail stage (supply amount not included) is 9.8%. The fisherman's external purchase rate in the retail price is 25.3%, that of the value added accounts for 42.2%. The fish wholesaler's overheads are 2.9%; the value added is estimated at 9.8% at this level. The vendor's overheads account for 8.3% and the value added for 1.4% at the retail stage. The value added of the fisherman, fish wholesaler and vendor stands at 24.9%. The value added of fishermen of demersal fish standing at 20.4% is quite different from that of fishermen of pelagic fish that stands at 11.4%. Among vendors, the demersal fish value added is 9.0% against 16.5% for pelagic fish. It is to be noted that value added differences observed here do not directly correspond to their income differences.



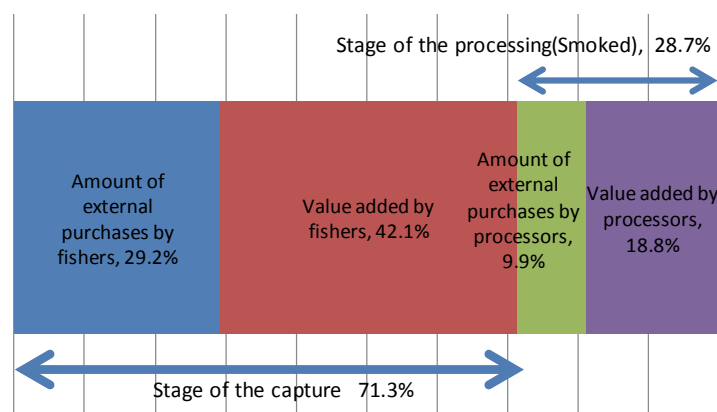
**Figure 2-19: Retail Price Structure of Fresh Demersal Fish**

(Source: PECHVAL)

## 2-9 Value Added of Smoked Products

In the smoked product value chain, the wholesale sale of smoked fishery products, mainly sardinella caught by pelagic fishing, is carried out in makeshift markets generally located along the roadside. Smokers, most of whom are families of Beninese fishermen, buy fresh fish on the beach from artisanal fishing dugout canoes, but in case of poor fishing, particularly if the supply of raw materials by artisanal fishermen is insufficient, they resort to sales points and industrial fishing refrigerated trucks. They process and even retail fish themselves.

71.3% of the retail price consists of the fish purchase cost and value added. The total external purchases and value added at the sales level is 28.7%, exclusive of the supply amount. The share of foreign purchases in the retail price is 29.2%, and that of the value added accounts for 42.1%. The vendors' overheads are 9.9% and the value added is 18.8% at this stage.

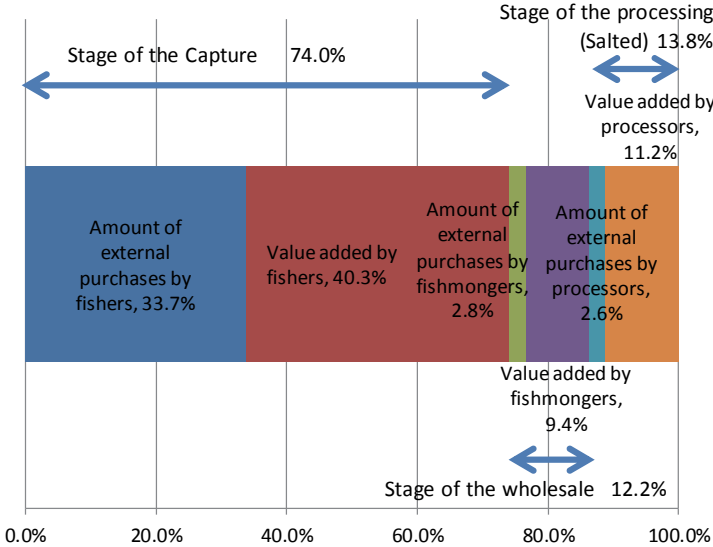


**Figure 2-20: Retail Price Structure of Smoked Products**

(Source: PECHVAL)

**2-10 Value Added of Salted and Dried Products**

Demersal fish caught by fishermen are sold to fish wholesalers who resell them to processors. Demersal fish sold on the beach are used as raw materials for the salt-dried products which are sold in the public markets or in the makeshift markets located along the roadside. In Pointe-Noire, these products are directly sold by processors to consumers.



**Figure 2-21: Retail Price Structure of Salted and Dried Products** (Source: PECHVAL)

74.0% of the retail price consist of the fish purchases cost and value added. The total external purchases and value added is 12.2% for fish trade, exclusive of the supply cost. It stands at 13.8% at the retail stage. The fisherman’s external purchase rate in the retail price is 33.7%, that of the value added accounts for 40.3%. The fish wholesaler’s overheads stand at 2.8% with a value added of 9.4%. The vendor’s overheads stand at 2.6% with a value added of 11.2%.

**2-11 Value Added Rate of the Artisanal fisheries Products and Average Turnover of Vendors**

The following table shows the different values added relating to the retail prices of the fresh pelagic fish, fresh demersal fish, smoked products as well as salted and dried products.

**Table 2-10: Value Added Rates in the Retail Price of Artisanal fisheries Products**

	Fresh Pelagic Fish	Fresh Demersal Fish	Smoked Products	Salted and Dried Products
Fish Catch Value Added	44.4%	42.2%	42.1%	40.3%
Fish Trade Value Added		9.8%		9.4%
Retail Value Added	16.5%	9.0%	18.8%	11.2%
Total Value Added	60.9%	61.0%	60.9%	60.9%

(Source: PECHVAL)

The total percentage of the value added is almost the same for the fresh (pelagic and demersal) fish, and processed (smoked and salt-dried) products. It corresponds to approximately 60.9 to 61.0% of the retail price. The fresh fish value added is about 2% higher than that of processed fish. The same gap is observed for the pelagic fish over demersal fish. The fish trade value added is less than 10%. The value added of processed fish retail sale is about 2% higher than that of fresh fish. That of pelagic fish is about 7% higher than that of demersal fish.

This is due to the fact that this value-added rate is the percentage relating to the retail price, but the vendors' profit varies according to the retail price and sold volumes. The figure below shows the average turnover, amount of expenditures and profits of vendors by product.

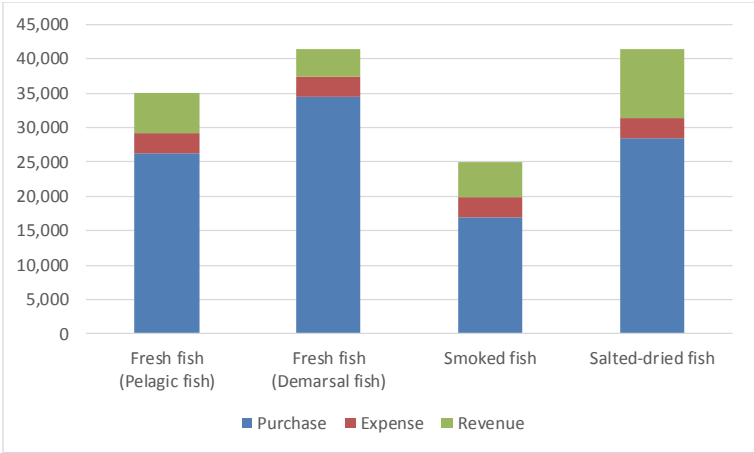


Figure 2-22: Average Turnover, Amount of Expenditures and Profits of Vendors per Product and Day

(Source: PECHVAL)

**2-12 Annual Incomes of Artisanal fisheries Stakeholders and Poverty Threshold**

We calculated the incomes of shipowners, crew members, processors, fish wholesalers and vendors involved in the value chain of the artisanal fisheries products.

For the calculation, we multiplied the average income of each transaction by the number transactions carried out per year, then we averaged it and divided it by 365 days to get the daily average income. The following table presenting incomes of each stakeholder, shows that these incomes differ according to the roles and responsibilities of stakeholders, particularly those of crew members (A), (B) and (C).

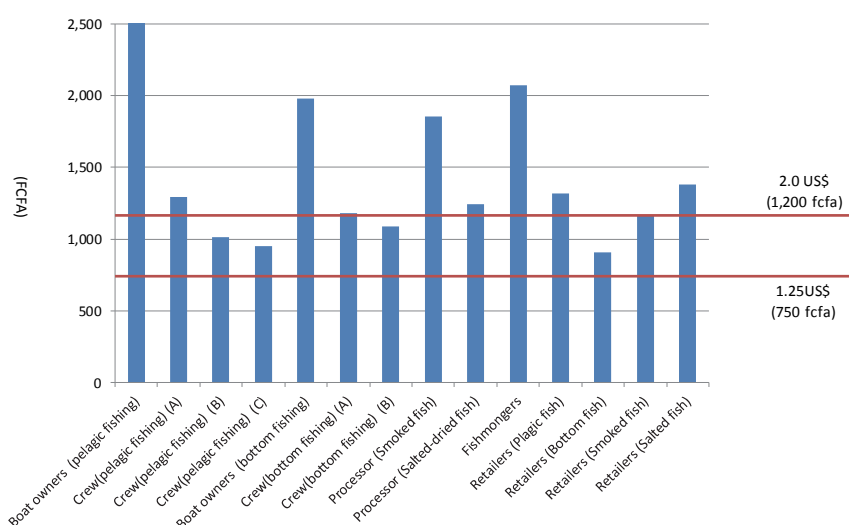
**Table 2-11: Average Annual Incomes of the Artisanal fisheries Stakeholders**

	Revenue per operation	Number of operation per year	Average revenue per year (f.cfa)	Average revenue per day (f.cfa)
Boat owners (pelagic fishing)	44,812	120	5,377,483	14,733
Crew (pelagic fishing) (A)	18,846	120	2,261,620	6,196
Crew (pelagic fishing) (B)	9,243	120	1,109,160	3,039
Crew (pelagic fishing) (C)	4,621	120	554,520	1,519
Boat owners (bottom fishing)	78,103	50	3,905,150	110,699
Crew (bottom fishing) (A)	41,402	50	2,070,100	5,672
Crew (bottom fishing) (B)	23,867	50	1,193,350	3,269
Processor (Smoked fish)	16,892	120	2,027,040	5,554
Processor (Salt-dried fish)	45,295	30	1,358,850	3,723
Fishmongers	9,461	300	2,838,300	7,776
Vendors (Plagic fish)	5,780	250	1,445,000	3,959
Vendors (Bottom fish)	3,980	250	995,000	2,726
Vendors (Smoked fish)	5,080	250	1,270,000	3,479
Vendors (Salted fish)	10,070	150	1,510,500	4,138

(Source: Study by PECHVAL)

The above daily incomes were divided by the average number of a family members provided by the survey conducted in Pointe-Noire in 2012 as a part of PECHVAL, in order to get the incomes per person and per day. Many of Beninese workers, who are the majority of fishermen embarked on pelagic fishing, left their families in Benin, and the survey has revealed that the number of their family members is smaller than that of Congolese families. Beninese nationals who left their families in Benin send them money, which makes it difficult to calculate per capita income by including families. The comparison with incomes of Congolese nationals seems difficult. Moreover, the same number of dependents of the demersal fishing boat owners, crew members and processors using the salt-drying techniques was used respectively for pelagic species fishing boats, crew members and processors using the smoking techniques.

The figure below indicates the average incomes per capita and per day of stakeholders of the different fishing activities. Incomes are estimated based on these results.



**Figure 2-23: Average Incomes per Capita and per Day of Artisanal fisheries Stakeholders (Estimate)**

(Source: PECHVAL, exchange rate used: in April 2015)

Part of the subordinate crew members of the pelagic and demersal fishing and vendors have an income ranging from 1.25 US\$ and 2.0 US\$, which is the poverty threshold. For the composition of families, we have assumed only one member has an income, but the wives of some fishermen are processors or the husband of a women vendor may have another income. In reality, the situation may not be as severe as it seems, but the transition to poverty could be very likely in the case of unemployment or death of the spouse.

## CHAPTER 3. Pilot Projects

### 3-1 Selection of Pilot Projects

After the analysis of the fish product value chain in Pointe-Noire carried out in Year 1, the most striking and most urgent problems to be addressed were clarified. Projects for the improvement of the quality of fish, improvement of the sales practice in the public markets, improvement of fish product processing practices, and maintenance and management of the landing beaches were selected to address these problems. In addition, the "construction of the artisanal fishing facilities" including spaces for landing, sorting and sale of catches as well as safe water supply facilities, ice and fuel, etc., and "support to the organization in charge of the management and operation of these facilities" are selected as the pilot projects.

The implementation of pilot projects started from the second year following their approval during the 1<sup>st</sup> Joint Coordination Committee (JCC) meeting.

The purpose of the pilot projects is to provide officials of the departmental Directorate of the MFA in Pointe-Noire and those of the departmental Directorate of Kouilou, with opportunities for practical work relating to the management of development activities contributing to the improvement of the fish product value chain, while collaborating with the associations of fishermen. The results and experiences acquired from the pilot projects will be incorporated in the development of the improvement plan.

**Table 3-1: Pilot Projects**

Title of Each Project	Main Content of the Project
1 Fish Quality Improvement	Improvement of fishing practices to keep freshness, of selling practices to preserve the fish freshness during the selling stage and its dissemination, keeping fish freshness lengthy during fish selling, and organizing of fishermen's associations
2 Improvement of the Selling Practices in the Public Markets	Improvement of hygiene conditions of selling stalls of fish products, use of ice during selling of fresh fish, dissemination of isothermal boxes, organizing of fish vendors' associations
3 Improvement of Fishery Product Processing Practices	Education on hygiene, "KAIZEN:improvement" activities including the introduction of improved smoking kiln and processing practices, hygienic handling of fresh fish, training activities, and organizing of women processors' associations
4 Maintenance and Management of Landing Beaches	Combing and claeaning of the landing beaches, development of cleaning/waste management plan and manual, awareness raising, establishment of the beach cleaning committee, strengthening the committee, in coordination with the municipality of Pointe-Noire
5 Construction of artisanal fishing facilities and provision of equipment	Selection of the site, development of construction and equipment plans, preparation of tender documents, arrangement of the tender, assisting the contract conclusion, construction and equipment supply work and their supervision, inspection upon completion, inspection after the guarantee period, etc.
6 Management and Operations of Artisanal fisheries Facilities	Strengthening of fishermen's organizations, establishment and strengthening of a organization in charge of facility management & operation, development of operating regulations and maintenance plans of facilities, establishment of statute and the internal rule, practical training for the management and opearation activities of facilities



### **3-2 Fish Quality Improvement Plan**

The artisanal fisheries in Congo is facing serious problems, such as a agonizing deterioration of fish freshness at each step of the fish product value chain and significant price loss resulting from them.

In the current situation of the fishery product value chain in Congo, no preservation of the fish freshness by conservation in ice and other measures is observed except during the demersal fishing at sea. As a result, fish lose its freshness before reaching the consumer in most cases. The "fish quality improvement" pilot project aims at making clear of the value loss in relation to the freshness loss in the fish product value chains, developing and teaching the practices of freshness preservation which could be adapted to the local situation.

The fish product value chain is beginning from the fish catch and landing stages, which are the most important stages for the preservation of the fish quality. After landing, decomposition of the protein in fish starts either gradually or quickly depending on temperature to be kept it. The fish quality deteriorates and this decay cannot be reversed.

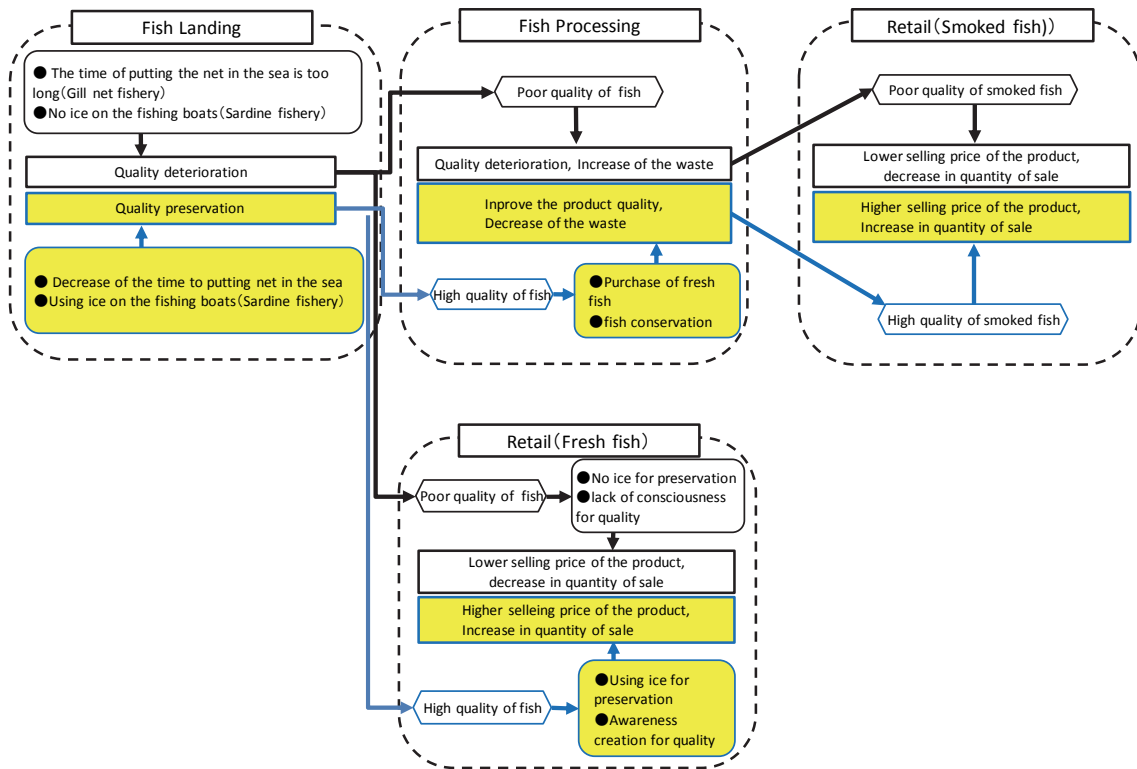
What is possible is to delay the deterioration speed and hold on as long as possible the transformation leading to putrefaction.

Fish lose their freshness during the landing, the downstream stages of the value chain have to accept the fish with deteriorated freshness, and this will cause a cascading value loss. The fish quality improvement plan aims to preserve fish freshness after their landing, so as to transfer fresher fish in a good condition to the next stage of the distribution chain.

#### **3-2-1 Components of the Pilot Fish Quality Improvement Project**

##### **3-2-1-1. Pelagic Fish Quality Improvement**

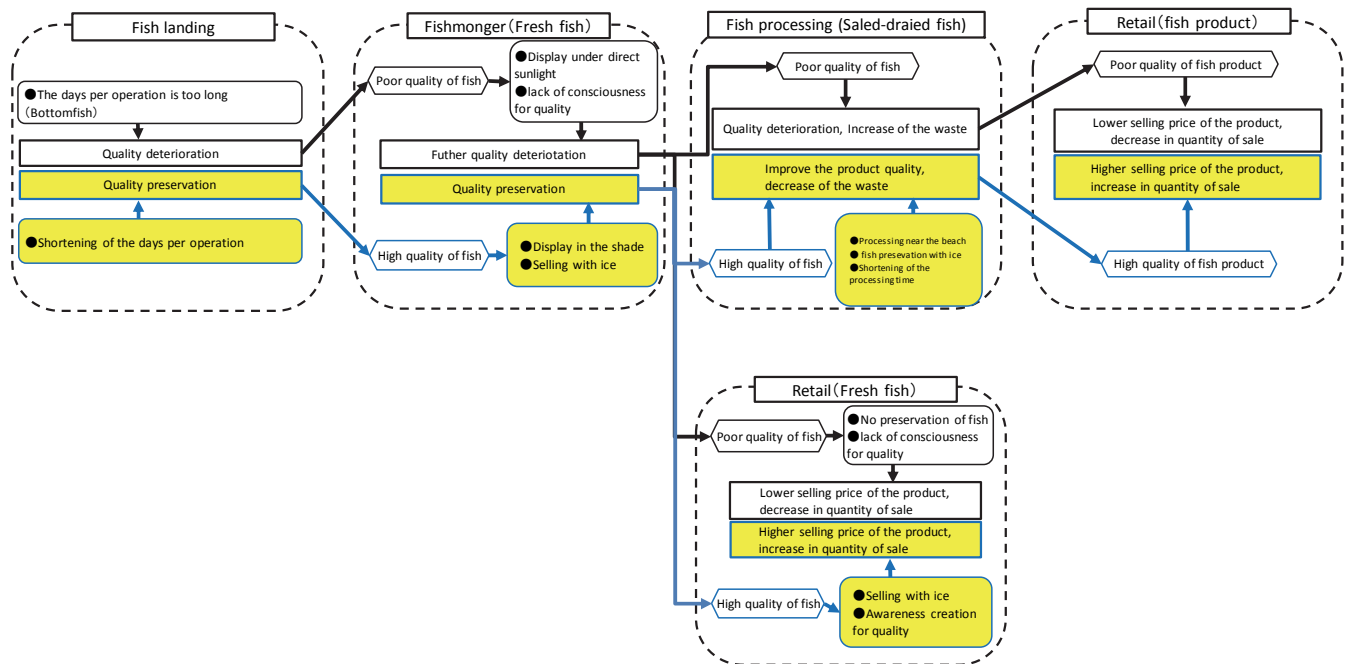
Problems and points to be improved in the pelagic fishing and effects of this improvement are indicated in the following figure.



**Figure 3-1: Problems in the Pelagic Fish Value Chain, Improved Points and their Effects**  
(Source: PECHVAL)

### 3-2-1-2. Demersal Fish Quality Improvement

Problems and points to be improved in the demersal fishing and effects of this improvement are indicated in the following figure.



**Figure 3-2: Problems in the Demersal Fish Value Chain, Improved Points and their Effects**  
(Source: PECHVAL)

The activities listed in the table below were carried out under the pilot fish quality improvement project to improve each stage of the value chain of artisanal fishing products and develop beneficial tools and techniques that can be disseminated.

**Table 3-2: Content of the Pilot Project for Fish Quality Improvement**

Stage	Action to Be Undertaken	Outline and Consideration
<b>Generalities</b>		
Basic Experience	Establishment of a fish freshness estimation tool (verification test)	Given the absence of institutions specialized in the scientific analysis of fish and quality control, the accumulated temperatures and freshness scores are measured and analysed for main species to simplify the estimation of the fish freshness on the spot; and a freshness forecasting method is established based on a recurrence equation.
<b>Pelagic Fishing</b>		
Catches	Development of the preservation in ice practice on fishing boats (verification test)	Verification of the effectiveness of catch preservation in ice on fishing boats to prevent quality deterioration
	Reduction in the timescale of the net setting in the sea (verification test)	Verification of the effectiveness of reducing the holding time of fish caught in the net to avoid the deterioration of their quality in the sea water.
	Financial analysis	Financial analysis of the "ice-based preservation on fishing boats" and "reduction in the timescale of the net holding the catch in the sea"
	Guidance and training of fishermen, dissemination of fishing and fish handling techniques.	Based on the findings of the financial analysis, guidance and training of fishermen in the preservation of fish quality in ice on fishing boats" and the "reduction in the timescale of the catch entangling in the net in the sea"
Processing	Verification of the relationship between the material fish's freshness score and the product quality (verification test)	Study of waste reduction through the employing fresher materials and verification of the predominance of the fresher materials
	Improvement of the fresh preservation practice of fish (verification test)	Instructions on the appropriate preservation technique in between the purchase of materials and the beginning of processing
	Financial analysis	Financial analysis of the "improvement of the fresh fish preservation practice "
	Technical guidance and training to processors. (dissemination of fish handling and processing techniques)	Based on the findings of the financial analysis, technical guidance and training to the processors on the "improvement of the fresh fish preservation practices in the processin"
Retail Sale	Introduction to fish preservation on ice (verification test)	Verification of the advantages of displaying fish with ice to prevent the deterioration of their freshness while selling fish.
	Technical guidance to vendors /dissemination of techniques	Based on the findings of the financial analysis, guidance to vendors in the "introduction to fish preservation on ice"
<b>Demersal Fishing</b>		
Catches	Reduction in the duration of fishing trips and reduction in the timescale of the net keeping in the sea (verification test)	Verification of the appropriate number of fishing days, taking into account of the catch deterioration in the entangling net, as well as in the fish hold.
	Financial analysis	Financial analysis of the "reduction in the duration of fishing trips" and "reduction in the timescale of the net holding the catch in the sea"
	Guidance and training of fishermen, dissemination of fishing and fish handling techniques.	Based on the findings of the financial analysis, guidance and training of fishermen in the "reduction in the duration of fishing trips" and "reduction in the timescale of the net holding the catch in the sea"

Stage	Action to Be Undertaken	Outline and Consideration
FishWholesale	Study of the correlation between the freshness score and unit sales price (verification test)	Study of the freshness score and study of the sales price of bass, the main species of demersal fish. Confirmation of the correlation between the fish cumulative temperature history and its unit price taking into account the accumulated temperature and freshness score resulting from the regression equation acquired in the basic study
	Improvement of fish selling practices (verification test)	Instructions to fish display using ice, and avoiding the direct sunshine.
	Financial analysis	Financial analysis of the improved practices in fish display with the correlation between the freshness score and sales price
	Guidance and training of fish wholesalers /dissemination of fish handling techniques	Based on the findings of the financial analysis, guidance and training of fish wholesalers were carried out in the "improved fish display practice"
Processing (salt-dried fish)	Improvement of the preservationpractices of fresh fish (verification test)	Study and verification of preservation practices of fish to reduce their freshness deterioration
	Reduction in the processing time (verification test)	Verification of the reduction in the processing time as a way of avoiding the quality deterioration and improving productivity
	Financial analysis	Financial analysis of the "reduction in the processing time"
	Guidance and training of processors/dissemination of techniques	Based on the findings of the financial analysis, guidance and training of processors in the "reduction the processing timescale"
Retail Sale	As in pelagic fishing	As in pelagic fishing

### 3-2-2 Fish Freshness Estimation Method

#### 3-2-2-1. Outline of the Estimation Method

To identify the fish freshness at each stage of the value chain is essential for the implementation of the fish quality improvement, but very experienced enumerators must be assigned to measure the freshness, but it is difficult to perform this task continually. For this reason, it was necessary to establish a simple method to measure the freshness scale of fish. Taking notice of the strong correlation between the accumulated temperature and freshness scale, we have developed a fish freshness estimate method by resorting to the accumulated temperature measurement.

The degeneration of proteins by oxidation reaction is the main cause of the fish freshness loss, and it is well known that this reaction is closely linked to the temperature and elapsed time.

As a result, we measured the fish freshness and temperature at given time intervals, established the correlation chart, and then sought the relational equation between the accumulated temperature and freshness scale to estimate the freshness from the accumulated temperature.

To measure freshness, without depending on a recognized laboratory that can make an accurate scientific analysis and considering the current situation in Pointe-Noire, where even if scientific equipment were provided, the researchers and technicians eligible to manipulate them and provision of stable reagents are hardly acquired, we adopt a relatively simple method, the freshness score method by sensory analysis. The freshness score is measured by MFA for catches of industrial fishing companies in Congo. We are employing the standard score check list same as

that of applied to the inspection of catch fish of the industrial fisheries. But as the measurements must be made consecutively in the following stages on the self-same fish, the test items requiring its dismemberment (visual inspection of the internal part of the abdominal cavity, etc.) were omitted and only the assessments of the external appearance and smell are adopted.

Since the pace of deterioration of the freshness loss speed varies according to the fish species and where the fish lived, the measurement was made on the major species in Poite-Noire that are sardinella (Makouala: *Sardinella maderensis*, Massoundji: *S. aurita*), the bass (*Pseudotolithus brachygnathus*), the black sea bream (*Pomadasys jubelini*) and captain (*Polydactylus quadrifilis*).

3-2-2-2. Correlation between the accumulated temperature and freshness score

A graph of correlation between accumulated temperature and freshness score is established for 2 species of sardinella and 3 species of demersal fish.

The freshness score shall be set at 3.0 immediately after death, but measurement samples had already lost some freshness during the catch, we rounded off the 0 degree Celsius to 3.0 by maintaining the orientation of the correlation regressive line and compensating for accumulated time.

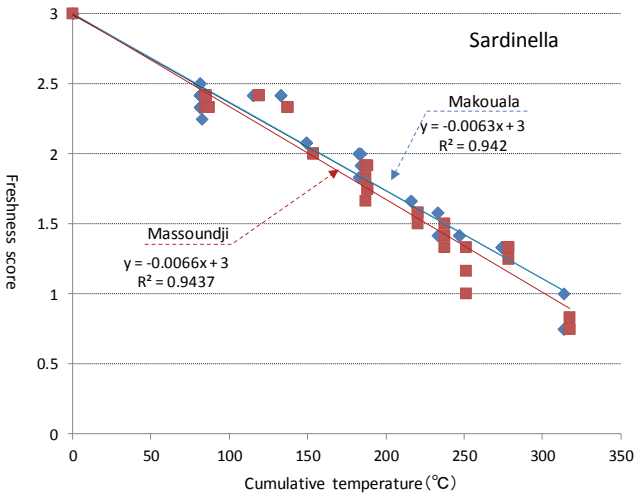
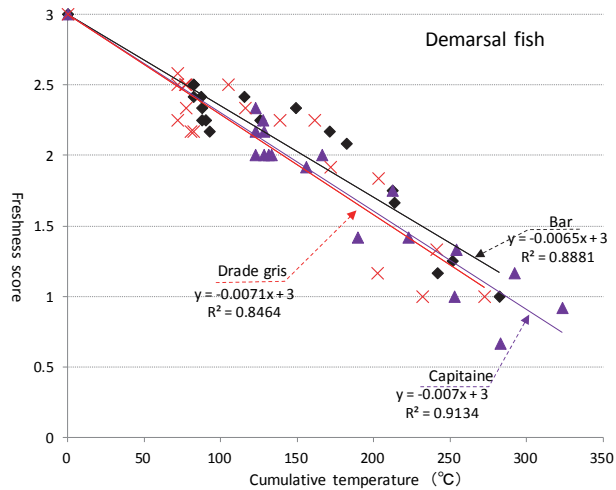


Figure 3-3: Correlation Between the Freshness Score and Accumulated Temperature of sardinella

(Source: PECHVAL)



**Figure 3-4: Correlation Between the Freshness Score and Accumulated Temperature of Demersal Fish**  
(Source: PECHVAL)

The results of measurements show a very strong correlations between the freshness score and accumulated temperature for all fish species.

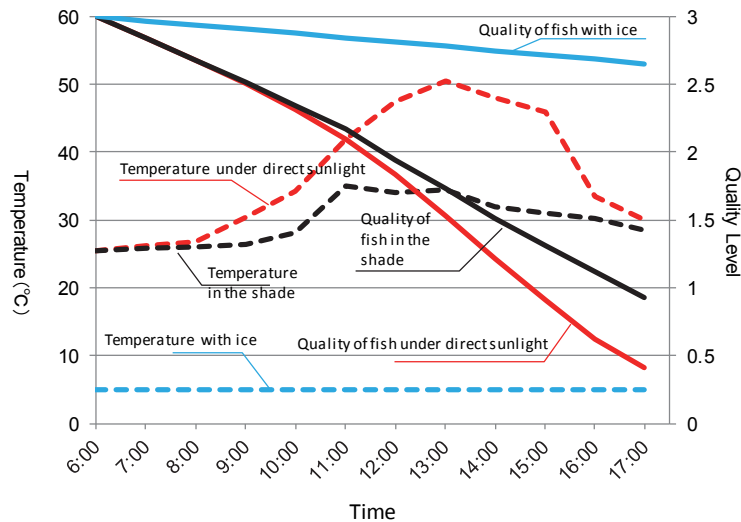
**Table 3-1: Regression Equation of Freshness Score and Accumulated Temperature**

Species		Correlation Coefficient (R2)	Regression Equation
Sardinellas	Massoundji	0.9437	$Y = -0.0063 X + 3$
	Makouala	0.9420	$Y = -0.0066 X + 3$
Demersal Fish	Bass	0.8881	$Y = -0.0065 X + 3$
	Black Sea Bream	0.8464	$Y = -0.0071 X + 3$
	Captain	0.9134	$Y = -0.0070 X + 3$

Y : Freshness Score X: Accumulated Temperature (°C)

(Source: PECHVAL)

These regression equations can be applied to know, for example, that if the bass is kept in an environment in an average temperature of 27°C, its freshness degree decreases to 1 (the threshold of freshness score for edible consumption) for approximately 11 hours. However, if it is kept in ice at 5°C during the same time, its freshness degree will be approximately 2.6, which deems fresh.



**Figure 3-5: Expected Evolution of the Freshness Score in the different conditions of preservation (Case of Demersal Fish)**

(Source: PECHVAL)

It is possible to estimate the temperature history from the freshness score, and vice versa, the freshness score from the temperature history, using the regression equations of freshness score and accumulated temperature obtained here. This allows to know easily the freshness level of the fish processed in the activities of each stage. For example, if one tries to sell large volumes of sardinellas to a freezing company, and if the freshness score required by the latter is more than 2.5, you can set the target value of preservation temperature and handling time using the regression equation of Massoundji [ $Y = - 0.0063 X + 3$  (Y: Freshness Degree X: Accumulated temperature)], and keeping the accumulated temperature with approximately 80°C below between fish catch and delivery.

The measurement of the fish handling temperature, using the regression equation of the accumulated temperature and freshness score, allows the freshness score estimation, which can be applied as a effective indexes for the situations before and after improvement.

### 3-2-3 Pelagic Fishery

#### 3-2-3-1. Catch Stage

##### (1) Development of the Preservation in Ice Practices on Fishing Boats

Sardinellas are mainly caught with floating gillnet. Fishers depart to the sea trip departure at 5 pm and continue the fishing until the return to the port at dawn the following day. The trip to fishing grounds takes 1 to 3 hours and fishing itself lasts approximately 8 hours. Once nets are set, fishermen wait for considerable fish is deemed to be caught to haul the nets; but since they leave nets in the water sometimes as long as 8 hours, the freshness of fish netted have been already deteriorated when fish are taken into the boat.

Once in the boat, fish are not kept in ice, and are left at ambient temperature until dawn. The fishes are deteriorating their freshness substantially between their hauling up in the boat and landing on the beach.

We have observed the quality deterioration degree from the time at the taking of catches into the canoe and landing and selling for pelagic fishing. Holding fish without ice and in ice were compared to see their effect on the fish quality preservation.,

Comparing the quality of catches in the landing stage and sales prices of sample fishes kept in ice and those kept without ice, has revealed that the quality degree during the landing was on average 0.8 higher for samples kept in ice, and their price was on average 120% that of fish kept without ice, which corresponds to a price difference of 50% per a freshness score of 1.0.

### **(2) Reduction in the timescale of the net setting in the sea**

After setting the drift gillnets for sardinellas into the sea they will be drifting for 1 hour at least, or it could be longer than 8 hours. Setting and hauling of the net should be done manually, so the physical load of the crews is substantial, and they are trying to limit the number of these tasks as much as possible, when few catches are expected. But when the net with catch remains in the sea for long time, as the sea water not being cool, the initial fish caught just after the net setting deteriorates considerably.

A simulation was made with the regression equation of accumulated temperature and freshness score to verify the extent of quality deterioration in the timescale of the net in the sea. The results of this simulation were shown in a workshop organized for the fishermen of pelagic fishing. We stressed the importance of reducing the duration of the net leaving in the sea for preserving the fish quality, and guidances and instructions are made to them.

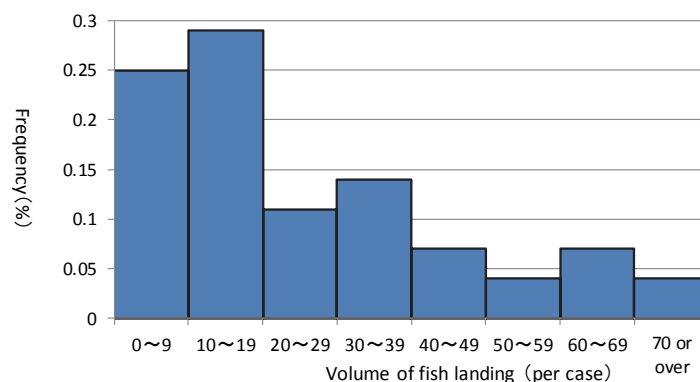
### **(3) Financial Analysis**

The results of the pilot projects and knowledge acquired so far show that the required ice quantity is about 20% of the catch volume, including ice melting before use for preservation.

About 532 kg of ice are required for the preservation of 70 boxes (approx. 2.660 kg) of Sardinellas in ice. The pilot projects have shown that fish kept in ice could be sold at 110% to 120% of the price of fish kept without ice, and the histogram based on the data from this study made it possible to calculate the average profit per fishing with preservation in ice.

In this histogram, the minimum volumes of each catch were employed.





Frequency (%)	25%	29%	11%	14%	7%	4%	7%	4%
Unit Price per Box	12,000	14,125	12,000	12,000	7,000	7,000	7,000	7,000

**Figure 3-6: Histogram of Catches per Fishing Trip**

(Source: PECHVAL)

**Table 3-3: Estimate of the Profit Resulting from Preservation in Ice**

Catch (Box)		0	10	20	30	40	50	60	70	
Frequency (%)		25%	29%	11%	14%	7%	4%	7%	4%	
Without Ice	Unit Price	12,000	14,125	12,000	12,000	7,000	7,000	7,000	7,000	
	Sales amount	0	141,250	240,000	360,000	280,000	350,000	420,000	490,000	
In Ice	Unit Price	14,400	16,950	14,400	14,400	8,400	8,400	8,400	8,400	
	Sales amount	0	169,500	288,000	432,000	336,000	420,000	504,000	588,000	
Difference (with/without ice)		0	28,250	48,000	72,000	56,000	70,000	84,000	98,000	
Deducting Ice price*1		-28,000	250	20,000	44,000	28,000	42,000	56,000	70,000	Total
Multiplied by the frequency*2		-7,000	73	2,200	6,160	1,960	1,680	3,920	2,800	11,793

\*1: Value obtained by deducting the ice price difference (2000 FCFA/bag x 14 bags = 28,000FCFA)

\*2: Value obtained by multiplying the ice price balance by the frequency (%) Each total of frequency multiplication becomes the income increase per an average fishing trip due to preservation in ice.

(Source: PECHVAL)

The calculation results indicate a profit of 11,793 CFAF per fishing trip when ice is used. The findings of the study of fishing trip account books carried out separately have revealed that the average income of a fishing boat's owner is approximately 31,500 CFAF. This income should increase by approximately 37% with the use of ice.

We have organized several working groups consisting mainly of participants of the workshop and motivated fishermen of pelagic fishing. Based on the verification of test data, we are trying to persuade these fishermen to reduce the timescale of the net's setting in the sea and introduce ice for the preservation of catches on their fishing boats. However, the volumes of catches are highly variable, and there were cases where almost no fish was caught when ice was taken during the sea trip or catches were limited, and the ice costs could not be recovered. We believe the long-term continuation of extension works and accumulation of data are necessary to convince fishermen in doubt.

#### **(4) Technical guidance and training of fishermen**

A workshop on the reduction of the timescale of the net set in the sea and introduction of ice for the preservation of catches on their fishing boats was organized among fishermen of pelagic fishing, based on the results of the verification tests and financial analysis, and we have heard their opinion on them.

Fishermen are not much motivated to improve the quality preservation practices due to no complaints or dissatisfaction expressed by processors and vendors regarding the current fish freshness on sale. We believe conscious-raising and changing mindsets of fishermen as well as strengthening the awareness of processors and vendors are quite important.

#### 3-2-3-2. Processing Stage

##### **(1) Verification of the relationship between the freshness score of fish and finished product quality**

It is estimated that 80% of pelagic fish catch are processed into smoked products. The pelagic fish purchased by the smokers are transported to the smoking workshops and set in kilns after washed. There is a roof over kilns and fish are not exposed to the scorching sun, but washing is also often carried out in a location in full sunlight, where the wastewater disposal is easy. Transportation, washing and preparation of kilns take a lot of time. Usually 1 to 3 hours elapse between the purchase of fish and the starting the fire which means the end of the freshness deterioration, the quality deterioration of fresh fish during this period is substantial.

The quality of smoked products using sardinellas kept without ice and sardinellas kept in ice in the fishing boats was compared. The ordinary processing was entrusted to smokers. The fish samples kept in ice from their catch until just before their processing, and the ordinary samples, kept in the conventional manner without ice were smoked in different kilns. The finished products were classified by smokers themselves in 3 categories: high-end product, medium quality product and reject product. The following table presents the sorting standards.

**Table 3-4: Sorting Standards of Smoked Products**

High-End Product	Lustrous product without cracks or slots
Medium quality product	Small cracks on the belly. No shine
Reject Product	Large cracks on the belly, damaged

The cracks on the belly easily cause the appearance of mould or worms in the abdominal cavity. They are not appreciated by consumers. The sales price of smoked products is 500 CFAF the heap (5 to 7 fish). The medium quality fish are generally mixed with high-end products in a heap (1 fish for a heap of 5 fish, 2 for a heap of 7 fish). So, the possibility of having unsold products becomes higher when the percentage of medium-quality products is substantial, even if the high-end products are included in the same heap.

The reject products are generally not sold to consumers. They are used with unsold smoked

products as feed for pigs and sold approximately at 5 CFAF a piece to pig breeders.

Table 3-6 presents the results of the product sorting based on the abovementioned standards.

**Table 3-5: Comparison of the quality of smoked products based on the preservation practice of fresh fish**

	Without Ice		In Ice	
Freshness Degree	2.3		2.9	
	Nber	%	Nber	%
Nber of Fresh Fish	800	100%	534	100%
High-End Product	666	83.3%	528	98.9%
Medium quality product	74	9.3%	4	0.7%
Reject Product	60	7.5%	2	0.4%

(Source: PECHVAL)

For fish kept in ice, there was almost no medium quality products and reject products (less than 1%), for fish kept without ice, there were fewer high-end products (less than than 15%), and the percentage of reject products was particularly substantial. This test has truly shown the economic superiority of the use of fresher materials.

**(2) Improvement of the quality preservation practice of fish**

For the use of high quality materials, it is of course necessary to choose very fresh fish when buying them, but attention must also be paid to the fish freshness preservation during their purchase and the starting of their processing. Reduction of the preservation timescale and keeping low temperature during the transportation are necessary to keep the freshness of fish.

As regards the current smoking activities, the average time required between the purchase of materials and beginning of the processing was measured at approximately 2h37min. The transport depends on the distance between the landing beach and processing workshop. However, all workshops are located in the Songolo district, but despite their close proximity to the landing beach, transport requires more than 2 hours, which leaves a big room for improvement. It is necessary to study the working practices in order to change them, for example completing the kiln fire preparations before buying materials, and to provide guidance and instructions with a view to improving these practices.

**(3) Financial analysis of the smoked products on the difference of freshness of materials**

A sales simulation of smoked products based on the difference of freshness of materials was carried out on the basis of the verification tests. For the unit price of fresh fish and finished products, we adopted the price at the test day (fish kept without ice: 7,000 CFAF/box, fish kept in ice: 9,000 CFAF/box, finished products: 500 CFAF for 7 fish). It was also assumed that 1 kiln could smoke 4 boxes at a time with 150 fish per box. The analysis was made under the

assumption that a medium quality product is sold in a heap of high-end products (7 fish), and medium quality products where this inclusion was impossible were disposed.

**Table 3-6: Comparison of Smoked Products per Preservation practices of Materials**

		Preservation without ice	Preservation in ice
A	Nber of Fresh Fish Used as Materials (per box)		150
B	For Consumption	Unit Sale Price (for a fish)	71 CFAF
C		Nber of High-End Products	125
D		Nber of Medium-Quality Products	14
E		Sales Prices of High-End/Medium Quality Products ((C + D) x B)	9,869 CFAF
F	For Animals	Unit Price of Reject Products	5 CFAF
G		Nber of Reject Smoked Fish	11
H		Prices of Reject Products (F x G)	55 CFAF
I	Sales Incomes (E + H)		9,924 CFAF

(Source: PECHVAL)

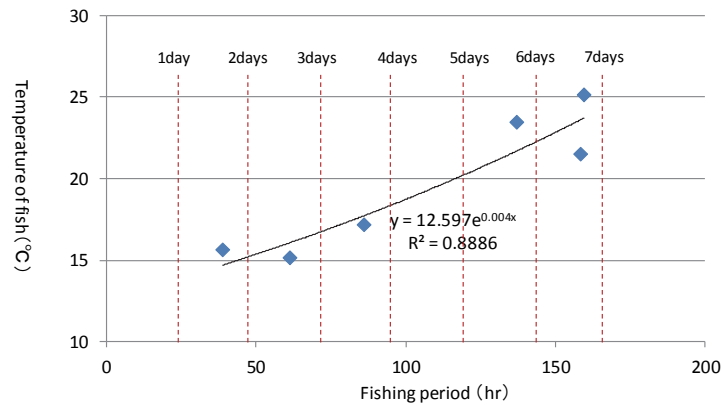
The sales incomes per box of products resulting from fishes kept in ice were more than 7% higher than those of products resulting from fishes kept without ice. But the opposite is also possible depending on the context in which the unit price difference between the materials stored kept without ice and those kept in ice occurs. Products resulting from materials kept in ice are sold more easily because the percentage of high-end products is high and there is a difference in the quality of products especially during the period where the weather conditions are bad like the rainy season which is torrid. As a result, a big gap appears undoubtedly in the sales incomes.

**3-2-4 Demersal Fishery**

3-2-4-1. Catch Stage

**(1) Reduction in the duration of fishing trips and reduction in the timescale of the net keeping in the sea**

Ice has been used at the demersal fish catch stage, but since the cooling capacity of the fish hold is not sufficient, the ice melts quickly. The temperature measurements in the hold have revealed that ice taken on board at the beginning of the fishing trip melts away within 3 days or so. The data concerning the duration of fishing trips and fish temperature measurement immediately after their landing also confirm this point: when the fishing trip duration exceeds 3 days, the fish’s body temperature also tends to increase and the difference with ambient temperature diminishes.



**Figure 3-7: Fishing Trip Duration and Fish's Body Temperature**

(Source: PECHVAL)

The data on the fish's body temperature and number of trip days (364 samples) was collected between November 2014 and March 2015. The optimum temperature for fish holding in the boats is deemed at below 10°C, but this temperature is exceeded when a sea trip lasts more than 4 days. And if ice melts in the fish hold, the temperature variation in the hold would be moderate and it becomes stable at the high temperature.

### **(2) Financial Analysis of the Reduction in the Sea Trip Duration**

We recommended fishermen of demersal fish to reduce the duration of their fishing trips, but they made objections reason with: if the trip duration is short, number of trips would increase and fuel costs boost, or the volume of catches decreases.

Then, the correlation between the number of demersal fishing trip days, the fuel price and volume of catches was verified based on the data from the study of account books. The results indicate a very low correlation.

At the current stage, it can be said that even a long duration trip does not lead to fuel saving and increase in catches. On the contrary, the effect of the fish unit price augmentation due to the appreciation of the fresher catch with the shorter fishing trip days is clear. We believe the reduction in the fishing trip days shall be encouraged profoundly.

### **(3) Technical guidance ant training of fishermen /dissemination of techniques**

We have convinced the fishermen of demersal fishing that a long fishing trip does not necessarily lead to fuel saving and increase in catches. We also have persuaded them, based on the results of the financial analysis, that on an annual basis, the daily profit would rather augment with the freshness loss of catches is minimized by shortening the sea trip days. We have advised them to reduce the trip duration to the maximum 3 days long.

We suggest surveys must be carried out periodically on the changes in the days of fishermen's trip to compare the current situations on the profitability with the following one.

### 3-2-4-2. Fish Wholesale Stage

#### (1) Analysis of the correlation between the freshness score and unit sales price

The statistical analysis<sup>24</sup> of data relating to the freshness score and price when vendors or consumers buy fish on the Base Agip beach, where fish wholesalers trade demersal fish, has clearly revealed a 36.75% variation of the fish price per freshness score (1.0). (Significance level 1%)<sup>25</sup> By combining this result with the regression equation of accumulated temperature and freshness score {  $Y = -0,0065x + 3$  (Y: freshness score, X: accumulated temperature (°C))}, it is possible to understand the downward trend of the unit price according to the elapsed time. The sales price shrinks by 5.5% per hour during the rainy season (December - March), where the average diurnal temperature is 30°C and 4.3% during the dry season (June - September) where the average temperature is 25°C. However, if the preservation temperature can be maintained at 5°C by using enough ice, the sales price drop rate per hour can be constrained to 1%.

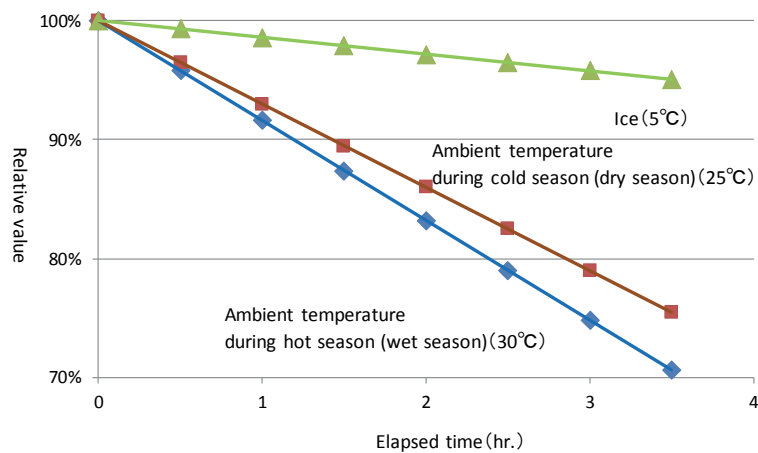


Figure 3-8: Change in the relative price according to the handling time by ambient temperature

(Source: PECHVAL)

#### (2) Improved Fish Display Practice

Currently, the fresh fish is put on the beach in direct sunlight at ambient temperature, by the fish wholeseller. We have introduced them to sell fish kept in ice on the display counter under the sun shade.

#### (3) Financial Analysis

The profits resulting from the sale of fish kept without ice and fish kept in ice were respectively calculated based on the results of the study of fish wholesaler' account books. The result of these

<sup>24</sup> Mr. Yagi, Associate Professor at the Department Agriculture and Life Science, Faculty of Agriculture of the Tokyo University, was requested to carry out the statistical analysis.

<sup>25</sup> The equation used is as follows.

$$Y_i = \alpha_0 + \alpha_1 S_i + \alpha_2 T_i + \alpha_3 D_i + \mu_i \dots (1)$$

Here, Y is the concerned fish price, S is the freshness score, T is the time elapsed between the beginning of the sale and conclusion of the transaction, and D is a dummy variable relating to the buyer. And  $\mu$  is the error item.

In this equation, the values  $\alpha_0$ ,  $\alpha_1$ ,  $\alpha_2$  and  $\alpha_3$  were estimated by the least square method. Eviews7 was the software used.

calculations shows that in the case of sale of fish kept in ice, ice costs add as an expenditure, but the fish wholesale's incomes increase by 7.5% compared to the amount of the current sales.

**(4) Technical guidance and instructions to fish wholesalers /dissemination of techniques**

Technical guidance and instructions were given to fish wholesalers for the use of a parasol, a sales stall and/or use of ice to avoid the temperature rising of selling fish.

3-2-4-3. Processing Stage (Salt-drying)

**(5) Improvement of the preservation practices of fresh fish**

Two methods can be used to avoid the quality deterioration of fresh fish until the salt-drying process begins: one is dismembering and salting the fresh fish on the beach immediately after purchase, and the other is putting the fish in ice for transport. Since taxi is the only available transport, and it is difficult to put the fish in ice for transport by taxi, we have recommended the dismemberment and salting of the fish on the beach immediately after purchase.

**(6) Reduction in the Processing Duration**

In the current processing by salt-drying, salting lasts 3 days and drying 3 to 4 days. The spending money used to purchase materials is only recovered after the sale of products, namely more than 1 week later. That is why the production cycle is limited to one time per week. Under PECHVAL, we have recommended salting fish in salt water which is permeable easily, and introduced drying bars for hanging fish which drains off and dry out easily. This method can reduce duration to 2 hours for salting and 3 days for drying. There is damage by fly, laying eggs on the drying fish at the initial stage of the drying process, but the mass outbreak of flies could be avoided by coating the flesh fish with a thick salt layer before hanging them.

In addition, there are quality deteriorations such as yellow colouring (fat burning) due to the deteriorated materials and fat content oxidation observed during the processing. However, the effect of prevention of quality loss with short processing days has been recognized.

**(7) Financial analysis**

The price increase resulting from the prevention of fat oxidation was not recognized, but the reduction in the conventional processing days from 7 to 4 days made it possible, through a simple calculation, to multiply production by 1.7, which should generate a corresponding increase in incomes.

**(8) Technical guidance and training to processors/dissemination of techniques**

The salt-drying pilot project was implemented by processors from the association of motivated processors using the salt-drying techniques. Each processor has a limited financial capacity which could be obstacle of the purchase and transport of fish. But if processor were grouped together,

they will be able to negotiate advantageously with fish wholesalers and taxi drivers. Through this joint funding in the pilot project, the production of salt-dried products of the group was much bigger than individual productions put together.

### 3-3 Improvement Plan of the Sales Practice in the Public Markets

#### 3-3-1 Components of the Pilot Project for the Improvement of the Sales Practice in the Public Markets

Pointe-Noire has 15 main public markets gathering some 3,500 merchants of fish products.

**Table 3-7: List of sales points of fish products in the public markets of Pointe-Noire**

Market name	Ocean fish (fresh)	Fresh water fish (fresh)	Ocean fish (smoked)	Fresh water fish (smoked)	Salted-dried fish	Total
Grand Marche	554	78	229	421	347	1,629
Plateau Ville	35	-	-	-	-	35
Tchimbamba	10	8	8	-	-	26
Mpaka	30	2	-	18	9	59
Voungou	-	34	-	18	12	64
Mvoumvou	25	-	20	-	6	51
Loussala	41	-	42	-	8	91
Bissongo	37	-	40	-	8	85
Nkouikou	65	32	55	-	10	162
Makoulou Ngoulou	90	2	60	3	40	195
Quaeter Culotte	26	-	25	-	12	63
Mbota	34	-	32	-	9	75
Tie-tie	93	12	38	-	20	163
Marche de la Liberte	600	135	25	15	-	775
Marche de Faubourg	-	-	-	-	-	-
Total	1,640	303	574	475	481	3,473

(Source: PECHVAL)

The retail sale stage in the value chain of fish products is the longest stage, compared to catch-landing-distribution stages, and also the period during which the freshness loss and quality deterioration through the contact with the contaminant is the most fearful. In Pointe-Noire, fish are laid for long hours on stalls without ice nor any other refrigeration system, and this long stay at hot temperature causes a considerable freshness loss. Stalls being made of concrete or wood, drips and viscous liquids from the fish enter into them easily and their cleaning is difficult. On the other hand, water supply for cleaning and washing of stalls and fish is hardly acquired. Pollution by flies and microbes also make there tremendous unhygienic conditions. Garbage is piled up next to stalls, but cleaning is left to cleaners alone, the cleaning frequency is low and collection of piled up garbage is also not enough. Fish sale is carried out in an extremely unhygienic environment.

In the pilot project for the improvement of the sales practice in the public markets of PECHVAL, the very limiting objective was set to improve the hygienic environment of the fish product sale;



because it is difficult, through one single pilot project, to cover the activities to improve the hygienic environment of the entire market. So, the following guidelines were given:

- (1) Carrying out a trial sales on model hygienic stalls, acceptable for both consumers and fish vendors, for fresh fish and disseminating these stalls by using them actually;
- (2) Raising the awareness of fish vendors in the public markets on the safe and hygienic handling of fish products, and increasing their awareness of hygiene;
- (3) Supporting the development of organizations of public markets' vendors and building their self-management capacities in improving hygiene;
- (4) Studying the existing conditions of freshness and quality of fish on sale in order to assess the expected improvement of hygienic stall;
- (5) Studying availability and quality of the water in the markets, which is the crucial element for keeping good hygienic conditions for a fresh fish market, and investigating how to improve the hygienic conditions in the market;

### **3-3-2 Trial Manufacturing of Hygienic Stalls and Their Dissemination**

#### **3-3-2-1. Improvement of Sales Conditions of Fresh Fish Sale in the Timbamba market**

A project for the improvement of the fish product sales practice had been implemented during the 2<sup>nd</sup> year in the Timbamba market, which is a relatively small-size public market, with concrete stalls that seemed to be changed into hygienic stalls easily.

The existing stalls being made of concrete, it was decided to rehabilitate them with locally available materials as much as possible, and the first improvement attempt consisted in removable displaying fish stall, which can keep ice, is set on the existing stall. After the first attempt, we had noted the following refinements. For the new removable stalls set on the existing concrete stalls prevent customers to view the fish, a storage space is needed for fear of thefts at night, and the labour setting up the stall is needed in the morning and in the evening. Based on lessons learnt from this first attempt, it was decided in the second attempt to use the existing stalls as much as possible with the minimum number of parts to be stored, and isothermal boxes were used to keep fresh fish under the stall for preventing the fish quality deterioration and having a more efficient sales practice. However, given the lack of space where isothermal boxes can be kept at night and the vendors are obsessed with all their fish to be put on the stalls, this attempt was not successful.

Many small vendors, who were collaborating with the pilot project at its inception, did no longer want to continue the experience because of the toils of the hygienic and freshness preservation requirements. This is probably due to the fact that customers of the Timbamba market are almost fixed, so improvement in freshness and hygienic aspect are invisible effects that do not lead to an increase in sales and number of customers. For this reason, during the 3<sup>rd</sup> year, the target market of pilot project for the improvement of the sales practice in the public markets shifted to the central market of Pointe-Noire, which has the largest number of customers and heavy competition between vendors.

### 3-3-2-2. Sales Practice Improvement Activities in the Central Market

The central market has more than 500 stalls for fresh fish sale. It is the biggest public market which gathers more than 5,000 stalls in total. But outside the central part of the market, almost all facilities and equipment are provisional. Water supply/drainage facilities are very poor and the hygienic conditions are deteriorated. The Congolese Government is planning the central market reconstruction. The demolition of existing facilities and their replacement by a provisional market took place in November 2015. Considering that fresh fish sale improvement with the hygienic stalls and improvement of the hygienic environment in the vicinity of the stalls by vendors could be useful after the reconstruction of the central market, this market was chosen as the target area for the 3<sup>rd</sup> year of the pilot project. The new central market was to be completed within 2 years. But this reconstruction was still interrupted in December 2018.

#### **(1) Trial of the Stall Remodelling**

The existing stalls of the central market are made of wood and non-standardized. They are all of different sizes. Cardboard is put on these stalls and fish are placed on top of it; which is very unsafe and unhygienic. Cleaning is also quite limited and given the stall structure, the use of ice is impossible, and both freshness deterioration and contamination are to be feared in these circumstances. As a result, an attempt was made to improve the stalls and the verification of its effect was carried out.

The existing stalls being all made of wood, the improved one has also a wooden structure; but the surface used to lay fish on was covered with tiles or an aluminium sheet. It can be used ice on it and a cleansing water drain hole were adopted. The aluminium sheet bonding allows for making it lighter, but tiling is considered more resistant. The measurement of the cleanliness degree before and after cleaning by wiping the stalls has revealed that dirt is more effectively eliminated on the stalls covered with an aluminium sheet. But since white tiles are more resistant, their cleanliness degree is relatively high, and the improvement of concrete stalls by tiling in the future is simpler, tiling will be adopted to improve the stalls.

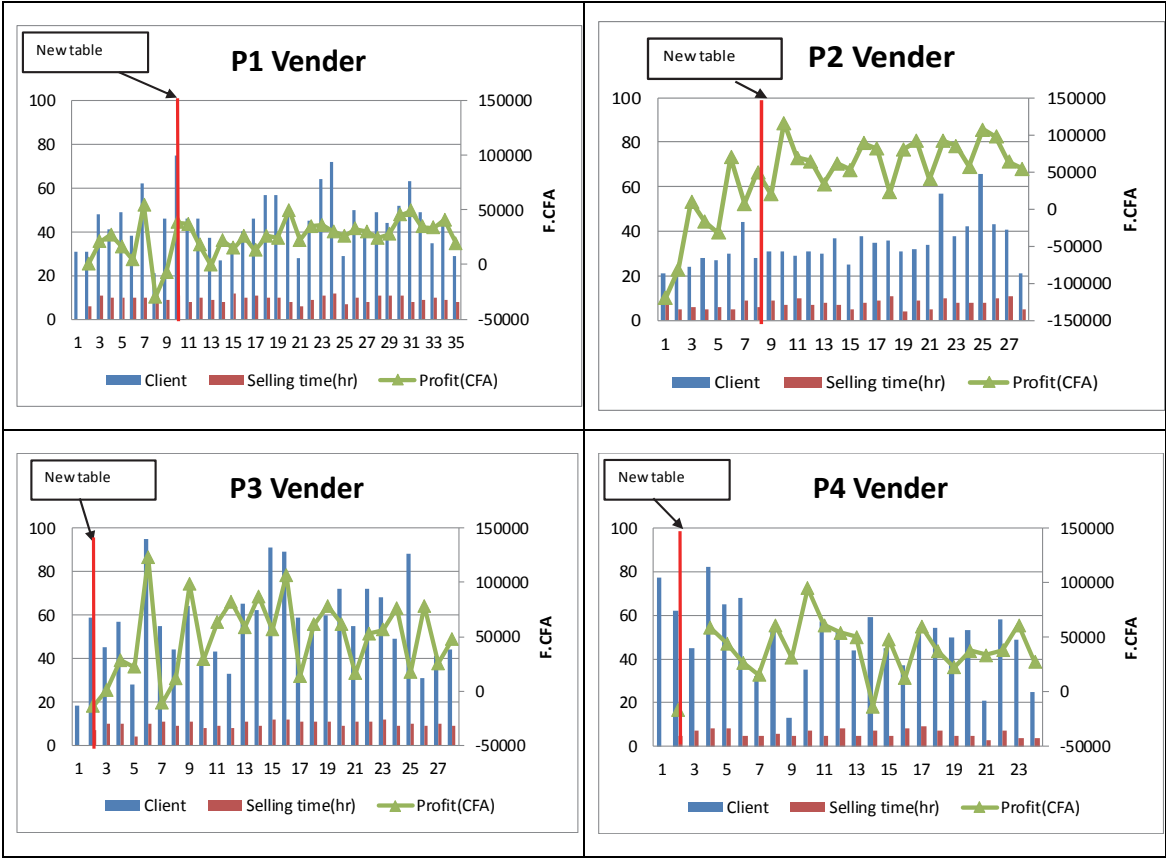
4 vendors who were interested in the fresh fish sales practice improvement and actively requesting to use the improved stalls were selected and the model stalls were lent to them.

#### **(2) Situation of Fish Sale in the Central Market and Changes of the Freshness Index**

Enumerators were sent to the central market twice a week to interview the 4 vendors using the model stalls. They always carried out a visual study and a one-hour interview in order to collect data on the vendor's commercial activities. This study was conducted from January to July 2015 with the following headings.

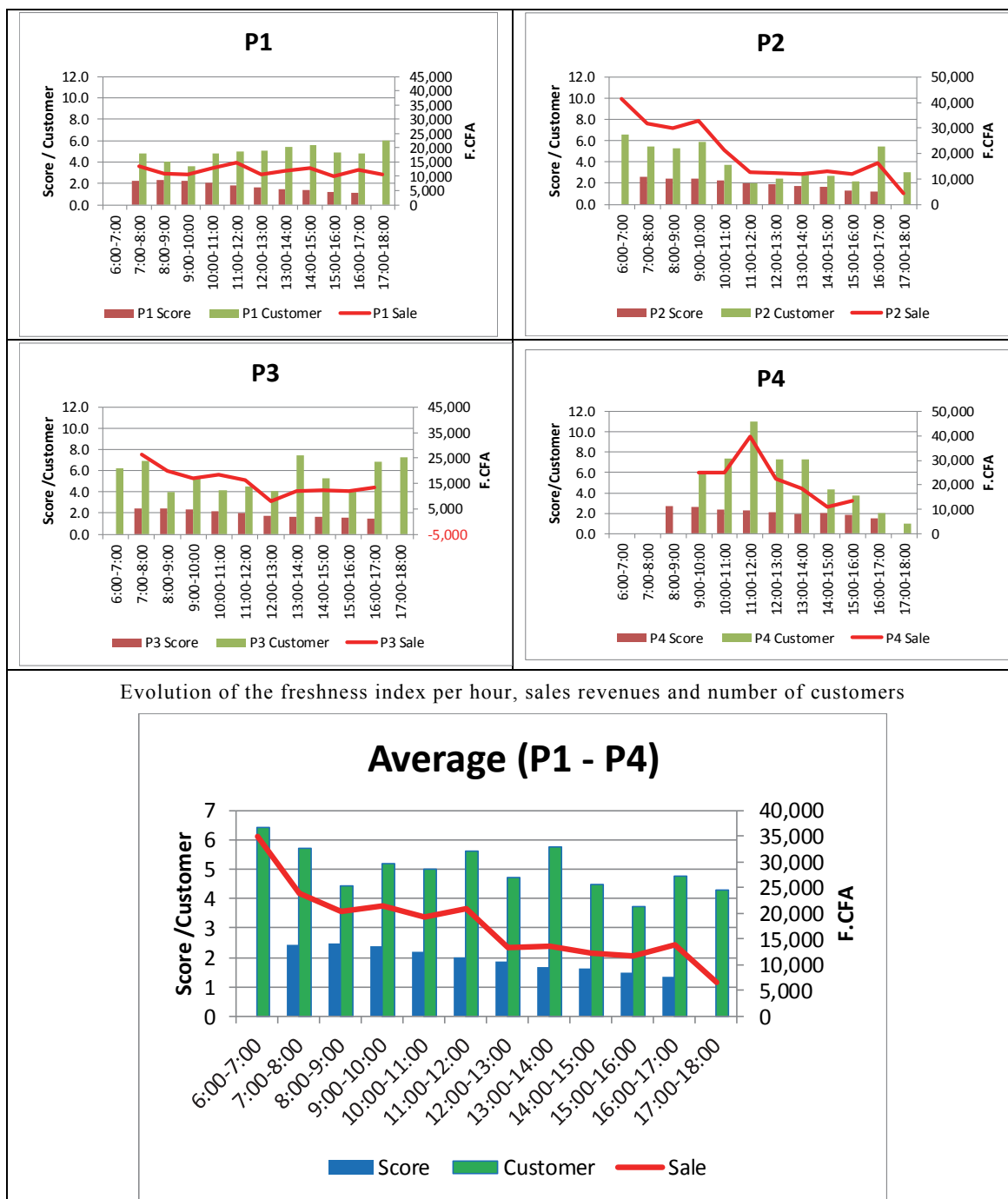
- Data of a sales day: purchase quantity (per box), supplier, purchased fish species and purchase amount
- Data per hour: number of customers, sales income, fish body temperature, ambient temperature, freshness index

Each vendor had approximately 50 customers per day, their number never reaches 100. The amount of sales is dropping from noon. 2 to 3 persons, including the vendor, engage in selling. The sale starts late for vendors buying their fresh fish from artisanal fishermen at Songolo beach, as many loyal customers prefer catches from artisanal fishing. Those vendors rewarded with a quicker sale and their selling time of about 6 hours on average is shorter than that of other vendors. The gross margin of vendors varies. It sometimes exceeds 100,000 CFAF, but sometimes the sales income is less than the supply amount and causes deficit situation. If all vendors are considered, the average daily gross margin stands at approximately 40,000 CFAF.



**Figure 3-9: Findings of the Study of the Sales of the PP’s Target Vendors in the Central Market**  
(Source: PECHVAL)

A study of the freshness of fishery products sold on model stalls was carried out at the same time as the sales data collection, once a week, between January and July 2015. The figure below presents the change of the freshness index per hour, sales incomes and number of customers.



**Figure 3-10: Comparison of Freshness with the Sales Incomes (per Hour) of the PP's Target Vendors in the Central Market**

\*1 : The freshness index assessment was entrusted to a URRM enumerator.

\*2 : Freshness index criteria

EXTRA: Freshness index higher than to 2.7

Freshness A: Freshness index between 2.0 and 2.7 Fish in good condition

Freshness B: Freshness index between 1.0 and 2.0 Fish to be consumed as soon as possible

Freshness C: Freshness index of 1.0 or below Uneatable fish

\*3 : Sale data was collected each week on Tuesday and Saturday and the freshness index revealed on Tuesday. (The central market is closed for cleaning on Monday and Friday.)

\*4 : The number of customers is the one per hour.

(Source: PECHVAL)

Vendors P1 to P3 buy their fish from industrial fishing companies brought in the central market, but vendor P4 goes to the Songolo beach to buy their fish from artisanal fishermen. Fish from industrial fishing companies have a freshness index slightly higher than 2.0 at the purchase stage, but most of them are not fresh.

Given the consumers' purchase trends, the first peak occurs between 6:00 and 8:00 am just after the market opening and there is a second peak around noon. Since market closes at 5:00pm because of the lack of lighting, there is a third peak of customers going to the market on their way back home. The fish purchased around 6:00 am remain on the stalls without ice throughout the day, and the sales incomes decrease when their freshness index becomes lower than 2.0 around noon. Among vendors P1 and P2, the freshness index was often lower than 2.0 around 11:00-12:00. It can be estimated from this evolution of sales that the freshness score influences to some extent customers' desire to buy fish.

In the evening, about 10 hours have already elapsed since the purchase of fish, the fish freshness has tremendously decreased and the freshness index drops to approximately 1.0. The security of food products has terribly deteriorated, but the central market is located at the terminal of buses and taxis and needs of consumers with intention of purchasing fish passing by the market on their way back home are high. But in this time slot, only unsold old fish are available.

### **(3) Installation of Model Stalls in the Provisional Central Market**

The move to the provisional market due to the reconstruction of the central market of Pointe-Noire began on 25 November 2015. Separate provisional central markets were established. One is for clothes and various products and the second market for fresh food products is now located in a former football stadium and surrounded by a fence. The ground is not covered. So, this market turns into a mess during the rainy season. With the huge influx of customers interacting there, it cannot be said that this is a good environment for a market of fresh products.

The stalls improved under the PECHVAL pilot project was appreciated by the Ministry of Fisheries and Aquaculture and 13 units were manufactured with funds provided by this Ministry. However, the manager of the provisional central market currently limit the granting of rights to use market places, because there are too many vendors asking for these rights. Furthermore, the fresh fish vendors wishing to keep the rights to use their current places in addition to the model stalls and the market manager have often opposite views and the installation of stalls is not carried out yet.

### **(4) Workshop on Hygienic Training for Fresh Fish Vendors of Public Markets**

A workshop on hygienic training was held 12 times for fresh fish vendors of 22 markets out of 31 public markets in Pointe-Noire. There were 124 participants in total. Many of these vendors buy fish from the trucks of industrial fishing companies on the road at the central market, but they are uncontent with the fish freshness and quality of them. But apart from a small number of active vendors who buy from the artisanal fishing landing beach, many vendors have no other choice

than to buy these fish that are not fresh. Furthermore, fish that are not fresh are often displayed on the stalls from the beginning of the sale. In addition, public markets as well as the central market, do not have any water and sanitation system nor appropriate waste treatment system, nor hygienic stalls. They have much problems of hygienic environment for the fresh fish sale. The participants in the workshop expressed their opinions as follows:

- There is neither water nor hygiene in the markets, no garbage disposal container or warehouses, that is why the supply of fish products of good quality to consumers is difficult;
- The fish from the Chinese industrial fishing vessels are small in size, which raises concerns over depletion of fish resources. The government should introduce a system of resource management;
- The variety of suppliers being limited, we have to keep on buying the products as they are and sell them in order to survive even if their freshness and size are unsatisfactory. It is difficult to reject them under the pretext of poor quality.

During the survey carried out among the participants in workshops 46 out of 49 persons answered “yes” when they were asked if they learnt practical things during the workshop on hygienic training, which is a relatively high number. In particular, all participants replied that washing of equipment and fish are being practised by themselves, and more than 90% of them replied that hand washing and not putting fish on the ground are practised. But only 6% replied that they use ice. We can guess that it is difficult for vendors to use ice for sale in the current environment of the market where it is difficult to have ice and where its price is high compared to the sales incomes. The findings of the survey suggest that vendors make efforts to put into practice the fresh fish hygienic sales practice, they learned during the workshop, in their deteriorated hygienic environment. In addition, the handling of fish products in the public markets could be significantly improved if, hygienic facilities were provided.

### **3-3-3 Hygiene Control of Public Markets**

#### **3-3-3-1. Water Availability in Public Markets**

Safe water is needed to cleanse fresh fish in the markets. But some public markets do not have the public water supply, or it has been cut off for a long time. It is frequent that water is not available when it is needed.

During the 2<sup>nd</sup> year, we asked URRM to carry out the supplied water quality analysis in 6 public markets of Pointe-Noire. All the 11 water samples contained heat-resistant colon bacillus and 6 were also polluted by fecal streptococci. The supplied water contamination in the public markets which provide food for the people of Pointe-Noire is a serious deficiency, which must be solved radically, considering the function of markets which is to provide consumers with safe food.

### 3-3-3-2. Hygienic Inspections of Fresh Fish Stalls

#### **(1) Hygiene of Fresh Fish Sales Stalls in the Public Markets**

We had measured, by ATP Bioluminescence Technology<sup>26</sup> (RLU: Relative Light Unit), the dirt degree on the stalls of fresh fish vendors in 18 public markets, except the following 4 markets: the central market of Pointe-Noire, and markets of Thiethie, Liberté and Timbamba, and simultaneously verified the RLU quantity variation by simple cleaning with a duster and water.

Stalls are usually made of wood. They are all made of wood in 13 of the 18 markets, and made of concrete in the others. In general, each stall is covered with vinyl, cardboard, newspaper or (Linen, synthetic) fabric before fish products for sale are put on it. Since there is almost no running water in all markets, vendors bring water in plastic bottles or containers to simply carry out the washing.

The findings of this study can be summarized as follows:

- 37 fresh fish stalls were surveyed: 28 in wood, 8 in concrete and 1 directly on the floor;
- The material covering the surface of the 37 wooden stalls, is vinyl for 22 stalls, cardboard for 7 stalls, fabric for 7 stalls and newspaper for 1 stall. Vinyl is used for more than half (60%) of them to receive fish products.
- The highest RLU value (the higher it is, the higher the contamination degree) was 775,547. It was measured on a wooden stall covered with vinyl.
- There is no comparable data previously collected by a similar study of the open-air markets; but according to the reference value of the cleanliness degree management of food products in Japan<sup>27</sup>, the RLU standard value is 500-1000 on a resin surface. The values measured in the public markets of Pointe-Noire are 1,500 times higher, which indicates an extremely high contaminated degree;
- For the simple cleaning test, the measurement was made before and after cleaning with a duster and water carried out every day by vendors. For vinyl, a RLU value drop by nearly 70% was observed after the washing, which shows a certain effect. Furthermore, since fabric absorbs water, the assimilated contaminants are difficult to be washed out. On the contrary we also had, under this study, a case where the RLU value of after washing was higher than before. In this case, the contaminants were probably released by washing water and the contamination density increased.
- Using bleach for cleaning further enhances the washing effect.

#### **(2) Hygienic Condition of the Central Market's Model Fish Stalls**

A simple cleaning test was carried out on the model stalls installed in the central market. The RLU value of stalls covered with aluminium dropped by 95.4% after cleaning, which is a good result; but for the stalls covered with tiling, it dropped by 77%. Among metals, easier to clean

---

<sup>26</sup> Use of the cleanliness degree control kit "Lumitester" of the Kikkoman Biochemifa Corporation

<sup>27</sup> See the manual of the Kikkoman branded "Lumitester"

than tiling or concrete, stainless steel, which becomes not easily dirty, is generally used, but because of its high cost in Congo, stainless steel is replaced by aluminium sheets. However, since tiling is more resistant, and dirt can be eliminated to some extent, we recommend to use tiling rather than aluminium sheet to cover existing concrete stalls when improving.

### **3-3-4 Activities for the Establishment of Fresh Fish Vendors' Associations**

In the public markets of Pointe-Noire, the municipality is in charge of the development of facilities, rehabilitations, the waste management as well as the collection of fees from vendors. However, the improvement of the public safe water distribution network fell behind schedule in many public markets, and many water supply/drainage facilities are disrupted. In addition, the development of the markets' facilities has been set back and no support is provided by the administration except for the garbage collection. The management of a hygienic environment in the vicinity of the vending stalls is left to the market vendors, but the tiny vendors are individuals with a limited financial capacity who are not sensitized to hygienic aspects. They discard garbage and wastewater next to their stalls, and amelioration of the deteriorated vending environment is impossible. Under the pilot project, we supported the development of vendors' organizations, fostered their commitment in the development of the hygienic environment of the fish vending zone, and development of the basic conditions for the betterment of the environment of all markets. The objective of these actions is to improve the hygienic conditions of fish sales simultaneously to the improvement of stalls and hygienic practices of vendors.

During the 2<sup>nd</sup> year, we created an association of vendors of fresh fish, smoked products and salt-dried products in the Timbamba market, appointed the members of the Management Committee and Evaluation Committee, and established basic statutes. Collaboration and coordination with the governmental entities being indispensable for the services of public infrastructures such as the development of water supply/drainage facilities, garbage collection and cleaning of the whole market in order to improve its hygienic conditions; we made efforts to establish an agreement system with the financial and accounting Directorate of Finnce and Directorate of Environment of Pointe-Noire City. The Lumbamba municipality showed interest in the healthy operation and improvement of the hygienic conditions of the Timbamba market; but the organization was stagnating because vendors of the Timbamba market are gradually losing interest in the pilot project.

In the 3<sup>rd</sup> year, an association consisting of fresh fish vendors of the central market using model stalls was created. In Congo, associations of all sectors, and not only those of the primary sector such as agriculture and fishing, are under the authority of the Ministry of Agriculture. Activities for the creation of associations started in collaboration with the departmental Directorate of the Ministry of Agriculture in Pointe-Noire. The provisional registration of the association with the aforementioned Directorate was accepted in August 2015, and the registration phase with the Ministry of Agriculture in Brazzaville started.

The members of the association of the central market's vendors can get the following



advantages:

- Exemption of taxes on imported goods and commissions for the equipment and materials required for the association's activities;
- Authorisation of access to the commercial port to purchase fresh fish, and possibility to purchase fish from industrial fishing vessels;
- Easy access to loans from banks, MUCODEC (Congolesse Savings and Credit Unions) and COPEC;
- Several fiscal privileges from the Ministry of Commerce;

This association of fresh fish vendors is also recognized by the central market Management Committee (private organization in charge of the coordination between the Mayor-manager of the Lumbamba municipality and central market vendors, as well as cleaning of the market), and the number of its members tends to increase gradually.

### **3-4 Pilot Project for the Improvement of Fish Processing Practices**

#### **3-4-1 Components of the Pilot Project for the Improvement of Fish Processing Practices**

The most typical processed fish products in Congo are the smoked products from 2 species of sardinella (Makoula, Masoundji) of the herring family. Smoking kilns are made of metal barrels. This practice was introduced by the Beninese community for more than 40 years ago. Smoking is still carried out almost according to the same practice. In the smoking process, fresh fish are placed between a metal grid and wood sticks on 6 superimposed levels in the smoke kiln. Smoking is performed during 3 to 4 hours on the logs fire. Then, fish are left to cool down for a few hours, and then transferred into another smoking kiln, returned and smoked again. The problems of this process can be summarized as follows.

- The smoke causes headaches, eye and respiratory ailments. Burns and injuries are also possible because of the iron bars around the smoking kiln;
- Fish being superimposed on several levels, fire control is difficult. If it is too low, fish is underdone, and if it is too strong, fish burn and lose their commercial value;
- If fish were stale, quality of processed fish will be poor and their sales price will be low;
- The smoking process requires long time, needs a lot of work to turn fish over which hamper the productivity of processing;
- There is a lot of work in the process that can cause health problems like lumbago and other ailments.

Improved kilns were introduced in the past by foreign donors to address these problems, but their use is not popular because of the difference in use with the existing kiln, cost, etc. Many women engaging the smoking say they do not want their daughters to continue this work of fish processing under difficult working conditions. They complain and claim that they are not content,

and yet they have been using the same kilns and installations without any improvement for several decades. The nature of the problem is that processors show no willingness or intention to improve smoking kilns and smoking facilities in order to increase the product quality and improve the processing practices. There are many matters to be improved in the sector of fish processing and it is absolutely essential that processors themselves wish to improve their working conditions and try to accomplish it.

In the pilot project for the improvement of fish processing practices, women processors tried to improve themselves the existing kiln and processing practices. Many test smoking kilns were built with the necessary improvements. Training was provided with a focus on how women processors themselves will improve their working environment, increase quality and productivity by using these smoking kilns. The objectives of this training were as follows:

- Improving the existing kilns in order to improve the quality of smoked products and increase their productivity;
- Handling of fish used as materials hygienic, preserving their freshness and avoiding contamination to improve the quality of products;
- Inspection of water for fish washing available on the spot by analyzing the quality of water used in the smoking workshops and studying whether the water can be treated with viable water treatment for fish washing;
- Improving the working practice to avoid work-related physical damage such as damage due to the smoke, back pain, etc.;
- Motivating women processors to become aware of improvement (KAIZEN) through their active commitment in the working environment and quality improvement;
- Sharing information by exchanges with the persons carrying out the same activity in the training course and developing the organization of women processors;

### **3-4-2 Processing Workshop and Tebiyama Kiln (a Type of Kiln with a Steamer Basket Shape Called "Seiro")**

#### 3-4-2-1. Workshop of the 2<sup>nd</sup> Year

The verification was carried out in the workshops of the improvement of existing kilns made up of second-hand steel drums, iron frames, bolts and nuts and the way of amelioration of the working environment and quality of products.

Under the pilot project, two types of test kilns, gas kiln and Tebiyama (Seiro) kiln, were fabricated experimentally after the manner of the existing kiln. In addition, a traditional kiln generally used in Congo was installed. A workshop was established to carry out a comparative study as part of which 3 kilns were simultaneously operated and charcoal that does not produce smoke was attempted for the traditional kiln experimentally.

For the test gas kiln, eucalyptus firewood used as fuel and smoking material was replaced by

butane gas. A lid, which does not exist for the conventional smoking, was placed on top of the kiln to enhance the heat effect. Fish were laid on the Seiro in a wooden frame and placed in the kiln.

For the Tebiyama (Seiro) method only one lighting aperture is provided at the front and 3 levels of wooden framework Seiro with 2 rows of fish (1,000 mm x 800 mm) are placed in the upper part of the kiln. Fish are aligned in the Seiro and a lid placed on top. As twigs are not used, more fish can be arranged, which strengthens the effectiveness. Moreover, by returning the Seiro, it becomes unnecessary to return fish one by one manually, which reduces the working time and required labour. Firewood was used as a conventional fuel.

The workshop was held within the URRM premises, once a month from December 2013 to July 2014 mainly for women processors and the number of participants in the workshop of the 2<sup>e</sup> year was 47.

In principle, the pilot project planned to improve the existing processing practice. The working conditions such as the preparation of processing, smoking temperature, smoking duration, etc. were in principle the same as those of the conventional practice. The project also aimed to increase the work efficiency during processing. Therefore, the production time (smoking time) allocated to all types of kilns was set at 4 hours; that is to say, the ordinary operation time in Congo. We compared the advantages and disadvantages related to the return rate (drying degree) of the weight of products against the weight of fish used as materials and fuel costs. There were no significant differences between the conventional type, the Tebiyama type, the gas type and charcoal one. For gas, the cylinder cost must be paid first; for the firewood, it is heavy, requires transport costs and efforts must be made to cut it into small pieces. A bag of 30 kg of charcoal can be easily bought everywhere, but a support grid is needed. So, each option has its advantages and disadvantages.

Opinions resulting from the product assessment indicated that the Tebiyama kiln gives products with a beautiful natural brown finish. With gas, there are no burns and the flavour of the original fish remains strong.

#### 3-4-2-2. Pilot Project of the 3<sup>rd</sup> Year

The gas kiln and Tebiyama kiln developed during the pilot project of the 2<sup>nd</sup> year, which have their respective advantages. However, the initial investment needed for gas is high, and its introduction is considered difficult because of the financial hardship of women processors. The Tebiyama kiln was considered good, given its performance and easy use. Furthermore, its extension and practical use were integrated in the pilot project of the 3<sup>rd</sup> year.

In the district of smoking workshops, we used part of the workshop of a leading woman processor to install a Tebiyama-type kiln in the real environment of a processing workshop with a view to carrying out practical smoking trainings.

There are 2 groups of women smokers: a majority group made up of Beninese women working in Songolo and a minority group of Congolese women working in Base Agip; their working places are separated. For the extension and practical training carried out under this pilot project, we

installed a Tebiyama kiln in each of the two districts, held workshops and conducted practical trainings once a month. In addition, when a workshop is not held, the Tebiyama kiln's owner uses it as part of her daily activities in order to compare the production of this kiln with that of the existing traditional kiln.

The features of this Tebiyama kiln are as follows: the combustion-smoking part where the aperture is located, as on the traditional kiln in Congo, is manufactured from steel drums, Seiro are stacked in the upper part, a lid is placed on top, so that heat and smoke can flow efficiently between fish in the Seiro. Since the structure of this method is not very different from that of the conventional kiln, except fish are aligned in the Seiro with a lid, it is easy to use for women processors, because operations such as lighting logs are almost the same as those in the conventional practice.

In the pilot project of the 3<sup>rd</sup> year, workshops were organized 7 times, with a total number of 62 participants, including 41 Congolese women and 21 Beninese women. During the practical training, we explained the handling of equipment before smoking as well as hygienic fish treatment, fish washing for example in order to make participants clearly understand that carrying out these operations would result in higher quality.

Women processor who experimented the Tebiyama kiln gave us their impressions as follows:

- Products of good and uniform quality can be obtained;
- Production work is easier because there is little work to be done;
- The firewood consumption is lower than that of the conventional kiln;
- Fish are not damaged and processing losses are reduced;
- The products are sold well and are sold out in a short period of time.

As some participants in the workshop expressed dissatisfaction regarding the insufficient production (quantity of fish processed) of the Tebiyama kiln, we increased the number Seiro per kiln from 6 to 12 and verified that the quality of products was the same when the same quantity of firewood was used.

We made a follow-up in the form of an interview survey among the participants in the workshop to know if they were putting into practice the results of the practical training. Significant differences were noted in the answers given by the Congolese and Beninese women. The workshop consisted of a theoretical course on hygienic education and a practical training course on processing. Almost all of them answered they were putting into practice what they learned in theoretical course, but only the Congolese women said they "put into practice" what they learned from the practical training course. Regarding the use of the improved kiln, the participants in the workshop from the Group of Congolese women could freely make their production with the Tebiyama kiln installed in the practical training workshop. By contrast, the work places of Beninese women were, in principle, individual ones segregated by fences and the use the kiln jointly with others was refused. So, the Tebiyama kiln installed in the practical training workshop was only utilized by the owner of the site of the workshop, except on the days of the workshop.

The operation of the test kiln by neighbouring processors was very restrictive. As a result, even though the total number of participants in the workshop was high, Beninese women said they did not have any practical experience with the improved kiln except on the days of the workshop.

**Table 3-8: Follow-up of the Practical Processing Training**

a. Impressions Concerning the Practice

Percentage	Reduction of Burns	Reduction of Health Problems Due to the Smoke
Yes (%)	100	17
No (%)	0	83

b.2. Improvement of the processing efficiency

Percentage	Work less hard	Workforce Reduction	More time for household work	No change
(%)	100	33	67	0

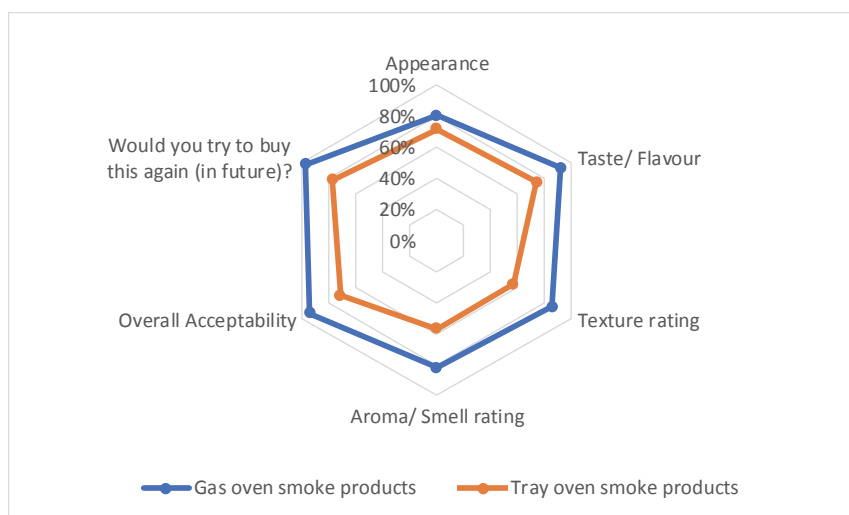
c. 3. Quality of Products

Percentage	Increase in Orders	Price Increase	Reduction of Loss	Better appearance	No change
(%)	100	33	67	17	17

(Source: PECHVAL)

As also indicated by the interview survey, there was few affirmative answers concerning the reduction of health problems due to the smoke. However, many other answers were positive. That was the case of those relating, for instance to the reduction of back pain, etc. thanks to work load reduction, income increase through the improvement of the quality of products; which are promising elements. In addition, burns during the work decreased because the improved kiln does not have a structure with protruding frames.

Invited to the agricultural exhibition organized by the Ministry of Agriculture to promote local consumption of agricultural products and processed products of Congo, we demonstrated the production and sale of smoked products by using a Tebiyama kiln and a gas kiln, and proposed the tasting of smoked products from 21 July to 2 August 2014 in the yard of the Chamber of Commerce and Industry of Pointe-Noire. The survey carried out after tasting showed that products made with both kilns were appreciated. The flavour and mouthfeel of gas kiln products, in particular, were highly appreciated. On the whole, the gas kiln products were therefore much more appreciated than those of the Tebiyama kiln.



**Figure 3-11: Results of the Survey After Tasting the Products**

(Source: PECHVAL)

These results are probably influenced by the fact that the social status of people visiting the exhibition of products organized in the centre of Pointe-Noire is relatively high. These are people who want to try, and accept the new products and things; but the reactions of ordinary people are probably a bit different. It turns out necessary to improve the products and practices by collecting the opinions of ordinary consumers and vendors of smoked products.

### 3-4-3 Hygiene training workshop for processors

#### 3-4-3-1. Hygiene training workshop for the 2nd year

We have organised a workshop emphasizing on general hygiene training targeting the people working in fish processing (particularly women fish-smokers), in order to make them understand the characteristics of fish products and strengthen their knowledge in hygiene for fish handling. As learning material, we created Powerpoint files explaining in a user-friendly way the importance of the freshness of the fish serving as processing materials and basic hygiene notions, such as hand-washing during operations and a manual has been prepared to give more detailed information. Workshop were held in the classroom by using those tools.

The content of courses was mainly as follows:

- Choosing a clean location for processing ;
- Washing all equipment to be used for processing before their utilization ;
- Using very fresh fish ;
- Keep the table and the processing workshop clean ;
- Using potable water ;
- Wearing clean working attire ;
- Before starting to work, remove accessories such as watch, rings, etc. likely to contaminate the fish by contact ;

- Do not join processing work when sick (particularly in case of diarrhoea or when wounded) ;
- Do not mix very fresh fish and the fish that lost its freshness.

Moreover, to judge the freshness of the fish, we explained the basic criteria of freshness sensory judgement, according to following items: eyes, skin, scales, fish shape, fish flesh, gills, guts, smell, etc.

The hygiene training workshop on processing was organised in the URRM at the eve of the workshop on processing training, from December 2013 to July 2014, and gathered all in all 66 women participants (2<sup>nd</sup> year).

### 3-4-3-2. Hygiene training workshop for the 3rd year

During the 3rd year workshop on processing, we organised a hygiene training workshop on fish handling for women participants, taking advantage of the free time during smoking. We conducted a verbal survey next to 24 women participants to the workshop. Essentially, all women answered that they applied what they had learnt at the hygiene training lecture, but also that they didn't use ice because ice procurement is physically very difficult and expensive, that temporary fish preservation does not last long and that there is no ice storage place.

**Table 3-9: A. Follow-up of the hygiene training lecture**

Percentage	Use of Ice	Hand washing	Fish washing	Not putting the fish directly on the ground	Washing the equipment
Yes (%)	0	95	100	100	100
No (%)	100	5	0	0	0

(Source: PECHVAL)

### 3-4-4 Availability of water for washing of the fish in processing

#### 3-4-4-1. Quality control of the water for processing

It is necessary to have potable water for washing during the post-catch operation and fish processing. However, the development of the public distribution network for potable water lags behinds in Pointe-Noire, water supply cuts are frequent and water volume is insufficient, thus hotels, restaurants and also private individuals generally buy water from tank trucks. Potable water access in Songolo district - where women smoking processors concentrated - is atypical and most processing workshops have a well in their premises for collecting the water for washing during processing. During PECHVAL project 2<sup>nd</sup> year, we entrusted the Microbial Resources Research Unit (MRRU) with the water analysis of the 11 shallow wells and 6 deep wells of Songol. The MRRU, had been engaged in water analysis jointly with French IRD all in all 597 wells (of which 219 planned for potable water) in Pointe-Noire and neighbouring villages, and had actually almost found no water contamination by toxins (arsenic, mercury, lead, cadmium, etc.) in Pointe-Noire and its neighbouring areas. Given that the risk of contamination by such dangerous toxins is low, the MRRU made its recommendations stating that the detection of colibacillus (2 types : colibacillus resistant to heat and fecal streptococci) must be adopted in Congo as water quality

index for temporary use- considering the absence of inspection & control system and lack of appropriate equipment.

Analyses for the detection of heat resistant colibacillus and fecal streptococci showed that water samples were contaminated by heat resistant colibacillus and that contamination by fecal streptococci was checked on samples from 4 shallow wells and 3 deep wells. All these waters are inappropriate for consumption and washing fish which will be contaminated with. Thus, those waters were judged inappropriate as washing water for processing.

#### 3-4-4-2. Availability tests of safe potable water with treatment of the well water

During the 3<sup>rd</sup> year, we tried to sterilize the water from 4 contaminated wells, to examine whether it was possible to obtain potable water. Sterilization was made by addition of bleach, but in 3 wells, contamination was so heavy that water quality didn't improve at all after sterilization. In another well the reduction of the number of bacteria was observed, but it couldn't eliminate them, which means the water is still inappropriate for consumption.

Fish processing in Pointe-Noire is thus exposed to contamination risk from the start and in order to supply processed fish as safe food products to consumers, the fish shall not be washed out with well water in the neighbourhood of the processing workshops, but it is critical to make potable water supplied to processing workshops to do so.

#### 3-4-4-3. Treatment of well water of the smoking workshops

There is no public potable water distribution network in Songolo district where has a high density of processing workshops and many fish processors depend on the water from the well in their workshop. But since the well water is contaminated, safe potable water supply is a vital and urgent issue to solve. In order to examine if potable water could be realized by adding commercially available bleach in the well to eliminate contamination, we had experiment under the pilot project on the 3<sup>rd</sup> year, water treatment tests on five wells, of which four in Songolo and the other in Base Agip.

The analysis of water sampling and water treatment had been entrusted to the MRRU.

- Analytical method used : «Membrane filtration», test by digitization of the bacteria present in the sample
- Treatment method used: Cleaning and sanitation of wells, January 2005, by the Red Cross. Concretely, active chlorine 2.6 (70 ml of bleach) is dissolved in 1 m<sup>3</sup> of water.
- Criterion : No heat resistant colibacillus or fecal streptococci is detected in 100 ml of water (WHO 1984, CEE 1980 standard)

Test results were as follows:



**Table 3-10: Results of water analysis**

Microbes tested	Nber of viable bacteria in the sample (ufc/100 ml)				
	Before treatment (TO)				
(well water volume)	Well N° 1	Well N° 2	Well N° 3	Well N° 4	Well N° 5
	0.19 m <sup>3</sup>	1.24 m <sup>3</sup>	2.1 m <sup>3</sup>	0.88 m <sup>3</sup>	0.1 m <sup>3</sup>
Heat resistant colibacillus	> 80	> 80	32	47	> 80
Fecal streptococci	0	> 80	39	25	> 80
After the 1 <sup>st</sup> treatment	(chlorine : 8.4 ml)	(chlorine : 180 ml)	(chlorine : 200 ml)	(chlorine : 500 ml)	(chlorine : 50 ml)
Heat resistant colibacillus	> 80	> 80	15	0	0
Fecal streptococci	0	> 80	21	0	0
After the 2 <sup>nd</sup> treatment	(chlorine : 210 ml)	(chlorine : 360 ml)	(chlorine : 500 ml)	No treatment	No treatment
Heat resistant colibacillus	> 80	> 80	6	58	0
Fecal streptococci	0	> 80	> 80	39	0

(Source: URRM)

Contamination of the wells n° 1 and n° 2 is very fatal; water quality couldn't be improved even after second treatments. Chlorine treatment effect was observed in the well n°3, though the increase of fecal streptococcus observed after the 2<sup>nd</sup> treatment could be induced by handling error during sampling.

In the well n°4, based on the experiences of the water analysis to date, 500 ml of chlorine were added in the 1<sup>st</sup> treatment. The result was that heat resistant colibacillus and fecal streptococci were not detected after 12 hours, and after 48 hours both reappeared. The reason is not clear, but the MRRU assesses that the injection of more than 500 ml bleach in a well with a volume of about 1 ton water may react with substances and catalyse to produce toxins such as trihalomethane (THM), etc. and thus MRRU withhold repeating treatments of bleaching.

For the treatment test n°5, the sampling well was changed from Songolo to the well in the joint working space of Congolese women in Base Agip. In this area, the existing well is located in low grounds and contamination risk is very high by the penetration of waste waters and the dumping of solid wastes from neighbouring households, since the ground and the water levels are nearly at the same level. Thus, it was decided to dig a new well and women processors and dwellers in the neighbourhood were taught how to choose an adequate well point and the method to dig a well.

The chosen point was inside the working space of women processors' group, located in a higher than the existing well ground level, a vertical hole was dug with a PVC pipe and a metallic barrel, and measures were taken to reinforce the structure and reduce maximum contamination between the ground level and water surface. As for the well coping, an upper part of about 1 m of a metallic barrel was buried, and the around of the well was concrete covered.

When water quality analysis was made - after adding of 50 ml of bleach, no microbe such as heat resistant colibacillus or fecal streptococcus was detected. It had been possible to maintain good quality water in this well by periodically bleaching (once every 3 days), but 2015 was a year of low sardinella catch, and processing workshops had been hardly operating due to the shortage of fish, and the utilization of the well was limited. For this reason - according to the well owner - no bleaching had not been made and when water quality analysis was made in December the

same year, contamination to heat resistant colibacillus or fecal streptococci was detected.

According to the MRRU that gave instructions for digging this well and for the improvement of water quality, they have experience that under the project for the improvement of the quality of polluted water for similar wells conducted previously, there had been hardly made bleaching after completion of the project, and thus the situation was back to the previous situation. This is undoubtedly due to the low consideration of the long term threat, caused by the negative impact of contamination by colibacillus invisible to the naked eye. Teaching at school and awareness-raising of inhabitants on the safe water are necessary, but the fact that it has not been sufficiently conducted is an issue, and it is necessary that public and private sectors commit jointly in a campaign on « the gravity of safe water ».

The results of doable tests for well water consumption - conducted to date - indicate that the improvement of water safety by chlorine treatment is not easy, and since the level of well water is generally low, it is difficult to obtain adequate volume of water for processing.

For a project for processing improvement in future, it will be necessary to plan activities using deepwell water or public network water supply for processing and post-harvest handling of fish, for example, building a common deepwell in a processing area such as Base Agip, or supply from public water network (SNDE) and set up fish washing places with a sanitation system. Thus, if potable water supply is possible and that this water can be used for daily life, it will lead to an improvement of the hygienic conditions of the whole community, introducing a joint management practice - including the maintenance of deepwells - that might contribute to promote the organisation of women processors.

### **3-4-5 Development of women smokers' association**

One of the reasons why the productivity of artisanal women processors of Pointe-Noire remains low is due to their vulnerable financial bases and the unavailability of required financial means. Thus, they have to purchase fish as materials with their meagre means, and they cannot enter a of productions as far as their products are sold and they have reclaimed their capital. During the peak fishing season, even though the price of the fish drops sharply, it is difficult to buy it in bulk. Furthermore, it is still more difficult to invest in the kiln to satisfy the big demand for fish processing. The acquisition of more efficient kiln or the increase of number of kilns to enable processing affordable price fish during the peak season is extremely difficult for private individuals who don't have necessary financial means in Congo, where private individuals funding is not developed. Due to that, it is necessary to increase their financial capacity by organizing and strengthening the creditline. In case of PECHVAL, a women processors group in Base Agip wished to access to credit (small financial institution) to manufacture Tebiyama kilns and obtain funds for procurement of fish, we have established a working group of 15 people interested in the organization of associations, and supported their organization to that effect. We had supported to register temporarily the said association to the Departmental Directorate of Pointe-Noire and then the association's application for registration to the Ministry of Agriculture had been officially

made. But in 2015, fish catch had been very poor in August - which is ordinarily a top peak season - and subsequently, sardinella fish catch had rarely recovered until December; thus it had been difficult to procure fish, processing activities had been stagnated and the amount of necessary registration fee could not be collected, thus registration had not been completed.

If the association were officially recognized, it would have following privileges:

- Exemption of taxes levied on imported goods and commissions for equipment and materials necessary to the association's activities;
- Authorization for the supply and transportation of wood for smoking is granted;
- Authorization for access to the commercial port for fresh fish purchase, and purchase from the industrial fishing vessels is possible;
- Simplification of formalities for the export of smoked products to Gabon (Direct sale is also possible);
- Loan facility from banks, MUCODEC (Congolese savings and credit funds) and COPEC.

Another merit for the association is that, when the fish are difficult to acquire - especially for a individual processor during poor catches - bulk purchase or price negotiation as a group becomes possible by the Association and purchase with refrigerated warehouses of industrial fishing companies in the port will also be feasible. The access to the credit line for purchasing fish from a partner bank is another advantage, but retarding of association activities is - among other reasons - due to the incompetence of members of the processor's association to comply with the various documents and formalities, the inadequate management and operation capacities, and the strong scepticism vis-a-vis new attempts, due to the low education level of association members.

### **3-5 Pilot project for landing beach management**

#### **3-5-1 Pilot project for landing beach maintenance and management**

Returning from fishing trip, even if the fish is kept fresh and of good quality - should the reduction of fishing trip duration or improvement of fishing boats capacities be achieved- when the beach is contaminated by waste, dirt and bacteria, the fish landed will also be contaminated, which will thus accelerate its decay.

A family living near the site discharges roughly 1 bucket (approx. 10 litres) of wastes per day, which have been generally cast off on the sandy beach. On the beach, some shipowners support cleaning activities of an NGO to clear solid wastes around their boats, but since there is no garbage bins, solid wastes are buried on the beach which would be exposed by wave. At the initial stage of this project, we had observed household wastes, fish remains, the tar from sub-marine oil layer, etc. scattered on the Songolo beach.

Leaving solid wastes in the landing beach and landing fish on litter of the beach contaminates the fish landed, depletes the value made by fishermen and even jeopardizes fishermen's reputation. Under the pilot project, the objectives of landing beach maintenance and management is:

- Inhabitants and stakeholders of fisheries will work together for cleaning the beach;

- Cleaning of the landing beach will avoid the contamination of the fish landed;
- During cleaning activities, sensitization on cleanliness will take place to strengthen awareness-raising on the cleaning of the environment by fishermen's village dwellers ;
- Carrying out cleaning activities organized - to which inhabitants and stakeholder of fisheries are involved and work together - will strengthen the organizational capacities of fishermen's associations;
- Motivate inhabitants and stakeholders of fisheries to act by themselves for the improvement of the living and working environment;
- Creation of an activity system for the development of sustainable living environment by strengthening solid waste collection capacities in collaborating with the administrative organization supervising the fishermen's village.

### **3-5-2 Awareness-raising on cleanness and achievement of cleaning activities**

In the survey of fishermen in Songolo at the initiation of the project (October 2012), regarding the beach environment 56.0% of them answered "very dirty," "dirty" or "we cannot say it is clean". Similarly, during the public hearings held at the starting of the project, some participants said that no solution could be found, insisting on the hygienic conditions problem: "We clean, but since there is no garbage bins, we bury the solid wastes in the soil", "Buried solid waste pile up, which worsens the hygienic conditions problem". "High waves and torrential rains dig up the wastes and contaminate again the beach".

In this context, during the 1<sup>st</sup> and 2<sup>nd</sup> years of the project, beach cleaning was done by the AICP, under the project supervision. For actual cleaning activities, instructions were given on the good cleaning method and the wastes buried on the beach for many years were dig up and collected. After cleaning, awareness-raising was conducted to strengthen the awareness on waste management and making people realize the meaning of cleaning activities.

The frequency of cleaning operations and the number of participants for the 1<sup>st</sup> and 2<sup>nd</sup> years were all in all 10 times, with more than 683 participants. But there were 37 participants to the 1st beach cleaning conducted on 7 April 2013, and only 10 participants to 2nd beach cleaning on 6 October. Fishermen are interested into the hygienic conditions surrounding their home, but were reluctant to clean the beach.

Given this situation, the project tried to do the zoning of the cleaning scope in February 2014, starting by cleaning the area where fishermen's houses were located, then the scope of the area was increased gradually, in parallel with the progress of awareness-raising on the importance of beach cleaning and finally covered the whole beach. The zoning of cleaning divided into 2 zones (A and B); zone A was subdivided into 3 sections and zone B into 4 sections, which makes all in all 7 sections. 2 people responsible for cleaning were appointed for each zone and each section, and then a cleaning committee was established. To materialize the autonomous management of the beach by fishermen, the cleaning committee was put under the AICP, for the AICP to lead the cleaning, and thus the AICP daily coordinated cleaning in the beach and called for participation

to cleaning. Some committee members became more active than in the beginning and the committee establishment contributed to continuous cleaning and to increasing the number of participants.

**Table 3-11: Number of participants to beach cleaning**

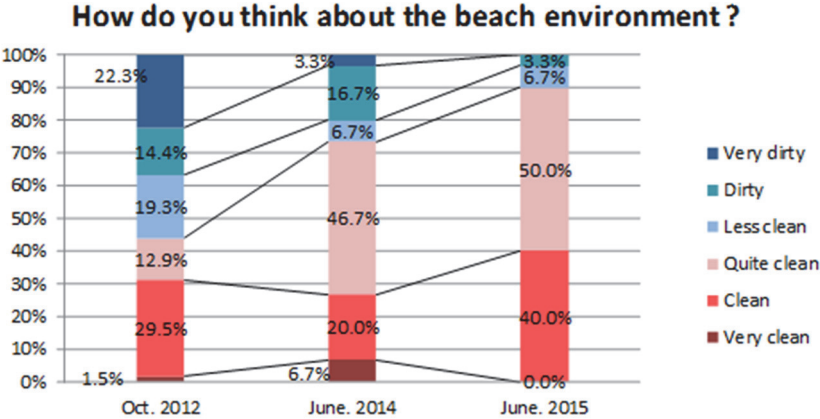
Dates (1 <sup>st</sup> and 2 <sup>nd</sup> years)	Nber of participants	Dates (3 <sup>rd</sup> year)	Nber of participants
07 April 2013	37	23 October 2014	The whole village (more than 150 people)
06 October 2013	10		
10 November 2013	101	14 December 2014	32
15 December 2013	21	25 January 2015 (A)	24
12 January 2014	75	31 January 2015 (B)	73
09 February 2014	58	28 February 2015 (B)	51
22 February 2014	40	04 April 2015 (A)	36
13 April 2014	198	11 April 2015 (B)	45
18 May 2014	More than 45	25 April 2015	22
08 June 2014	98	26 July 2015	96

\* A: cleaning of zone A, B: Cleaning of zone B

(Source: PECHVAL)

During the 2<sup>nd</sup> year, we sensitized on the importance of the hygienic conditions, and did cleaning under the project supervision, and during the 3<sup>rd</sup> year, cleaning made under AICP supervision became more regular, reaching 8 times, with more than 383 participants. A survey next to fishermen working in Songolo beach continued and several people interviewed expressed now that « the beach has become clean (very clean, clean, clean enough) » thanks to those regular cleaning activities. The percentage of positive answers was of 43.9% in the beginning of the project, but it increased to 73.4% in June 2014 then 90% in June 2015.

Cleaning activities by PECHVAL and the AICP were appreciated by the Chamber of Commerce and Industry of Pointe-Noire, a garbage container was donated by the Chamber in May 2014, which contributes to the development of garbage collection activities.



**Figure 3-12: Beach environment (Survey)**

### 3-5-3 Links with administrative bodies

Since cleaning the landing beach is fishermen's responsibility - under their activities of development of the landing beach environment - and the setting of garbage containers and garbage collection for the development of inhabitants' living environment supported by the local government, PECHVAL and AICP called upon the mayor of Mongo Mpoukou administrative district, of Pointe-Noire city; which the project site belongs to and asked for its collaboration for the installation of garbage containers and for garbage collection. In response to this demand, the mayor of Mongo Mpoukou administrative district visited the site to observe, discussed with PECHVAL, proposed a programme including following components for promoting further the link between the municipality of the administrative district and the AICP for cleaning activities of Songolo- Raffinerie beach, and declared that Mongo Mpoukou municipality would take full responsibility of the programme.

1. Periodical cleaning of the beach under the supervision of the mayor of Mongo Mpoukou ;
2. Calculation and collection of subscriptions due by each household for purchasing of cleaning tools;
3. Clarification of responsibilities on the cleaning of each zone ;
4. Autonomous management of the cleaning tools by each section ;
5. Holding periodical meetings, for exchanging viewpoints on the cleaning status and problems.

In May 2015, the municipality of Mongo Mpoukou administrative district installed garbage containers and started garbage collection, cleaning activities started under the supervision of the municipality of Mongo Mpoukou arrondissement in August 2015. Under this framework, the mayor of Mongo Mpoukou organised a public meeting with beach inhabitants, and presented a draft of management rules of the beach and established the rules and the regulation..

**Table 3-12: Management rules of the beach proposal by the Mayor of Mongo Mpoukou**

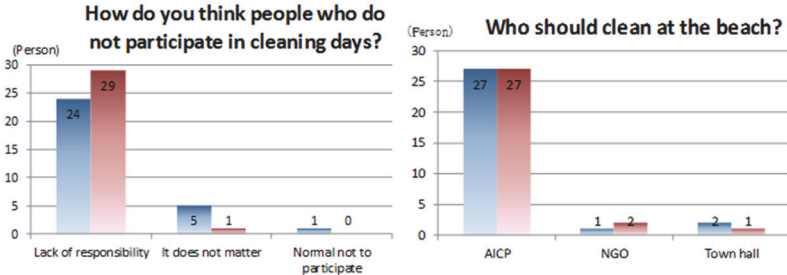
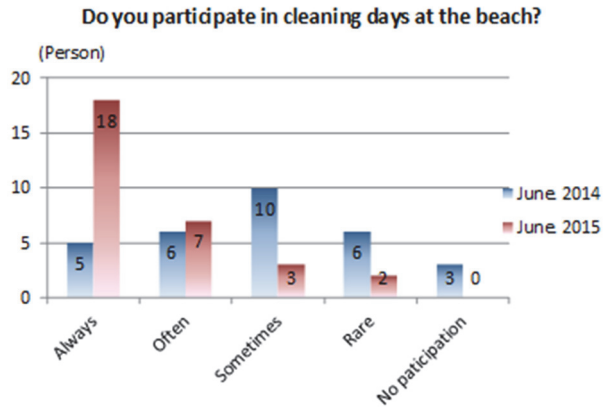
(1) Management rules of the beach
<ul style="list-style-type: none"> <li>- Prohibition to throw wastes out on the beach. Offenders will be fined.</li> <li>- Prohibition to bury fish remains and to put them in garbage bins. Offenders will be fined.</li> <li>- Prohibition to buy firewood produced from trees illegally logged. Offenders will be fined.</li> </ul>
(2) Role of the municipality
<ul style="list-style-type: none"> <li>- Installation of 5 to 6 garbage bins along the beach</li> <li>- Donation to the AICP of cleaning tools, such as rakes and forks, hand carts and scoops</li> <li>- Patrols with gendarmes on the beach to improve public security</li> </ul>
(3) Collaboration between the municipality and the AICP
<ul style="list-style-type: none"> <li>- Daily cleaning of the beach is under inhabitants' responsibility and the municipality delegates a person for cleaning twice (2) a week.</li> <li>- Demand of cooperation for beach management (supply of garbage bins, etc.) to private oil companies (CORAF and TOTAL) in the vicinity of the beach</li> <li>- Increasing the number of persons in charge of cleaning and strengthening the cleaning committee</li> </ul>

In February 2016, cleaning tools were supplied to the AICP by the municipality of Mongo Mpoukou administrative district, and the mayor of Mongo Mpoukou invites periodically a meeting of the cleaning committee composed of representatives of fishermen’s village inhabitants for cleaning and sensitization activities.

**3-5-4 Development of the beach ownership consciousness of fishermen and strengthening of the awareness on cleaning**

In the results of surveys conducted 30 fishermen in June 2014 and June 2015, 5 of them answered « I join the cleaning every time. » in 2014 and 18 in 2015.

Moreover, 27 respondents think that « The ACIP must do (themselves) the cleaning by itself. », and for those who don't take part to cleaning, 29 respondents think « They are lack of responsibility ». Little by little, ownership consciousness of the beach is developing among fishermen and awareness on cleaning is strengthened.



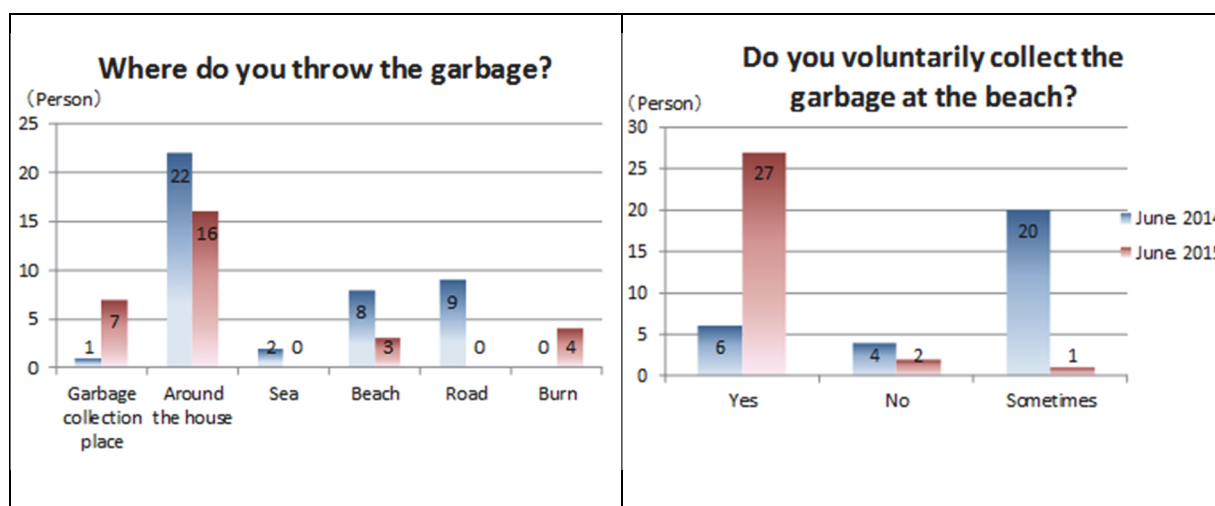
**Figure 3-13: Improvement of awareness on cleaning activities**

On 23<sup>rd</sup> October 2015, a cleaning activity upon request of the cleaning committee and shipowners, had been done without aegis of the PECHVAL. That day was declared rest day for fishing activities and the whole beach was cleaned with the participation of fishermen’s village inhabitants. The garbage collected was sent to the public dumping site on 2 trucks rented with the money collected from inhabitants and fishermen. The fact that fishermen could organize a large scale cleaning without asking PECHVAL support, and that they didn't bury garbage but transported them to the dumping site with trucks rented with their own money is an important result.

Since November 2015, beach cleaning is done periodically and continuously lead by the cleaning committee.

### 3-5-5 Change of consciousness on the cleaning of environment

Among the results of the survey conducted in June 2014 and in June 2015 of the fishermen, 6 of them answered « If some garbage falls on the beach, I pick it up. » in 2014, and the number increased to 27 in 2015. Cleaning the beach and awareness-raising have been conducted continuously since April 2013, created a beach ownership consciousness to fishermen and increased their awareness on the cleaning of environment.



Furthermore, fishermen having answered throwing garbage around their house or along the beach said that it was due to the lack of garbage bins, and « were there garbage bin near their homes, they would dispose the garbage in it ».

### 3-5-6 A plan for utilizing fish remains discarded to process into feed for pig

For reducing the garbage on Songolo beach, a nutrition analysis and economic study were conducted on the small fish abandoned by the beach during landing, fish guts and remains cutted off when processing and the fish unsold and/or to be discarded off shore when the market is saturated during the abundant fish catch season, to study the feasibility of making livestock feed from them.

Small fish abandoned on Songolo beach during the landing and fish guts and remains cutted off when processing products were collected and transported to a feed processing place, and processing by boiling them in hot water -> pressing -> drying into feed for pig (feed from fish remains). Moreover, water after boiling fish is not disposed but mixed with cereal-based feed (wheat germ) and dried, to utilize also as feed for for pig (Feed from cereal mixed with fish boiled water).

Following table presents the results of the nutritive analysis of manufactured feed.



**Table 3-13: Results of the nutrition analysis**

Sample name	Water content (%)	Proteins (%)	Fat (%)	Ash content (%)
Feed from fish remains	21.8	41.1	6.1	22.9
Feed from cereal mixed with fish boiled water	7.3	19.9	10.8	4.8
General criteria for fish-meal	under 10%	over 12.5%	under 10%	under 20%

(Source: PECHVAL)

Fish remains and fish-boiled water are good for feed with high protein content. Water content of fish remains is found the value of over the criteria, but an improvement is possible by extending the drying period.

Pigs prefer to eat feed made from fish remains and fish-boiled water, and the feed manufacturers for livestock are also interested in, and these products could be sold only if price and quantity conditions are met.

Fish remains were processed in trial and the overhead costs of processing were calculated. The result shows that a gross profit margin of about 30% can be expected - transportation fees of materials up to the processing workshop and for shipping included. But the quantity of fish remains generated in Songolo beach is about 300 kg per day, which is not sufficient quantity for making a profit and we have considered that it is difficult to make a business as a going concern.

### **3-6 Plans for construction of the artisanal fisheries center and for procurement of equipment for it**

#### **3-6-1 Objective of the construction of the artisanal fisheries center and procurement of equipment**

The objectives of this pilot project are to investigate the effect of improvement of fish products in the distribution stage of the artisanal fisheries in Pointe-Noire, and to make a proposal to the Congolese government a future development plan of a artisanal fisheries center and its equipment. To this end, we have established this plan within the confine of minimal necessary pilot facilities and the related equipment, to examine a contribution to the improvement of quality of fish products, and an increase in the income of those actors in the fisheries sector, namely fishermen, processors, distributors and vendors. The study includes also the identification of consumers' reactions to price increase in relation with the improvement of the quality of fish, and confirmation of the management capabilities of an agency in charge of operation of the pilot facilities.

#### **3-6-2 Elements of Plans for construction of the artisanal fisheries center and for procurement of equipment for it**

Facilities and equipment to set up under this pilot project are limited to those have priorities, which is strongly necessary, essential and vital in the improvement of the value chain and the promotion of activities creating added-value. Furthermore, components of facilities will be developed in the layout plan even if achievable by other means, integration in the plan is desirable, and which could contribute to the augmentation of sales.

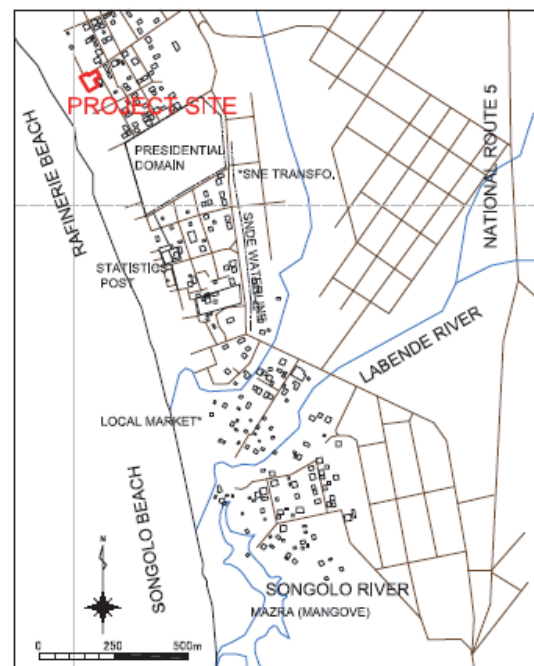
**Table 3-14: Plan of components of the facilities'**

Components for major activities in the Value chain	Fish handling area Washing space Ice making plant, and sales point for ice Workroom for Salt-drying, storage room for products Cilling storage Toilets Waste depot
Components of support activities for the Value chain	Administrative buildings Meeting area Retail market
Pertinented facilities	Toilets, waste depot, security guard, store Tools shed, electrical room, machines room, equipment for water supply and drainage, water reservoir, elevated water tank, septic tank, permeate treatment basin Parking, exteriorr facilities (asphalted areas, slopes, fences and gates, protection against erosion) Deep well (submerged pump, pipelines, meters) Emergency generator, transformer for connection to the grid
Related equipment	(equipment for fish distribution) : fresh fish tubs (cleaning, cooling with ice), isothermal boxes for fresh fish, weighing scales, carts, (Carts or basket) fish boxes, mesh baskets (Retail equipment) : sinks, kitchen tables, knives/boards, weighing scales (smalls), stalls for sales (Equipment for management) : office equipment, desks, chairs, shelves, safe, meeting tables (Equipment for cleaning) : high-pressure cleaners, foldable ladder, waste containers, cleaning material, etc.

### 3-6-3 Selection of the site

After the series of discussion with PECHVAL team, the Congolese government decided the construction site of the artisanal fisherr center. The site is a flat sandy land of 2,500 m<sup>2</sup>; located at the North of President's plots and situated on the Raffinerie beach facing the port - a State property belonging to Quartier Mbotra-Raffinerie Océan, Arrondissement No.5 Mongo Mpoukou, with neither inhabitant nor economic activity on it.

The acquisition of this land as the project site was confirmed by a cadastral map provided by the Cadastre General Directorate and in the MOU for lands allocation for the project made by the Pointe-Noire Port Authority to the Ministry of Fisheries and Aquaculture.



**Figure 3-14: Location of the artisanal fisheries centre**

A study on coastal erosion was conducted in October 2012 to analyse erosion risks on the construction site and the neighbouring beaches. Hereafter a summary of the study results:

- The sand beach in front of the project site is composed of sand with extremely fine grains, its configuration changes subtly under the effect of waves, and sand washed ashore is

also difficult to stay on the spot. The reduction of littoral drift due to the commercial port development had an enormous impact on the beach, and the beach had been suffered from serious coastal erosion between 1958 and 2011;

- The risk of coastal erosion of the site is deemed « low » actually, but the recession rate of the coastal line is closely related to the commercial port development, and the risk of change of configuration due to the commercial port development remains high. Therefore, a careful monitoring system and dynamic anti-erosion measures in the port development are required for the future;
- As for waves along the coast, it is calm in the south part of the port, but the height of waves increases towards the north as far off the shelter zone of breakwaters of the port. The results of the simulation - based on the digital analysis - suggest that the beach located in front of the site is on the borderline of the wave conditions for manoeuvring pirogues by the local fishermen;
- As the sand grains being fine, the beach gradient is also very moderate (1/15 – 1/30 about), which is a configuration to facilitate high waves climbing up the beach, and there is a risk for waves to wash ashore. We forecast that waves might wash up to the limit line of the facilities several times a year. To reduce this risk, the floor level of buildings shall be decided above the height of E.L. +2,6 m to prevent wash ashoreling of the waves, even in case of abnormal waves (probability once for one hundred years), and the floor level for the installation of equipment shall be 70 cm higher than that level. Moreover, gabion baskets made of very resistant resin net filled with gravel shall be placed subsurface in front of the building adjacent to the shore line, for preventing any unexpected partial erosion.

It has been identified that the soil of the site is composed of a layer of humus above the level of -1.50 m, including partially wastes and dirt, and layers of slight coarse sands with varied colours. The results of the dynamic penetration test identify that the soil layer from 0.0 m to -0.60 or to -1.00 m depth is well tight, that the layer from -1.0 m to -1.60 or to -2.20 m depth is averagely tight, and that the layer from -2.20 m to -3.00 or to -6.40 m depth (the limit penetration depth) is very tight. Hence, the foundations of the concrete structure for one-storey buildings shall be direct foundations such as the independent foundation and the mat foundation.

#### **3-6-4 Layout plan**

The project site is a convex shape land with access road in the North, and opening up to the beach in the West.

For the layout of facilities planned under the project, the zoning per function will be adopted such as sorting, washing and precooling, ice making, preservation, fish selling, sales of products and administration, and considering people's movement, catches and vehicles, we make sure to bring about easy movement with short and clear traffic lines in their activities.

Facilities shall be built with a step back of about 13 m from the border of the land on the shore side, as a measure against coastal erosion risk.

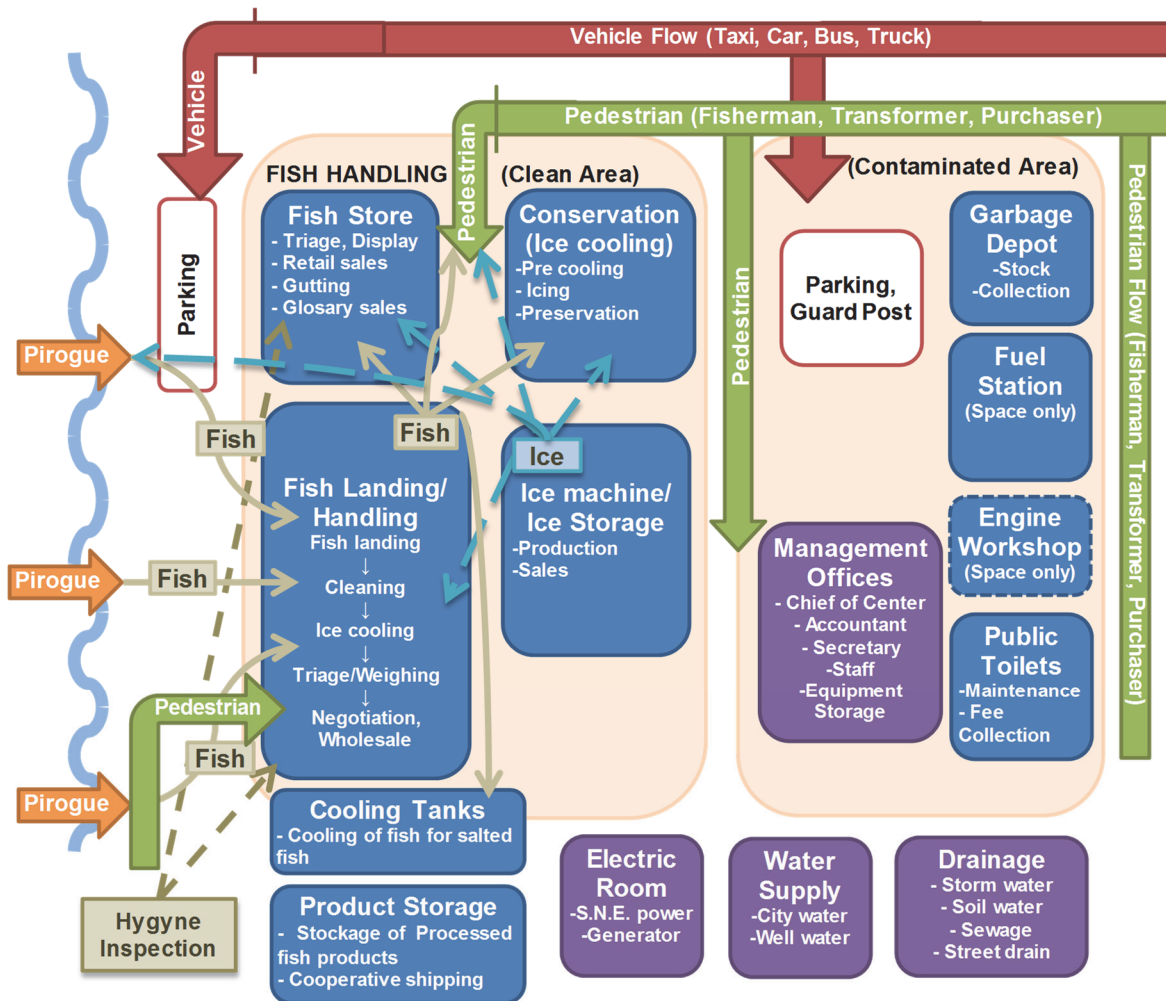


Figure 3-15: Zoning plan

### 3-6-5 Environment Impact Assessment (EIA)

#### 3-6-5-1. Procedures for environment impact assessment

For the construction of artisanal fisheries facilities in Pointe-Noire, the Law n° 2009-451 of Congo stipulates to conduct an Environment Impact Assessment (EIA). The study procedure is as follows: the Ministry of Fisheries and Aquaculture - that is the Project implementing agency for Congolese government - submits an application requesting the execution of EIA, draft terms of reference and outlines of the Project to the Ministry of Tourism and Environment, and after its approval, an environmental consultant registered to the Congolese government is selected and conducts the study and submits the EIA report to the Ministry of Tourism and Environment, through the Ministry of Fisheries and Aquaculture to get its approval. The PECHVAL team supported the Ministry of Fisheries and Aquaculture for preparation of draft terms of reference and of outlines of the Project.

### 3-6-5-2. Implementation of the environment impact assessment

An environmental certificate has been issued for the present pilot project, Construction of Artisanal fisheries Center, as the planned buildings are small-size buildings and is ranked in category B - EIA results showing that the implementation of the project will hardly make negative effect, which can be avoided by appropriate countermeasures.

### 3-6-6 Outline of the planned facilities

#### 3-6-6-1. Floor areas and structures of buildings

**Table 3-15: Structure of each building and floor area of rooms/premises**

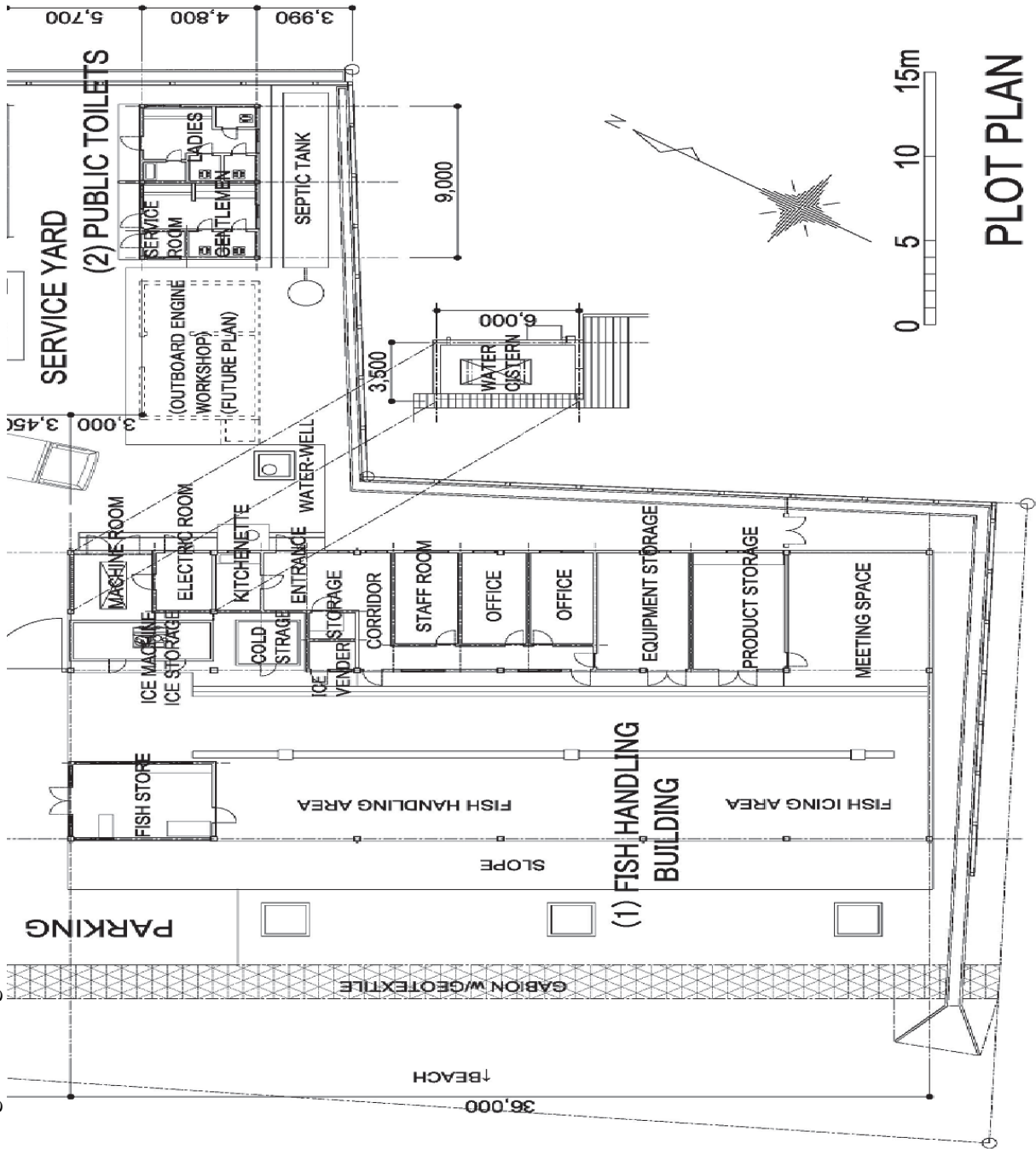
Name of the premise / room	Floor area	Structure / Characteristic
<b>(i) Sorting building</b>	<b>612.00</b>	One story building made of reinforced concrete Independent foundations and reinforced-concrete slab foundation, base-slab foundation Timber truss
Sorting and cooling area	333.00	
Electric and machine room	21.00	
Ice making plant area /Cilling storage	34.65	
Meeting area	42.00	
Storage for products	28.00	
Storage for materials	28.00	
Ice sales room	3.78	
Retail market	27.00	
Administrative buildings/premises	46.75	
Kitchenette	7.00	
Entrance/corridor	37.25	
Warehouse for office equipment	3.57	
<b>(ii) Public toilet</b>	<b>43.20</b>	One story building made of reinforced concrete Continuous footing, base-slab foundation Timber truss
Men/women toilet	40.24	
Dressing room	2.96	
<b>(iii) Waste Depot/Gas station</b>	<b>19.50</b>	Construction of walk-in made of reinforced concrete Conventional flat foundation, direct foundation Timber truss
Security guard /Fuel station	10.50	
Waste depot, Warehouse	9.00	
<b>(iv) Space for fuel tanks</b>	<b>28.86</b>	Construction with blocks / reinforced concrete slab foundation

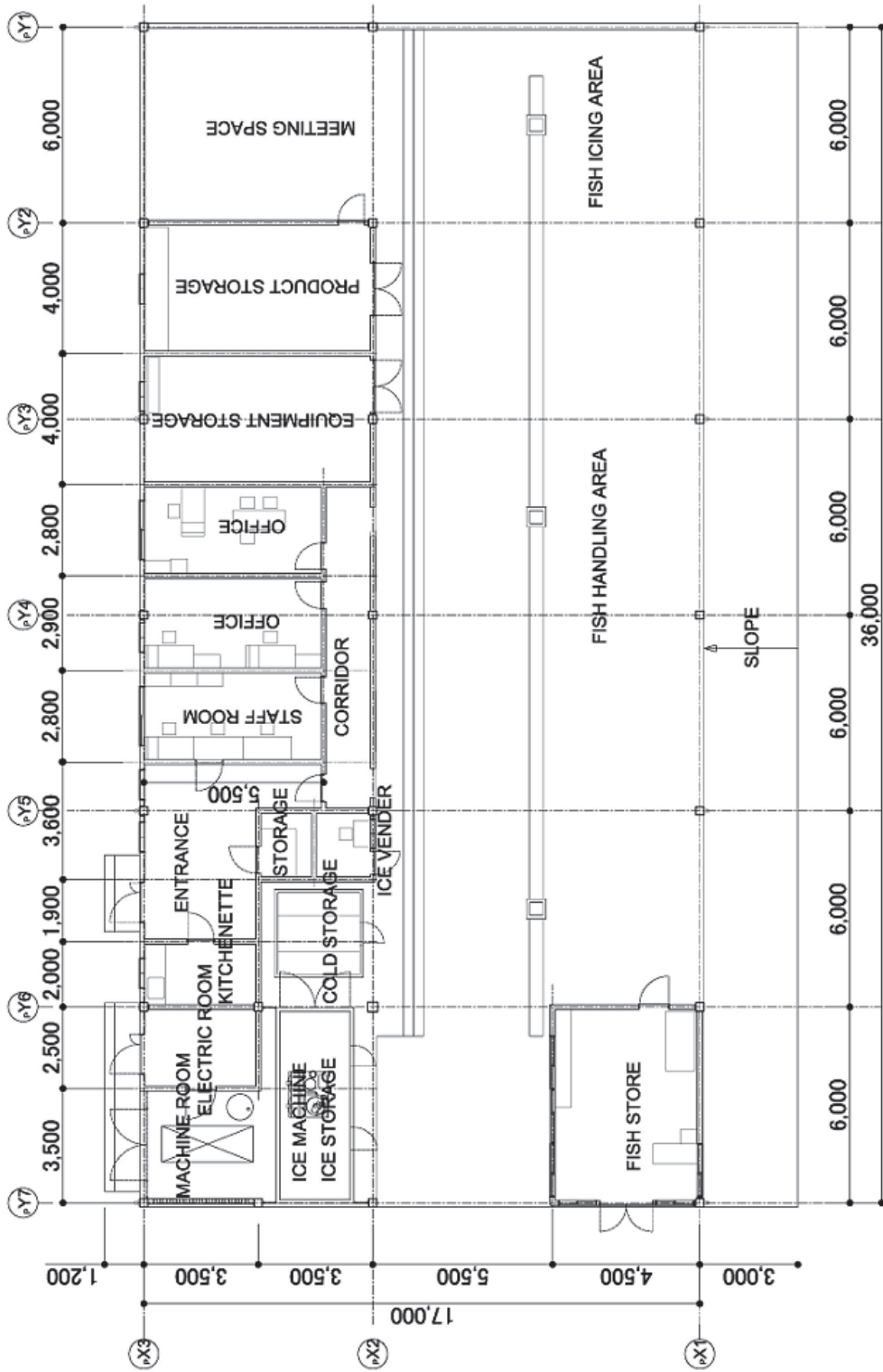
#### 3-6-6-2. Outdoor structure and others

**Table 3-16: Characteristics of outdoor structure and others**

Items	Characteristics	Quantity
Ice making plant	Flake ice, Capacity : 2.5t / day	1
Freezer for ice	20 feet refrigerating container (equipped with cooler)	1
Refrigerated shed	With insulation boards -5°C (fitted with cooler)	1
Flooring in the premises	Simple flooring with concrete	646 m <sup>2</sup>
Anti-erosion system (the shore side)	Geotextile 3 mm thick, gabion in plastic 2.0 x 0.5 m	Total length of 56 m
Drainage channels around the premises	Made of concrete, partly covered with concrete covers	Total length of 153 m
Exterior walls	Concrete blocks H = 2000 - 2200	Total length of 140m, with 3 steel doors
Deep well	Depth about 80 m, water pipes in PVC dia. 125, submerged pump 2.8 kW (>5 m <sup>3</sup> /h), chlorine instillation device	1 lot
Others	Sorting area / treatment basin by infiltration Public toilets / digester pit / cesspool Emergency generator (50KVA) Outdoor lighting	3 lots 1 lot 1 set 1 set

3-6-6-3. Basic design drawing



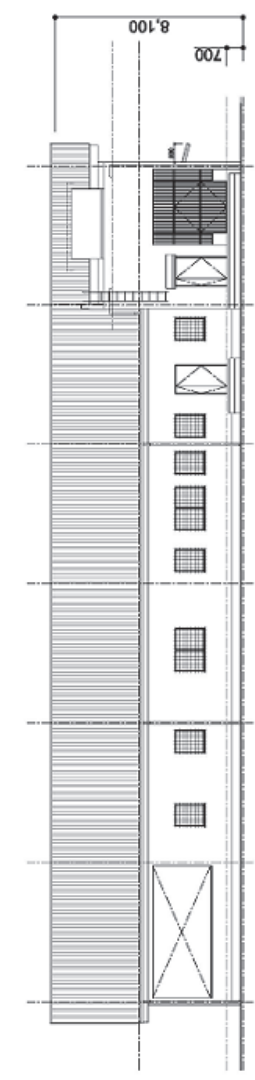


PLAN

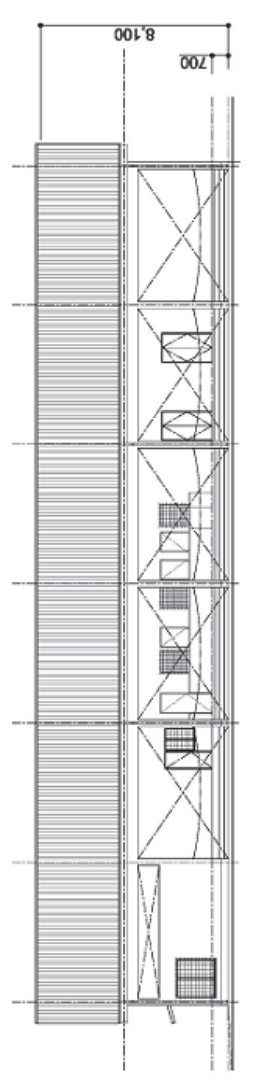


(1) FISH HANDLING BUILDING

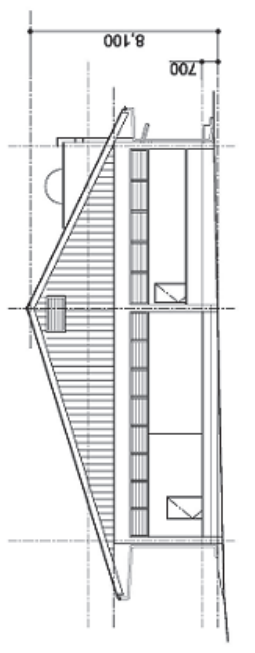




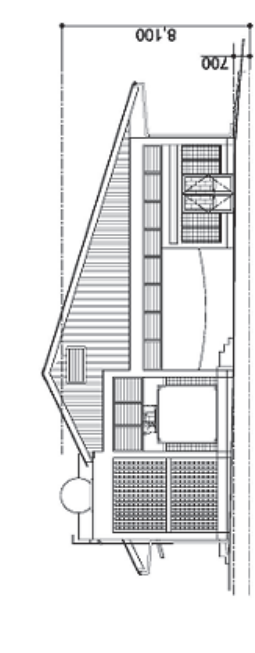
EAST



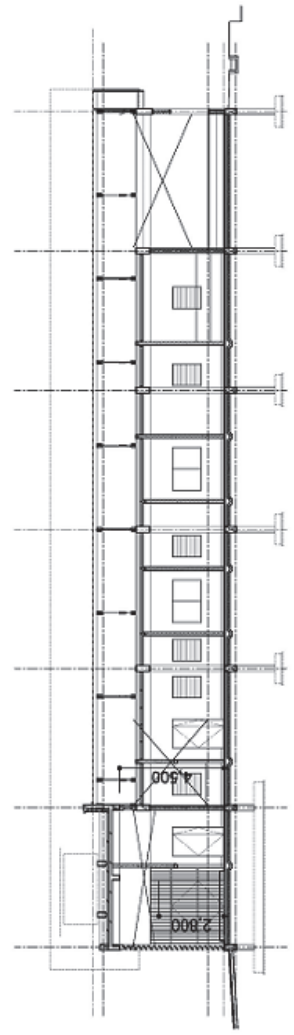
WEST



SOUTH

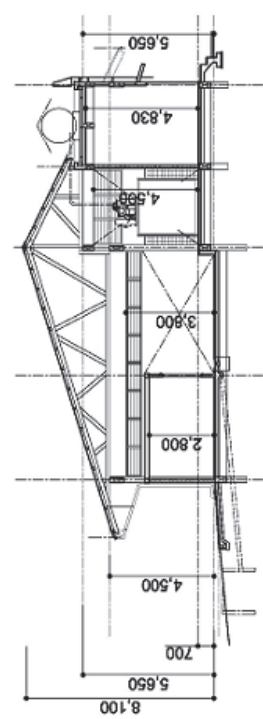


NORTH



SECTION

(1) FISH HANDLING BUILDING



SECTION







### 3-6-6-4. Equipment plan

**Table 3-17: Characteristics of equipment**

Equipment name	Characteristics	Quantity
Fish containers	500 litres in FRP (Fibber-glass reinforced plastic) with wheels	10
Isothermal fish containers	100 litres made of high-density polyethylene	10
Weighing scale	mechanical, capacity 100 kg, stainless steel plate	2
Weighing scale with dial	capacity 20 kg in stainless steel	4
Meshed fish box	(60x40x20cm) capacity 20 kg in plastic	40
Kitchen table	in stainless steel 180x120xH90cm	4
Sink	in stainless steel 120x60xH90cm	2
Fish stall	in stainless steel L=120cm	3
Freezer	capacity 400 litres -20°C	1
Electronic cash register	PC connexion, bar code reading, thermal printing	1
Fish baskets	(60x40x20cm) capacity 20 kg in plastic	120
Carts	made of steel pipes, capacity 300 kg	3
High-pressure cleaner	15Mpa, 550 litres/h, 2.5kW	1
Safe	weight: 50kg, W50cmxD45cmxH35cm	2
Office	150x70xH70cm wooden	6
Drawer/Table	30x70xH70cm wooden	4
Cabinet	120x40xH180cm wooden	6
Wheelchair	(one armchair type, with castors)	12
Deck chair	170x35xH40cm wooden	3
Meeting table	fold-out 160x60xH70cm	8
Stacking chair	in plastic	50
Lap top computer	(Windows 10, MS Office, DVD, LAN, WIFI)	2
Interruptible supplies (UPS)	for lap-top computer	2
Multifunction copy machine	format A3, monochrome, LAN	1
Ceiling mounted projection screen	1 x 2m	1
Whiteboard	90 cm x width 180 cm rolling	1
Folding ladder	in aluminium (H max.=5m)	1
Shovel	(ice and cleaning) available in the local market	10
Scrub brushes	available in the local market	20
Brooms	available in the local market	20
Buckets	(in plastic) 20 litres available in the local market	10
Rubber hose	length 20m available in the local market	4
Rakes	in steel (cleaning the beach) available in the local market	10

Locally available equipment among equipment to be procured, a bid was to be intengrated into that of construction works, and for equipment locally not available, it had been decided to procure from Japan and a bid was organised separately for the equipment.

### 3-6-6-5. Bid for the construction work

The local bid for the construction works of facilities was organised according to a formula and procedures as those of general public works in Congo.

Since it is required for the local construction companies of capacities to complete the works within the defined period with appropriate quality management, an open type conditional bid, where the examination of the qualification and bids can be made at the same timing, was adopted

to examine the capacities, such as size, experiences, capital, etc., of possible service providers at the bid opening.

Details of the bid and service provider selection are as follows:

(1) Bid public announcement :	28 April 2014
(2) Number of companies received bid document :	16
(3) Date of submission of bids :	04 July 2014
(4) Number of companies bitted their proposals:	8
(5) Bids evaluation :	from 5 to 07 July 2014
(6) Date of submission of the bids evaluation report :	08 July 2014

In line with the instructions to bidders and formalities of the major public works in Congo, in the bid opening room, the representative of JICA Kinshasa office, the representative of the Ministry of Fisheries and Aquaculture, the Consultant and the local engineering firm were in attendance and checked the presence/absence of documents required in Bid documents, then the evaluation committee checked the contents of the documents.

Further to the evaluation, 2 companies MIAMBANZILA Sarl and CHINA XINMA ENGINEERING had been judged qualified, and MIAMBANZILA Sarl having made the cheaper proposal, the captioned company was recommended to JICA as the Contractor, and JICA office in DRC signed the contract with the MIAMBANZILA Sarl on the 1st August 2014.

On 16 August 2014, the groundbreaking ceremony for the artisanal fisheries center took place in attendance of the representatives of the Embassy of Japan, JICA office in DRC and the Ministry of Fisheries and Aquaculture. Construction works had started, but the progress had been slow and there had been a big delay on the schedule, despite the frequent directions of the Consultant and of the local engineering firm, the completion being still unpredictable, whereas the date of 30 April 2015 – the time limit date of the completion and delivery – had been fast approaching, JICA decided not to extend the construction period and terminated its contract with the MIAMBANZILA Sarl.

For the selection of the company taking over the construction works - since it would be about the execution of a bid under special circumstances for taking over works - restricted bid procedure was adopted to chose a company having technical capacities to continue the works and execute them within a limited execution period.

(1) Date of bid announcement :	08 June 2016
(2) Number of companies nominated :	3
(3) Submission of proposals :	11 August 2016
(4) Number of companies submitted their bids:	3
(5) Bids evaluation :	12-13 August 2016
(6) Submission of the bids evaluation report :	19 August 2016

In line with the instructions to bidders and formalities used for the public works in Congo, in the bid opening room, the representative of JICA Kinshasa office, the representative of the Ministry of Fisheries and Aquaculture, the Consultant and the local engineering firm were in attendance and checked the presence/absence of documents required in Bid documents, then the evaluation committee checked the content of the documents.

Further to the evaluation, OCEANA was judged to be awarded, made the lowest proposal under the ceiling amount, the company was recommended to JICA as the Contractor, and JICA office in DRC signed the contract with the company on the 23rd August 2016.

The contract signed between JICA office in DRC and the company OCEANA stipulates the completion date by the 31st May 2017; but even though tax to be exempted as to the R/D (Records of Discussion on the project between the Government of Congo and JICA) - as the tax exemption certificate from the Ministry of Finance of Congo had not been issued up to the date when the ice making plant was ordered - the execution period was extended by 4 months, up to the 7th October, because the delay had been deemed to be of the case of Force majeure, as the delay due to stalling of the tax exemption procedure.

Since the ice making plant to be imported, it took as a whole 1.5 months to procure it: 1 week for packaging and arrangement of the shipment, 3 weeks for marine transportation, 1 week for custom clearance and 1 week for installation and inspection. The various provisions, assembly and preparation of transportation included, should have been completed by mid August 2017, but an outstanding balance invoice required for starting the manufacturer's shipping procedure was received on 22nd August by the Contractor, who made a bank transfer to the manufacturer on 13th September. However, the money transfer from Congo to overseas being subject to IMF stringent regulation, the fund transfer that should have taken 2-5 days, was made only on the 5th October. The manufacturer confirmed the reception of the money in his bank account on the 9th October, a vessel was chartered the next day on 10th October, and thus the supply of the ice making plant had been significantly delayed.

As external causes of the delay of ice-making plant supply, the lack of foreign currencies due to the worsening of the economic situation in Congo, and the extension of the general procedure for money transfer from Congo to overseas, further to the limitation of overseas transfers from all banks in the country stipulated by the Congolese government - thus - the money transfer procedure from Congo to overseas took about 3 weeks. In reference to Force majeure conditions, an amended contract was signed to extend the execution period and the reduction/exemption of the delay penalty, works were completed on the 2nd February 2018 and the facility handed over to the Ministry of Agriculture, Livestock and Fisheries of Congo by JICA.

The inaugural ceremony for the Artisanal fisheries Support Centre of Pointe Noire (CAPAP) took place at the centre on 4th June 2018 in attendance of the Minister of Agriculture, Livestock and Fisheries, , the Prefect of Pointe-Noire department, the Prefect of Kouilou department, the Mayor of Pointe-Noire, the Mayor of Mongo Mpoukou administrative district, the Director

General of Fisheries and Aquaculture, The Director of Pointe Noire Port Authority, etc. and for the Japanese side : Mr. Karube, the Ambassador of Japan in DRC, Mr. Shibata, the Resident Representative of JICA office in DRC, as well as members of the Embassy and JICA office and persons in relation with PECHVAL project. EU Ambassador, French Development Agency representative (FDA) and FAO representative also attended the ceremony.

### 3-6-7 Bid for equipment to be procured from Japan

Among the equipment of the Artisanal fisheries Support Centre, those not available in Congo is to be procured from Japan and an open general bid was organised in accordance with the procurement guidelines of JICA.

#### 3-6-7-1. Equipment

**Table 3-18: Equipment procured from Japan**

1 Fish containers	Capacity about 500 litres	10 units
2 Isothermal fish containers	Capacity about 120 litres	10 units
3 Mechanical weighing scale (plate scale type)	Weighing capacity over 100 kg	2 units
4 Weighing scale with dial	Weighing capacity over 20 kg	4 units
5 Mesh fish boxes	Capacity about 35 litres	40 units
6 Stainless steel kitchen table	180cm x 90cm x 80~90cm	4 units
7 Sink	1 reservoir, stainless steel sink for heavy kitchen work	2 units

#### 3-6-7-2. Supply conditions

- (1) Modalities: Delivered at the destination, transportation up to the destination
- (2) Exporter: Contractor
- (3) Boarding port: Ports in Japan
- (4) Destination port: Pointe-Noire Port, Republic of Congo
- (5) Delivery date: this 31 May 2017

#### 3-6-7-3. Bid proceedings

The bid announcement was made on 15 November 2016, and companies Sanyo Syoji Co., Ltd. and Nitto Seimo Co., Ltd. applied for the bid. Both companies have received the class A qualifications for competitive bidding of the procurement of the products and materials under the unified and common qualifications criteria for ministries and public agencies in Japan.

##### (1) Date and place of bidding

- ① Date and time: on Friday, 16 December 2016, at 2h00 p.m.
- ② Venue: Meeting room, Fisheries Engineering Co., Ltd.,

8F, Shinjuku Hokuto Bldg., 16-8 Shinjuku 2-chome, Shinjuku-ku, Tokyo,  
Japon

(2) Result of the bid

The bid opening took place after verification that there is no problem with the bid documents submitted by the two companies.

**Table 3-19: Result of the bid for equipment procurement**

Order	Name	Bid amount
1 <sup>st</sup>	Nitto Seimo Co., Ltd.	6,480,000 yens
2nd	Sanyo Syoji Co., Ltd.	6,800,000 yens
Estimated amount by the Consultant		6,581,400 yens

Further to the evaluation, the company Nitto Seimo Co., Ltd. having made the lowest bid cheaper than the estimated amount was awarded as the successful bidder and a contract for equipment procurement was signed with the latter on 7th January 2017. The equipment arrived in April 2017 and were custom cleared and inspected, but since construction works of the facility were not yet completed, they had been temporarily stored in the construction company's warehouses, then transported to the CAPAP after completion of the facility.

### **3-6-8 Management and operation of artisanal fisheries facilities**

#### **3-6-8-1. Objectives of the pilot project for the operation of artisanal fisheries facilities**

In the area of maritime artisanal fisheries, in Congo, more than 10 fishing associations established by type of activity are working stationed in Songolo beach, which is the project site. In Congo, even for the same type of activities, organisations were different for Congolese and foreigners, and their activities were centred on assistance for livelihoods and financial assistance for the various ceremonies of major life events, but there was no organic collaboration between organisations and their results were little effective and very limited. It is in this context that the Association for Self-promotion of Fishery Community Initiatives (AICP), a federation gathering associations of all nationalities carrying out various activities was established on 18 April 2005 with the support of FAO, and has been recognized by the Congolese government.

Artisanal fisheries facilities developed under PECHVAL pilot projects, serve as place of activity aiming to check that the improvement of fish products quality can contribute to increasing the income of fishermen, processors, distributors and vendors, and it is essential that they participate by themselves to the operation of these facilities. For that reason, it had been decided to target the tripartite operation of facilities by the AICP, one federation gathering associations of all nationalities carrying out various activities, the Ministry of Fisheries and Aquaculture (MFA), the Pointe-Noire Municipality.

AICP has been established as federation, but its organisation and by-laws are not defined and since its organisational capacities and performances are more vulnerable, it is necessary to draft its statutes so that it can operation properly artisanal fisheries facilities, accordingly to the drafted statutes. The assistance for the drafting of statutes, for organising meetings and for strengthening the organisation, for example training of the executive staff, took place.

AICP, MFA and Pointe-Noire Municipality will create a management body aiming to the autonomous operation and management of artisanal fisheries facilities, and the project provided its support for this creation.

Artisanal fisheries facilities developed under PECHVAL project are those unprecedented in Congo, and candidates such as the executive staff in charge of their operation - without previous experience – made a fact finding visit to similar facilities in Senegal, were trained on necessary tasks to develop necessary operation capacities.

Simultaneously, PECHVA supported the drafting of temporary statutes and rules on accounting and operation of facilities, and actors defined those operation rules.

The effective and sustainable utilisation of artisanal fisheries facilities and equipment under this project would be materialized by the autonomous operation of the facilities by the management body and the compliance to regulations by users, such as fishermen, processors, distributors and vendors when they carry out their activities, which would contribute to the improvement of the value chain of artisanal fisheries products in Pointe-Noire.

#### 3-6-8-2. Assistance for strengthening the organisation of stakeholders

AICP activities had significantly declined after the death of its president in March 2013, who was a key person for all activities from its establishment in 2005. Under the lead of volunteers desirable to reactivate the association, a temporary restructuring committee was created in July 2013, the recruitment of members and the preparation of the general assembly took place in October 2013, new executives were selected, and activities restarted. PECHVAL provided its assistance for the drafting of AICP statutes and by-laws, provided training to the executive staff on the management of the association and financial management, etc. for building the organisational capacity of the new committee of AICP executives, but it appeared that some of the executive selected didn't participate to the association meetings, and didn't understand the content of activities, which pushed up the dissatisfaction of members. Thus, some members declared that « The AICP didn't make any progress. », and at the general assembly on November 2014, the executives selected at the previous assembly were dismissed, a new AICP special assembly was hold on 27 February 2015 to choose a new committee of executives, new AICP statutes and by-laws were approved and new executives appointed.

3-6-8-3. Establishment of the Company for the enhancement of fishery resources management of Songolo (SOVAGHAS) as management body of the Artisanal fisheries centre

(1) Legal status

Under the Congolese law, the categories of a private establishment are classified in Association, Civil society and Commercial Firm. In case of Commercial Firm, tax burden is heavier compared to the scope of activities for the new organization, and in case of an Association, formalities for the creation of the organization and its approval are time consuming. In case of Civil society, the establishment is possible during the PECHVAL project period, and operation under financial burden is compliant to the scope of activities possible after the establishment. So as the operation and management organization for the Artisanal Fisheries Center, the Civil Society, SOVAGHAS ( Société de valorisation de la gestion des produits halieutiques de Songolo ) was to be established.

(2) Organization

The capital of SOVAGHAS was decided at 1,000,000 F.CFA; AICP as the main user of the artisanal fish center will subscribe for 500,000 F.CFA, the MFA, as the competent authority, will subscribe for 400,000 F.CFA and Pointe-Noire Municipality, the local government to which belong the artisanal fish center will subscribe for the remaining 100,000 F.CFA. The Executive board is composed of representatives of contributors, the AICP, the MFA and Pointe-Noire Municipality. The following figure shows the organisation chart of SOVAGHAS. The Director of the centre and other staff were to be recruited upon the completion of facilities.

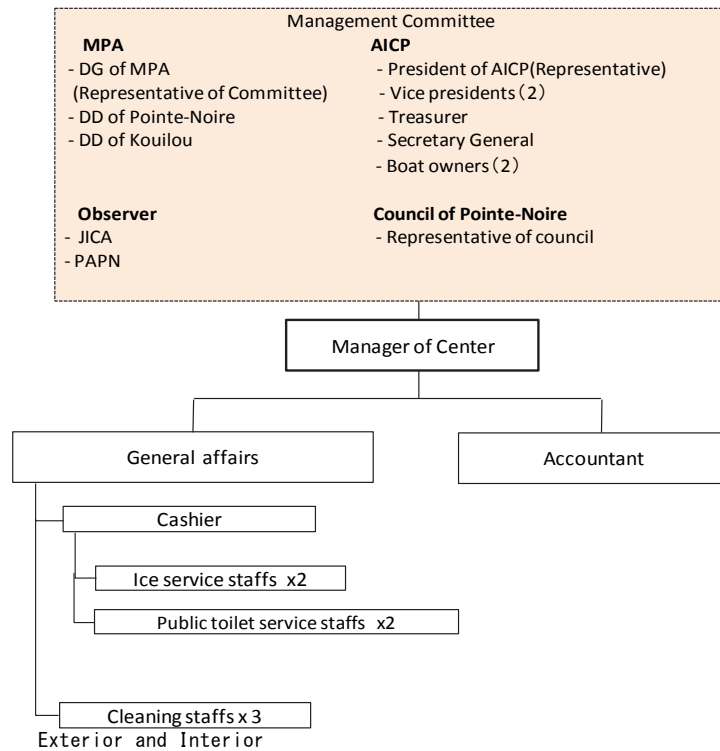


Figure 3-16 : SOVAGHAS Organization chart



### (3) Statutes and internal rule

PECHVAL had supported the drafting of the statutes and the internal rules of SOVAGHAS, and contributors' representatives, the AICP, the MFA and Pointe-Noire Municipality, had agreed on them and endorsed. Signed statutes and by-laws were submitted to Pointe-Noire Commercial court, and the establishment of SOVAGHAS was authorized on 29 December 2015. Registration formalities of the company were made for the completion of facilities.

#### 3-6-8-4. Training abroad for the operation and management of the Center

In Congo, there was no artisanal fisheries facilities, organizing of fishermen's association remains sluggish, and no experience on autonomous operation of facilities by means of an independent management body.

To make the SOVAGHAS Management board members and representatives of stakeholders acquire the knowledge and experiences on the role of the management organisation and tangible operation activities, a training in the Republic of Senegal (hereinafter referred to as « Senegal ») was organised. Under this framework, they had visited Lompoul Fishery Centre, Kayar Artisanal fisheries Centre, Kaolack and Dakar Fish markets, that are fishery facilities financed by Japan and were provided lectures such as (1) Role and importance of the management organisation, (2) Responsibilities and functions to provide for, and (3) Necessary knowledge to fulfil the responsibility and for the supervision of activities, provided by the responsible personnel of the operation and management of each establishment.

Among training topics received in each facility, more than half participants answered that lectures « Operation of facilities and responsibilities of the executives » are the most interesting for them, and in Kayar where activities for fishermen's organisation and autonomous management of resources are active, they were strongly interested in specific activities of the centre such as « Coexistence of nomadic and sedentary fishermen », « Women organization », etc.

In the survey after the training on the effectiveness of the training provided, 14 out of the 15 participants answered « Very effective », 2 answered « Very satisfied » and 13 « Satisfied » for the acquisition of necessary knowledge for the operation. We can say that the satisfaction level and the level of achievement of results for the whole training content was high among the participants, and the training was effective for strengthening the knowledge and understanding on the management body and activities for the operation of facilities.

The knowledge acquired by the trainees during this training was shared with other stakeholders through the Joint Coordination Committee (JCC). SOVAGHAS organization chart, the internal rules for utilisation of facilities and the staff employment plan were revised, considering the positive points and improvement acquired from the examples of operation and management of Senegal. Trainees who joined the training had wished to use the results of their internship and expressed positively their viewpoint by saying « it is necessary to adopt positive points from Senegalese establishments to our artisanal fisheries centre and not repeat the same mistakes as for negative points. » « That will serve as reference in case of problem in the management of the

new artisanal fisheries centre. » « Achieve a strict operation and management system and harmonious collaboration without nationality-based discrimination ».

3-6-8-5. Change the status of the operation and management organization for the Artisanal Fisheries Center to the administrative corporation (CAPAP: Centre d'Appui à la Pêche Artisanale)

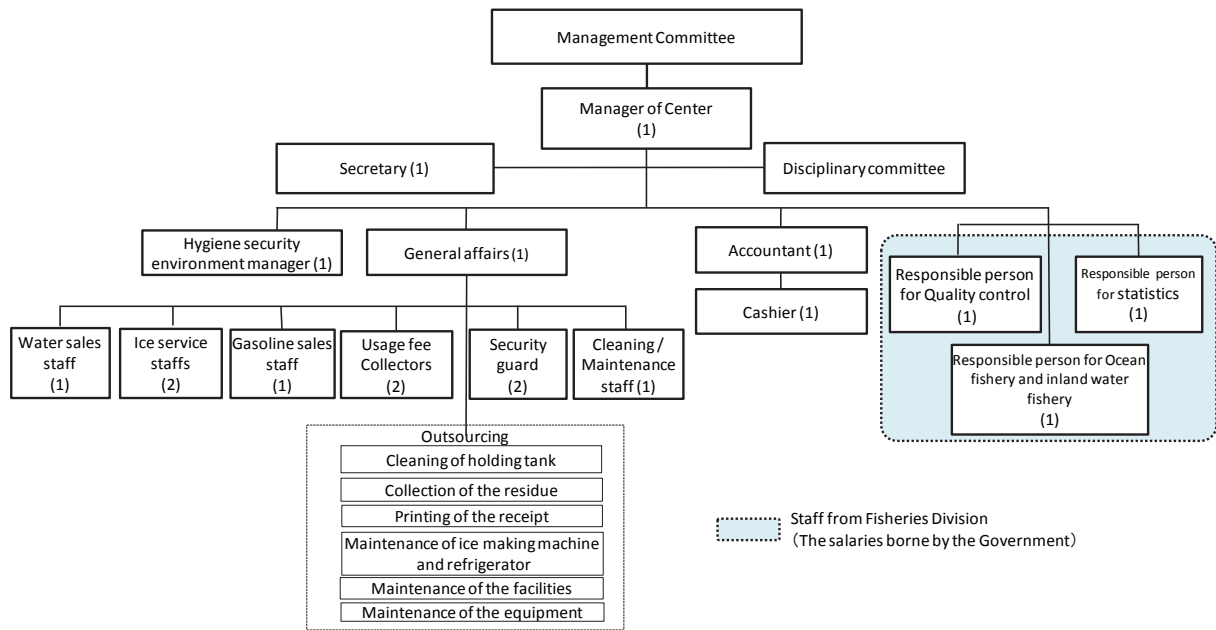
Before completion of Fisheries Center, a request for covering initial operation cost of the Center was made to the Ministry of Agriculture, Livestock and Fisheries, and negotiations on that issue took place with the Minister of Agriculture, Livestock and Fisheries, and the Director of the General Directorate of Fisheries and Aquaculture, but since the coverage of operation cost of a civil society by public funds was difficult, SOVAGHAS, the Civil society was decided to change into administrative corporation, Artisanal fisheries Support Centre, upon request of the Congolese party. The two points above were mainly referred to for this change.

- (1) In case of civil society, the government can hardly grant a subsidy in case of balance sheet deficit, which is possible in case of a administrative corporation.
- (2) In case of civil society, it is difficult to dispatch officials of the Ministry of Agriculture, Livestock and Fisheries (responsible for statistics or responsible for quality control, etc.), which is possible in case of administrative corporation.

**Table 3-20: Comparison of the type of organization**

	Civil society (former SOVAGHAS organization)	Administrative corporation (new organisation CAPAP)
Preferential measures on the taxes	Yes	Yes
Tax exemption on corporation tax and VAT	Yes	Yes
Procedure period for the establishment of the organization	About 2 months	More than 6 months
Financial assistance from other organizations	Impossible	Possible
Profit-making activities	Impossible	Impossible
Secondment of officials from the Ministry of Agriculture, Livestock and Fisheries	Impossible	Possible

The approval and endorsement of the decree by the Office of the President of the Republic is necessary for the establishment of a administrative corporation, a procedure that takes about 6 months. The statutes and the internal rules necessary for establishment of the CAPAP were submitted to the Ministry of Agriculture, Livestock and Fisheries at the end of March 2018. After verification by the legal officer at the Ministry of Agriculture, Livestock and Fisheries and endorsement by the Ministry of Agriculture, Livestock and Fisheries, the Ministry of Finance and Budget and the Ministry of Sustainable Development, formalities for government approval will end up with the decision of the President's Office.



**Figure 3-17: CAPAP Organization chart**

**3-6-8-6. Training to fresh fish handling and freshness keeping in CAPAP facilities**

After CAPAP opening, PECHVAL used the facilities for training on fresh fish handling and freshness keeping from 23rd June to 5th July 2018.

At the opening of the centre - due to wholesalers' suspicion, dissatisfaction and despise towards the administration in general - the centre had bad reputation and was barely frequented, but thanks to public relation and awareness-raising efforts of Fisheries Directorate and the Centre staff, wholesalers little by little came to meet at the centre, fish started being landed in front of the center and consumers' visit at the centre have gradually become more frequent.

PECHVAL instructed a team of 4 agents of CAPAP, after PECHVAL explained them the content of the pilot project for keeping the freshness (Improvement of fish quality), and lectured on the theory for keeping the freshness, to sensitize directly consumers, wholesalers, fish cutters and fishermen who come to CAPAP to the importance of sanitary management and freshness management (wash well the fish, maintain the fish at low temperature), to organise regularly meetings with wholesalers and fish cutters, and to exchange their viewpoints. The supervision of fish cutters includes collecting fish remains in a box, discarding in one garbage bin and gathering with a broom the scales scattered so that they don't flow in the drainage channel. And in case of fish preservation in cold storage, wash the fish rapidly and put it in ice to avoid quality deterioration during the storage and contamination of other fish. The team had meetings also every day after the end of the work to draft a weekly report of activities to the Departmental Directorate.

Since, wholesalers were not actually motivated for washing the fish and the preservation in ice, a demonstration sale took place under PECHVAL, in order to show wholesalers the correct fish handling, enabling to supply high quality fish to customers, and make consumers became aware.

#### 3-6-8-7. Training of CAPAP agents

The training on accounting and management of CAPAP agents had entrusted to a local consultant took place from 17 September to 31 October 2018.

The training was about the treatment of the cash flow and the accounting management with accounting software, supervision of accountants and training to routine activities of the director, accountant, cashier, ice-making plant agents, secretary of the Centre according to their professional code of conduct. But since the official endorsement of CAPAP by presidential decree was not made until the training was provided, and that the official recruitment of agents was impossible, making a public announcement for the recruitment of agents by using a local consultant was abandoned, the positions of agents were revised, further to the change of status as Civil society: SOVAGHAS into administrative corporation: CAPAP, and training was provided on that basis.

Moreover, for candidates of the member of the steering committee, workshop on organisation management related to CAPAP operation, internal audit, etc. was conducted.



## **CHAPTER 4. MANAGEMENT OF COASTAL ARTISANAL FISHERIES BY THE CONGOLESE GOVERNMENT**

### **4-1 Assessment of the current coastal artisanal fisheries management**

Under PECHVAL Project, 6 pilot projects, i.e. « Pilot project for fish quality improvement», « Pilot project for the improvement of selling practices in the public markets », « Pilot project for the improvement of fishery products processing practices», « Pilot project for maintenance and management of landing beaches », « Pilot project for the construction of artisanal fisheries facilities and equipment supply » and «Pilot project for management and operations of artisanal fisheries facilities » were selected and executed, and a master plan for the improvement of fishery products value chain in artisanal fisheries be established with observation through these pilot projects and the analysis of the value chain. But therecognition acquired via pilot projects, by their nature, will enable having a specific viewpoint and solving problems at microscopic scale, but general information on Congolese fisheries and its challenges are insufficient.

Fisheries is divided into several fields from reproduction of fish resources to consumption, through fishing, processing and distribution, and is also composed of various steps and elements interrelated in a complex manner, such as the natural environment, fishing types, the technical level, socio-economic characteristics, etc. of the country and the concerned area. Thus, fishery management methods and their combinations are also diverse. With the « FishMAT software : Fishery Management Assessment Tool), a tool for the fishery management assessment in developing countries »<sup>28</sup>, a tool developed to seize simply and objectively the current situation of fishery management (what is done) and challenges (what is not achieved) fishery management in developing countries, we will examine carefully fishery administration problems in Congo from a macroscopic viewpoint by using indexes of measures made by the government for artisanal fisheries management, hoping that it will contribute to the establishment of a master plan for the improvement of fish products value chain in artisanal fisheries indicating the way forward.

### **4-2 Overview of FishMAT, fishery management assessment tool for developing country**

FishMAT divides into 8 categories essential measures for fishery management, and after having weighted each factor of fishery management in each category, checks the existence of activities in the country, and gives as index the current situation of fishery management measures per category in the country. The following table gives an overview of each category of resources management activities.

---

<sup>28</sup> Baseline report on fishery resources management abroad of 2014, Marinoforum 21, Japan, March 2015

**Table 4-1: Main categories of resource management activities by objective and their content**

Category per objective		Description
I.	Basic information to identify the current situation	Basic information for the establishment of fishery resources management plan such as the number of fishermen for coastal fishing, volumes of catches, current situation of fish distribution
II.	Maintenance/Rehabilitation of the ecosystem	Increase of the productivity of fisheries, activities for increase in aquatic resources
III.	Resource management (Input-Control)	Qualitative and quantitative regulation of fishing operations
IV.	Resource management (Output-Control)	Qualitative and quantitative regulation of catches
V.	Improvement of business structure	Change of fishing types, alternative income sources
VI.	Improvement of processing and distribution for fish products	Improvement of the price and value added, reduction of post-harvest losses
VII.	Reinforcement of human resource and organizations	Training of human resources, organisation strengthening
VIII.	Reinforcement of Capabilities for assessment and analysis	Development of technology and resources, understanding of the ecosystem and forecasting of it

In order to assess the capacity of the implementation of strategic plans of fishery and management capacities of the government, there are another criteria by ranking the various management items according to MCSA code (M : Monitoring, C : Control, S : Surveillance, A : Management activities), in which the various results of activities will be assessed and evaluated item by item. Followings are the definitions of the MCSA.

M : Monitoring	Continuous activities necessary for identifying the volume of fishing effort and the volume of resources
C : Control	Control of activities on the utilisation of fish resources
S : Surveillance	Surveillance necessary to the maintenance of the regulation and management of fishing activities
A : Management activities	Activities of stakeholders working in the fishery sector and concerned organisations necessary to maintaining good order in fishing activities.

With FishMAT, we have analysed fishery management in Congo and assessed fragile areas by combining the 8 categories and MCSA rankings aforesaid and we aim to identify the higher priority areas for cooperation in fishery management.

#### 4-3 Items and weighing of FishMAT, as well as MCSA code

FishMAT items with their weighing and MCSA code are indicated below.

**Table 4-2: Items on the Basic information to understand current situation**

No	Factor	Weighing	Code MCSA
1	Information on the number of fishing vessel and local fishers	2	M
2	Information on the number of days of fishing operation	1	M
3	Information on the catch amount of principal species	2	M
4	Information on the distribution amount of principal species	1	M
5	Price data on landing and retail site for principal species	1	M
6	Information on the facilities of landing site such as number of ice-making machines and storage	1	M
7	Information on the domestic consumption of principal	1	M

No	Factor	Weighing	Code MCSA
	species		
8	Information of the number of middle-persons in active	1	M
9	Information of fisheries cooperatives in active	2	M
10	Information of resource management activities in local fishers	3	M

**Table 4-3: Items on the Maintain/Rehabilitation of the Ecosystem**

	No	Factor	Weighing	Code MCSA
On Land	1	Regulations on inflow/outflow sediment including sands/soil mining	2	C
	2	Regulations on sewage and industrial effluent water	1	C
	3	Regulations on deforestation including mangrove	1	C
	4	Regulation on waste disposal and control	1	C
	5	Surveillance system on the practice of the above items	2	S
On water	6	Activities for rehabilitation of environment (Coral reef, mangrove, tidal flat and seaweed bed)	2	A
	7	Surveillance system for preventing IUU fishing	2	S
	8	Seed production & release and installation of nursery ground for stock enhancement	2	A
	9	Conservation activities for rare and endangered species	1	S
	10	Public awareness on the practice of the above items	1	A

**Table 4-4: Items on the Resource management (Input-Control)**

No	Factor	Weighing	Code MCSA
1	Fishers / vessel registration system for each fishing type	2	C
2	License / permission system for each fishery	1	C
3	Surveillance system on the practice of the above items	2	S
4	Zoning of fishing ground by fishing method	2	C
5	Surveillance system on the practice of the above item	2	S
6	Regulation on fishing vessel capabilities such as HP, Tonnage, length	1	C
7	Restrictions on the fishing method including destructive fishing	2	C
8	Surveillance system for destructive fishing	2	S
9	Restrictions on the fishing gear or equipment of fishing vessel	1	C
10	Restrictions on the fishing period (months in year)	1	C
11	Restrictions on the operational time of fishing (time in a day)	1	C
12	Restrictions on allowable operational days (days a year)	1	C
13	Surveillance system on the practice of the above items	1	S
14	Regulation on fishing ground such as no-fishing zones, marine preserves, MPAs.	3	C
15	Surveillance system on the practice of the above item.	3	S



**Table 4-5: Items on the Resource management (Output-Control)**

No	Factor	Weighing	Code MCSA
1	Systematic mechanisms to understand fish-catch information such as catch amount, size of caught fish.	2	M
2	Regulation on catch size of principal fishery species or restrictions on catch by maturation stage or sex of crustaceans	2	C
3	Surveillance system on the practice of the above item	2	S
4	Restrictions on by-catch in industrial fishing	1	C
5	Surveillance system on the practice of the above item	1	S
6	Restrictions on upper-limit of catch amount per each fisher	2	C
7	Surveillance system on the practice of the above item	2	S
8	Restrictions on upper-limit of catch amount per region or in the nation	1	C
9	Surveillance system on the practice of the above items	1	S
10	Regulation or support system on local fishers or fishery cooperative for fish catch recordings	2	M
11	Public awareness or fishers' training program regarding above items	1	A
12	Periodical communications between fishers and government regarding above items	1	A

**Table 4-6: Items on the Improvement of business structure**

No	Factor	Weighing	Code MCSA
1	Activities or guidelines for cost saving of fishing operation	1	A
2	Activities or guidelines for fish preservation	2	A
3	Activities or guidelines for value-adding to fish products	1	A
4	Activities or guidelines for alternative income sources	3	A
5	Activities for diversion or change of fishing type	1	A
6	Activities for cooperative shipping or marketing by local fishers groups or fishery cooperatives	2	A
7	Finance support system such as tax reduction or financial compensation for local fishers or fishery cooperatives which assist any resource management scheme	1	A
8	Micro-finance scheme for local fishers	2	A
9	Activities for the business development service (BDS) for fishery cooperatives and related small and medium-sized enterprises (SMEs)	1	A
10	Public awareness activities by administrative institutions regarding above items	1	A

**Table 4-7: Items on the Improvement of processing and distribution for fish products**

	No	Factor	Weighing	Code MCSA
Onboard	1	Activities for improvement of fish preservation techniques	2	A
	2	Technical guidance by administrative institutions	1	A
	3	Fishing vessels equipped with cold storage facilities for fish preservation	1	A
	4	On-board sanitary standard	1	C
	5	Surveillance system on the practice of the above item	1	S

	No	Factor	Weighing	Code MCSA
After landing	6	Sanitary and quality standard for fishery products	1	C
	7	Surveillance system on the practice of the above item	1	S
	8	Activities for improvement of processing techniques	1	A
	9	Activities for improvement of fishery products distribution	2	A
	10	Activities for improvement of fish landing sites	1	A
	11	Activities for improvement of fish markets	2	A
	12	Public awareness activities by administrative institutions regarding above items	1	A

**Table 4-8: Items of the Reinforcement of human resource and organizations**

No	Factor	Weighing	Code MCSA
1	Officers for dissemination and protection in each local area	2	M
2	NGOs supporting fishery management activity	2	A
3	Periodical communications between central and local fishery authorities	1	M
4	Periodical communications between fishery authority and related other authorities such as ministry of environment and coast guard	1	M
5	Periodical communications between fishery authority and fisheries cooperatives	2	M
6	Periodical communications between private organizations such as fisheries cooperatives and NGOs	2	M
7	Education system for the local officers	1	A
8	Education system for the staff of research institutes	1	A
9	Education system for the local fishers	2	A
10	Education system for the middlepersons and processing persons	1	A

**Table 4-9: Items of the Reinforcement of Capabilities for assessment and analysis**

No	Factor	Weighing	Code MCSA
1	Research institutes for fishery science	2	M
2	Stock assessment to principal species by local researchers or institutes	2	M
3	Studies for ecological and biological characteristics such as spawning ground, period on principal species by local researchers or institutes	2	M
4	Studies for oceanography such as current variation, salinity change and ocean temperature anomaly by local researchers or institutes.	1	M
5	Studies for biological chemistry on coastal, estuarine and swampy waters by local researchers or institutes	1	M
6	Studies for socioeconomics on fishery by local researchers or institutes	2	M
7	Studies for processing techniques by local researchers or institutes	1	M
8	Studies for fishing equipment and techniques, by local researchers or institutes	1	A

No	Factor	Weighing	Code MCSA
9	Periodical communications between the administrative organizations and researchers regarding above items	1	A
10	Dissemination activities for the research results regarding above items	1	A

#### **4-4 Assessment of the current situation of Congolese fisheries**

For the assessment of the current situation of Congolese fishery management, after having analysed fishery management status before the implementation of PECHVAL project, we have examined which areas are changed with PECHVAL project activities, so that we could confirm the impact of the PECHVAL projects and reflect on the improvement plan of Congolese fishery management.

##### **4-4-1 Items on the Basic information to understand current situation**

As for the factor « data on the number of fishing boats and fishermen », which are renewed every year, as there is the related registration system and quotas of catches shall be defined on that basis. Data collectors assigned to the Songolo and Base Agip beach - that is the prime landing beache – should collect the data on fish species and volumes of catches (the number of fish boxes) at each landing of boats on their return from fishing trip. Data collection on artisanal fishing catches, has started only in 2010. There would be certainly missing data, mainly for landings early morning and late night, but the estimation method of these data is being established in collaboration with FAO. However, the information on consumer fish prices, consumptions of fish products, as well as the information on distribution out of markets is not collected at all. For the « data on resource management actions undertaken by fishermen », the Beninese fishermen group makes an self-imposed restraints on fishing during pelagic fishing peak season - but which - in fact doesn't target resources management, but rather aims to taking measures against fish price slump, due to the excess supply on markets.

##### **4-4-2 Items on the Maintain/Rehabilitation of the Ecosystem**

Environment preservation, for example run-off of sediments, sewage from households and industries, and waste treatment, etc. is ruled by the law, but its surveillance is still poor. In the fishery area, the surveillance of industrial fishing vessels is made by surveillance boats or by satellite using the VMS system (Vessel Monitoring System)<sup>29</sup> to prevent IUU fishery (illegal, unreported and unregulated fishing), but there is only one single surveillance boat due to the lack of budget, thus surveillance activities are inadequate. Furthermore, activities for the restoration of resources haven't started. Rules and the law do exist, but surveillance and control means are lacking.

<sup>29</sup> It has been decided on occasion of the Fishery Forum organised on 5th June 2018 by the Minister of Agriculture, Livestock and Fisheries to make compulsory VMS equipment (Vessel Monitoring System) not only on industrial vessels but also on artisanal boats, but details are not yet available.

#### **4-4-3 Items on the Resource management (Input-Control)**

The law and decrees on fishery rules fishing on the sea within 6 miles off the coast for artisanal fishing and from 6 to 200 miles for industrial fishing. The mesh size of net is also regulated by decree. The registration system of fishing boats had been started with industrial fisheries vessels, but registration is now also imposed to artisanal fisheries boats by type of fishing (3 types: pelagic fishing, demersal fishing and shark fishing). A quota system per fishing boat is imposed for artisanal fishermen. There is no regulation or special limitation defining the period, duration of fishing trip, and fishing hours. The surveillance of illegal fishing in fishing grounds where is forbidden to industrial fisheries vessels is made by one single surveillance boat, which is inadequate, there are constantly conflicts between industrial fishing boats and artisanal fishermen on - among others – mal-operations conducted by industrial fishing boats in the fishing grounds allocated to artisanal fishermen within 6 miles off the coast, entail damages on fishing gears, etc.

#### **4-4-4 Items on the Resource management (Output-Control)**

The data on catches are collected per boat, but not those on the size of catches (length of the fish, unit weight). There is a ceiling of catches per quota for individual fishermen, and not by origin of country or region, and since volumes of quotas for artisanal fishing are set much higher than volumes of actual catches, the quota seems to be most destined to the collection of registration and licence fees rather than the preservation of resources. The neighbouring area of Gabon border being reserved to the Natural Marine Park, this zone is totally forbidden to fishing. However, there is neither limitation of catches, nor surveillance system. Awareness-raising activities for fishermen are rarely conducted.

#### **4-4-5 Items on the Improvement of business structure**

Nothing is done yet in the 10 items of this category. There is no activity on the reduction of fishing cost, support to fishermen's association activities, the micro-financing system, keeping freshness and valorization or diversification of processing products, etc. and guidelines are not established. The improvement of administration management capacities is required.

#### **4-4-6 Items on the Improvement of processing and distribution for fish products**

In this category, activities on boats and after landing are presented separately. Fishing boats (canoes) targeting demersal fish use second hand domestic refrigerators as cold storage for their fishing trips of 3-4 days. Hygiene standards on boats are defined by the decree for industrial vessels, but nothing is determined for artisanal fishing, which complies with industrial fishing standards. Fish handlings onboard the industrial vessels are deplorable, and fish quality is already significantly deteriorated before the landing. Also, in this category, even though there are rules or standards, the problem is that those frameworks go unheeded.

Furthermore, hygiene and quality standards are not defined for fish handling on shore, and there

is no tangible activity for the improvement of landing places, fish processing, distribution, etc. There is no special market for fish. Stalls for fish products are installed in allocated areas in public markets. Hygienic conditions degradation in markets is an issue and public central markets of Brazzaville and Pointe-Noire are under construction.

#### **4-4-7 Items of the Reinforcement of human resource and organizations**

It is important for sustainable fishery management to have a system to develop human resources and to strengthen organisational factors. For transferring to fishers of techniques and knowledge acquired from technical assistance with international donors and developing assistance organisations, it is necessary to have extension specialists having hand-on knowledge on fishing, but currently there is neither extension specialist, nor system to train them. The Ministry of Fisheries has its headquarters in Brazzaville, and contacts with the departmental directorate in Pointe-Noire which control maritime fishery are relatively well secured. The cooperation with police is also ensured for the control of illegal fishing, but there is nearly no liaison with fishers and NGOs. The absence of extension specialist at the Ministry of Fisheries and regional directorates is one of the important causes of their modest communication with fishers. Moreover, in Congo, there is no educational/training establishment for fishery and the education-training system for fishery is not developed. Training for fishing and fish processing has not been done in Congo. Currently, group trainings in Japan organised by JICA and third country trainings are the main training possibilities for the officials of the Ministry of Fisheries.

#### **4-4-8 Items of the Reinforcement of Capabilities for assessment and analysis**

In Congo, there is no organization to conduct study or assessment of fishery resources, and there has not been done such study and assessment. While the insufficiency of fish supply is feared, fish supply depends considerably on imports, and the low self-sufficiency rate comes up for the strategic plan, actions towards increase in fish production should be undertaken, but the assessment of resource volumes based on the scientific information, studies necessary to determine the sustainable maximum yield (SMY) and basic fish data collection (age, size, sex) are not conducted. No cooperation is granted in this area by various donors or international organisations. One sole result was noticed in this category that is «the socio-economic research by Congolese researchers and research institutes», but it's not a specific research in fishery. There is neither fishery higher education institution nor research institute.

#### **4-5 Results of FishMAT analysis**

The table below presents the results of FishMAT analysis on fisheries management by the Congolese government prior to the implementation of PECHVAL project.

**Table 4-10: Results of FishMAT analysis for Congolese fishery management**

Fishery Management Category	Rating by category	Rating by category in percentage	Monitoring	Control	Surveillance	Management activities
Basic information to understand current situation	8/15	53%	8/15			
Maintain/Rehabilitation of the Ecosystem	13 / 15	87%		5/5	5/5	3/5
Resource management (Input-Control)	21 / 25	84%		12/15	9/10	
Resource management (Output-Control)	8/18	44%	2/4	3/6	3/6	0 / 2
Improvement of business structure	0/ 15	0%				0 / 15
Improvement of processing and distribution for fish products	3/15	20%		1/2	1/2	1/11
Reinforcement of human resource and organizations	4/15	27%	2/8			2/7
Reinforcement of Capabilities for assessment and analysis	2/14	14%	2/12			0 / 2
Total Rating	56 / 132	42%	14 / 39	21 / 28	18 / 23	6 / 42
Percentage by MCSA code			36%	75%	78%	14%

Among the 8 fishery management categories, 5 categories, namely « Resource management (Output-Control) », « Improvement of business structure », « Improvement of processing and distribution for fish products », « Reinforcement of human resource and organizations » and « Reinforcement of Capabilities for assessment and analysis » have a percentage inferior to 50%, which shows that there are several fields in which fishery management activities operated by the Congolese government shall be reinforced and more support should be provided to Congolese government activities. In particular, the mark given to « Improvement of business structure » is null, which indicates that there is no activity in this area. Moreover, the rate for « Reinforcement of Capabilities for assessment and analysis » is 14%, a very low level, with namely the mark for A (management activities) of 0. As for « Improvement of processing and distribution for fish products », its level is also low with a rate of 20%, and in this area, we gain only one point out of 11 for A (management activities). As for « Reinforcement of human resource and organizations », the rate is also low, of 27%, which shows the delay in Monitoring activities (M) and Management activities (A). The rate of « Resource management (Output-Control) » is of 44% in total, but the mark for Management activities (A) in this area is null by lack of awareness-raising activities of fishermen on the various controls and regulation of catches, actions undertaken by the administration of fishermen associations, etc.

On the other hand, in the MCSA code, the Monitoring level (M) and Management activities (A) are both low enough, 36% and 14% respectively, which indicates apathetic activities for securing

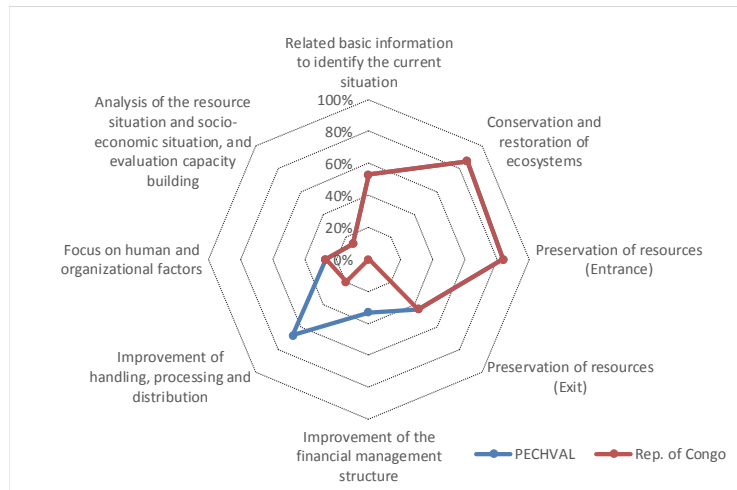
sustainability of fishing. In particular, we see that no effort is made in the area of Reinforcement of human resource and organizations, neither in the analysis capacity building and evaluation of the current situation. As a whole, there are many challenging issues to solve in the fishery management area in the future.

#### 4-5-1 Impact of PECHVAL pilot projects

Further to FishMAT analysis - reflecting PECHVAL pilot projects activities - besides management activities of the Congolese government, the mark for the 2 categories « Improvement of processing and distribution for fish products» mainly which level was low in the analysis of fishery management activities by the Congolese government, was largely enhanced, which shows that PECHVAL project contributed on time in appropriate areas. For other categories also, the activity level raised from 42 to 54% contributed by PECHVAL activities.

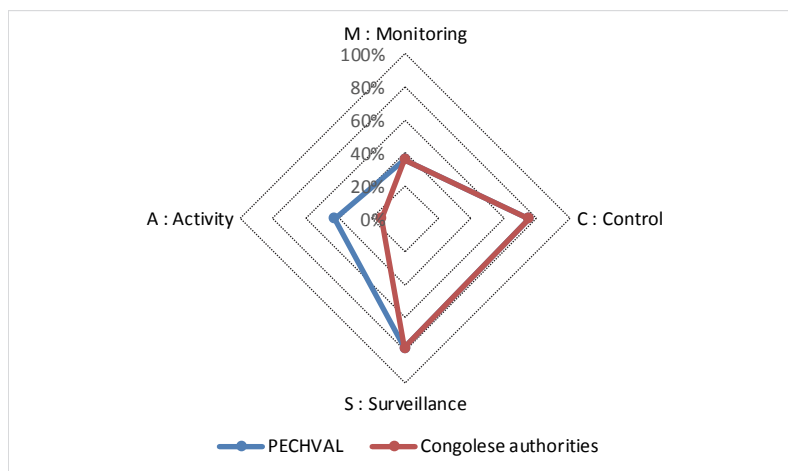
**Table 4-11: Results of FishMAT considering PECHVAL pilot projects**

Fishery Management Category	Rating by category	Rating by category in percentage	Monitoring	Control	Surveillance	Management activities
Basic information to understand current situation	8/15	53%	8/15			
Maintain/Rehabilitation of the Ecosystem	13 / 15	87%		5/5	5/5	3/5
Resource management (Input-Control)	21 / 25	84%		12/15	9/10	
Resource management (Output-Control)	8/18	44%	2/4	3/6	3/6	0 / 2
Improvement of business structure	5/15	33%				5/15
Improvement of processing and distribution for fish products	10/15	67%		1/2	1/2	8/11
Reinforcement of human resource and organizations	4/15	27%	2/8			2/7
Reinforcement of Capabilities for assessment and analysis	2/14	14%	2/12			0 / 2
<b>Total Rating</b>	<b>71 / 132</b>	<b>54%</b>	<b>14 / 39</b>	<b>21 / 28</b>	<b>18 / 23</b>	<b>18 / 42</b>
<b>Percentage note by MCSA code</b>			<b>36%</b>	<b>75%</b>	<b>78%</b>	<b>43%</b>



**Figure 4-1: Results of FishMAT analysis (Congolesse government and PECHVAL project)**

With the help of PECHVAL project, the mark according to MCSA code increased from 14 to 43% mainly for A (Management activities), which level was low under Congo government management activities, strengthening is still necessary. As for Monitoring (M), which was also low, PECHVAL project didn't provide its support and in the future support for this activities shall be reinforced.

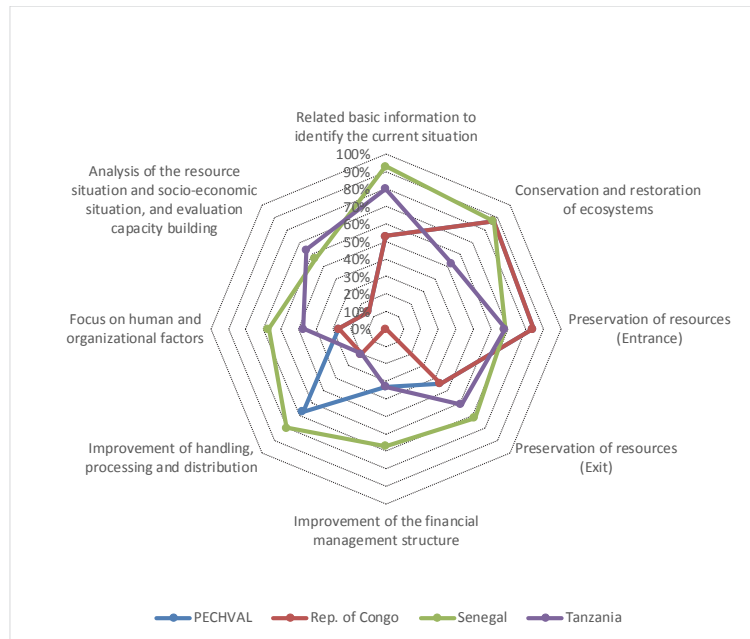


**Figure 4-2: Results of FishMAT analysis according to MCSA code (Congolesse government and PECHVAL project)**

#### 4-5-2 Comparison of FishMAT analysis results with other countries

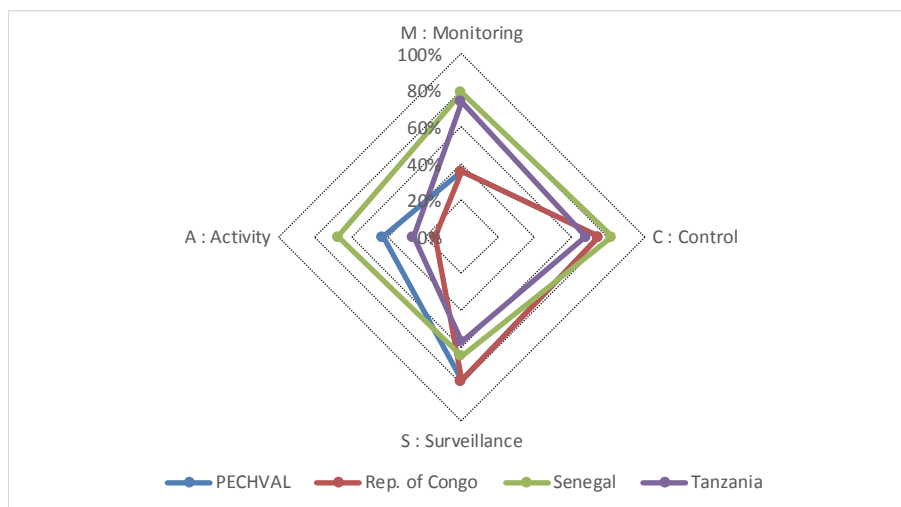
Little time has passed since FishMAT development, examples of analysis are still very few, but we made a comparison of results of artisanal maritime fishery of the Republic of Congo with those of Tanzania (continental fishery) and Senegal (artisanal maritime fishery) chosen among the results of FishMAT studies conducted until now by MarinoForum 21, Japan.





**Figure 4-3: Comparison of FishMAT analysis results of various countries**

Among the above 3 countries, Senegal presents a relatively well balanced graph. As for Congo, levels are very low in the 3 categories ; « Basic information to understand current situation», « Reinforcement of human resource and organizations» and « Reinforcement of Capabilities for assessment and analysis », and its graph is deformed. Besides, for « the Analysis of resource situation and socio-economic situation, and evaluation capacity building » and « Resource management (Output-Control) », Congo’s level is the lowest of the 3 countries. Furthermore, about « Reinforcement of human resource and organizations » and « Improvement of processing and distribution for fish products », had we not considered PECHVAL pilot projects activities, Congo’s level would have been the lowest of the 3 countries. Strengthening the fishery management system and the Congolese government activities in these specific areas is an emergency, and a strong support shall be provided to that effect.



**Figure 4-4: Comparison of FishMAT analysis results according to MCSA code between the various countries**

Based on FishMAT analysis results according to MSCA code, Congo's level is very low compared to the two other countries as for the Monitoring (M), and evaluation of Congolese management activities (A) would also be inferior to two other countries without assistance of PECHVAL pilot projects under « Reinforcement of human resource and organizations » and « Improvement of processing and distribution for fish products» ; that shows the current situation of insufficiency of basic information on fishery and the absence of researches and scientific studies in the fishery sector, including the oceanography, of Congolese researchers. Congo has only 170 km of coastline, and maritime fishery bases are concentrated in Pointe-Noire, so much so that the delay in Management activities (A) is important in this country, despite a relatively high evaluation for MSCA code elements: Control (C) and Surveillance (S). Moreover, these regulations and surveillance concern only industrial fishery, and to increase the effectiveness of regulations and surveillance, strengthening Management activities (A) is requisite. As for artisanal fisheries, all relating activities just started, including collection of statistical data, and the strengthening of all the four elements of MSCA code, namely Monitoring (M) Control (C), Surveillance (S) and Management activities (A), is vital.



## **CHAPTER 5. THE PLAN FOR IMPROVEMENT OF THE ARTISANAL FISH PRODUCTS VALUE CHAIN IN POINTE-NOIRE**

### **5-1 Strategy of the Improvement plan**

#### **5-1-1 Elements of the value chain improvement plan**

The PECHVAL project aims to draft a master plan and action plans for the improvement of fishery products value chain in artisanal fisheries in Pointe-Noire, to contribute to the food security, economic growth and poverty reduction. It is in the same vein as the Sustainable Fishery Development Plan 2011-2020 of the Congolese Government and the Fisheries and Aquaculture Guidance by the President of the Republic of Congo.

Points below are generally listed up as hindrances to value chain development in developing countries.

1. Expensive transit costs due to poor infrastructures and high transportation costs;
2. Information divides between vendors and buyers due to poor information diffusion;
3. Limited stock of human resources ;
4. Lack of investment ;
5. Fragile regulatory body ;
6. High cost of inputs and raw materials etc.

The improvement plan of the fishery value chain concerns the following 7 areas.<sup>30</sup>

1. Sustainable management plan of fishery resources, legislation of laws and regulations, etc. ;
2. Increase, improvement, regularization and stabilisation of the production ;
3. Improvement of the quality and security of products ;
4. Establishment of an harmonisation mechanism among the stakeholeders of the value chain ;
5. Reduction of the time required for the delivery of products to consumers ;
6. Minimization of transit costs ;
7. Building the capacity of stakeholders of the value chain to help them catching up and acquiring market development and related techniques.

To reduce poverty among stakeholders of artisanal fisheries, the following 6 points, which are key factors <sup>31</sup> for the value chain improvement plan, must be integrated to the detailed improvement plan.

1. Labour intensification

One of the characteristics of artisanal fisheries is labour intensification and it is desirable that a plan taking advantage of the labor intensification rather than capitals intensive is elaborated. Intensification of production-processing which is currently achieved

---

<sup>30</sup> Value Chain Approaches in Fisheries Planning, Aaron Parke, CRFM, Sep 2014

<sup>31</sup> Nicholas Ross et al. The Value Chain Approach to rural agriculture development. Understanding the principal determinants of pro-poor outcomes, Hertie School of Governance, 2013

individually will lead to the improvement of production effectiveness, to building financing capacity and the optimization of investments and management techniques.

2. Specificity

Differentiate artisanal fisheries products, and industrial fishery products and imported frozen fish, will enable increasing the value and competitiveness of final products, and will lead to strengthening profitability and stable operation.

3. Robustness (come over frailty)

It is strongly desirable to elaborate a draft plan enabling to come over the frailty of artisanal fisheries and turn it into strength. To tackle negative elements that arise from time to time, it is necessary for fishers and stakeholders of artisanal fisheries to have capacities enabling to come over and remedy it. In so doing, human capacities and financial capacities are necessary, as well as the support of the government and fisher's associations.

4. Perishability

Fish products deteriorate easily (loss of freshness and quality) compared to other agricultural products, which results in decline of the price and a negative impact on fishers' negotiation power (placed upstream of the value chain). The loss of freshness and quality of fish depends largely on fish themselves and the action of enzymes of bacteria, which is in close correlation with the temperature and preservation time, and since it is possible to reduce significantly the degree of value loss by decreasing or reducing one of the two, it is thus essential to reduce the perishability to increase the negotiation power:

- 1) Reduce the speed of freshness loss by keeping cold;
- 2) Reduce the preservation time and accelerate the distribution speed;
- 3) Reduce the perishability, by changing the quality of the product through processing.

5. Income smoothing

The landing volumes vary significantly according to days and seasons, and the catch volumes and unit price change noticeably during the peak season and low season as well as the income from sales. This fluctuation of the volume of catches is a characteristic of fishery, but it is necessary to make the variation of the volume of catches does not result directly into a variation of income, by finding another way of making money (ie. changing target species, changing the supplier of fish, etc.) at the poor catches and by thus smoothing the income, for stabilising the operation.

6. Governance of linkage (strengthen the collaboration between actors of the value chain)

The vertical governance of links among actors of the value chain (consumers, market vendors, fishers, etc.) will enable accessing to a stable and vigorous market that will

encourage production decision-making. Horizontal links between artisanal fishers and those between market vendors will enable reducing the cost transferred to buyers and strengthen their purchase power, or even strengthen market control by producers.

### 5-1-2 Internal/external environments of the artisanal fisheries in Pointe-Noire

The strengths and weaknesses of artisanal fisheries in Pointe-Noire are shown as follows:

**Table 5-1: Strengths and weaknesses of internal environment of the artisanal fisheries in Pointe-Noire**

	<b>Strengths</b>	<b>Weaknesses</b>
Human environment	Fishers are geographically concentrated in and around Pointe-Noire.	<ul style="list-style-type: none"> <li>• Harmonious dialogues between Congolese community and foreign communities are scarce</li> <li>• Even though the stability and security of fishing canoes is insufficient, preparations and the rescue system in case of accident at sea are not put in place.</li> <li>• Absence of resources management system</li> <li>• Absence of surveillance system for environment protection</li> </ul>
Financial environment		<ul style="list-style-type: none"> <li>• Capitals are limited and the investment capability are null. Notably, financial bases of processors and vendors are fragile.</li> </ul>
Hardware environment	<ul style="list-style-type: none"> <li>• Smoking workshops and landing beaches are close.</li> <li>• Smoking workshops are geographically concentrated.</li> </ul>	<ul style="list-style-type: none"> <li>• Not only fishery infrastructures, but also social infrastructures such as power and public water supply, are failing, and there is no clean water to wash the fish.</li> <li>• The transportation infrastructure is underdeveloped, transportation is ineffective and expensive.</li> <li>• Salt-drying workshops are remote from landing beaches.</li> <li>• Fuel and ice sales points are remote.</li> <li>• Trash and garbage are scattered on the landing beach and the hygienic condition in processing workshops is dreadful.</li> </ul>
Technical environment		<ul style="list-style-type: none"> <li>• The capacity of fishing canoes is insufficient.</li> <li>• Fishers have defective knowledge on keeping fish fresh, and there are no measures against post-harvest losses.</li> <li>• Fishing techniques are outdated.</li> <li>• Processing techniques are inferior and the production efficiency is low.</li> <li>• Maintenance capacities of outboard engines are weak.</li> <li>• Information on resources is lacking, statistics are fragmentary</li> <li>• Absence of extension system of the artisanal fishing techniques</li> </ul>
Cultural environment		<ul style="list-style-type: none"> <li>• Knowledge on keeping freshness and food contamination are lacking.</li> <li>• Knowledge on hygiene is deficient and markets and sales environment is unacceptable.</li> </ul>

	<b>Strengths</b>	<b>Weaknesses</b>
Production	<ul style="list-style-type: none"> <li>• Restriction of fish trips by themselves in case of excessive catches of pelagic fish in peak season</li> </ul>	<ul style="list-style-type: none"> <li>• Seasonal variations of volumes of catches are significant for pelagic fishing.</li> <li>• The supply of demersal fish is deficient.</li> <li>• Fishing time and days are long and loss of freshness during the fishing trip is considerable</li> <li>• Unstable supply of the fish for processing by artisanal fishers make many processors recourse to industrial fishing.</li> <li>• The working environment and processing workshops are hazardous due to smoke, waste, etc.</li> </ul>
Products and services		<ul style="list-style-type: none"> <li>• Without means for keeping fish cool, freshness loss is accelerated during high temperature season.</li> <li>• Transportation service for long and middle-ranged distance is marginal</li> <li>• Expensive and inaccessible fishing gears</li> </ul>
Price	<ul style="list-style-type: none"> <li>• Fish is less expensive than meat.</li> <li>• The price of sardinella, caught in big volumes is cheap.</li> </ul>	<ul style="list-style-type: none"> <li>• The price change of demersal fishes is fearsome.</li> <li>• During the peak pelagic fishing season, price of fish on the beach might be inferior to the catching cost.</li> </ul>
Outlets		<ul style="list-style-type: none"> <li>• The network of fresh fish sales is confined in Pointe-Noire.</li> <li>• While pelagic fish are caught in excessive volumes, fishing trips have to be self-restricted to avoid the further fall of market price</li> <li>• The deferment of repayment for processed fish sales in remote areas makes a processor lack of funds for the purchase of fish for continuous production.</li> </ul>
Sales promotion	<ul style="list-style-type: none"> <li>• The demand of demersal fish is high.</li> </ul>	<ul style="list-style-type: none"> <li>• The underdeveloped transportation infrastructure restricts fresh fish sales area.</li> </ul>
Organization	<ul style="list-style-type: none"> <li>• AICP is the umbrella organisation gathering stakeholders of artisanal maritime fisheries.</li> <li>• Interconnections within the fishery community are solid.</li> </ul>	<ul style="list-style-type: none"> <li>• Activities of organisations by profession under the AICP are dissatisfied.</li> </ul>

### 5-1-2-1. Artisanal fisheries external environment in Pointe-Noire

Opportunities and threats of artisanal fisheries external environment in Pointe-Noire are listed below.

**Table 5-2: Artisanal fisheries external environment in Pointe-Noire**

	Opportunities	Threats
Foreign country		<ul style="list-style-type: none"> <li>• 40% of fish products consumed in Congo are imported.</li> <li>• Imported fish dominate fish markets in Congo.</li> <li>• Foreign industrial fishing companies are numerous</li> <li>• Number of foreign artisanal fishermen are larger than that of Congo.</li> </ul>
Regulation	<ul style="list-style-type: none"> <li>• Registration of fishing boats</li> <li>• Quota system of catches</li> </ul>	<ul style="list-style-type: none"> <li>• Hygienic management and the regulation of markets and food products sold are not effectively secured by public services.</li> <li>• Illegal fishing by industrial fishing vessels in the zones allocated to artisanal fisheries</li> <li>• The development of statistical data, the monitoring and control of fishery resources for sustainable management are insecure.</li> <li>• Restriction of fishing near the oil rigs.</li> </ul>
Techniques		<ul style="list-style-type: none"> <li>• Lack of maintenance capacity for outboard engines</li> </ul>
Population	<ul style="list-style-type: none"> <li>• Population growth rate is as high as about 3%.</li> <li>• Demand of fish products increases in tandem with urbanization and population increase.</li> </ul>	
Environment		<ul style="list-style-type: none"> <li>• Debris from the hinterland accumulated on the beach.</li> <li>• Coastal contamination caused by oil business</li> <li>• Deteriorated fish are sold and there is a risk of food poisoning by contaminated products.</li> </ul>
Economy	<ul style="list-style-type: none"> <li>• Contributes to the creation of regional jobs.</li> <li>• The GDP per inhabitant in Congo augments significantly.</li> </ul>	<ul style="list-style-type: none"> <li>• Financing of fishers and stakeholders in artisanal fisheries is vulnerable.</li> </ul>
Competition		<ul style="list-style-type: none"> <li>• Supply by artisanal fisheries is inferior to that of imports, continental fishery and industrial fishery.</li> <li>• Imported frozen fish dominate the market.</li> <li>• Price loss due to the excessive supply of pelagic fish by industrial vessels during the peak season</li> </ul>
Substitute products	<ul style="list-style-type: none"> <li>• Consuming of fish products in households is 3 times higher than meat.</li> <li>• Fish products are much cheaper than meat.</li> </ul>	
Vendors	Fish price is stable compared to other food products.	<ul style="list-style-type: none"> <li>• Competition with industrial fishery companies</li> </ul>
Buyers	Marine fish is appreciated in Pointe-Noire.	<ul style="list-style-type: none"> <li>• In Brazzaville people relish freshwater fish.</li> <li>• Transportation cost is expensive.</li> </ul>



As far as the value chain of artisanal fish products in Pointe-Noire is concerned, general principles can be applicable - but taking advantage of previous tables that present weaknesses, strengths, opportunities and threats of the value chain - we summarized in following tables the various actions undertaken by the Congolese side, namely: actions to analyse weaknesses and improve them, actions for coming over weaknesses by taking advantage of given opportunities, actions to come over threats with strengths.

Threats										
40% of fishery products consumed in Congo are imported.	Imported frozen horse mackerels dominate the market.	Imported fish is dominant in the markets.	Supply by artisanal fisheries is inferior to that of imports, continental fishery and industrial fishery.	Deteriorated fish are sold and there is a risk of food poisoning by contaminated products.	Hygienic management and the regulation of markets and food products sold are not effectively secured by public services.	The development of statistical data, the monitoring and control of fishery resources for sustainable management are insecure.	Illegal fishing by industrial fishing vessels in the zones allocated to artisanal fisheries	Lack of maintenance capacity for outboard engines	Debris from the hinterland accumulated on the beach.	Coastal contamination caused by oil business
<b>Actions for analysing weaknesses and improving them</b>	Seasonal variations of volumes of catches are significant for pelagic fishing	Make optimization of distribution of fish after landing and maximize the volume of distributing fish in Congo	Strengthen the management system on fish resources	Establish the monitoring & control system of fisheries						
	The supply of demersal fish is deficient.	Reduce post-harvest losses	Develop the capacity of fish data collectors Improve the fish statistics							
	Unstable supply of the fish for processing by artisanal fishers make many processors recourse to industrial fishing.	Restrict the area for selling fish by industrial fishing companies								
	There is a self-limitation of fishing activities to avoid the fall of market price when pelagic fish are caught in excessive quantities.	Improve processing techniques, Increase number of smoking kiln Develop transportation infrastructure								
	The power of fishing boats is insufficient.	Establish a finance system for the construction of fishing boats Establish a finance system for procurement of outboard engines								
	Fishing techniques are outdated.	Increase the capacity of fishing boats and improve their fishing techniques								
	Capitals are limited and the investment capability are null. Notably, financial bases of processors and vendors are fragile.	Establish a micro-finance system for improvement of processing capacities								
	Not only fishery infrastructures, but also social infrastructures such as power and public water supply, are failing, and there is no clean water to wash the fish.	Develop fishery infrastructures (landing places, processing workshops, etc.) Improve the public water system for markets, Supply of cleaning water to processing workshops								
	The transportation infrastructure is underdeveloped, transportation is ineffective and expensive	Disseminate ice use for avoiding the loss of freshness Introduce iced storage box for avoiding the loss of freshness and the contamination of the fish on board								
	Sail-drying workshops are remote from landing beaches.	Establish the wide area distribution network								
	Fuel and ice sales points are remote.									
	The price change of demersal fishes is fearsome.									
	Processing techniques are inferior and the production efficiency is low									
	Fishers have defective knowledge on keeping fish fresh, and there are no measures against post-harvest losses.									
	Without means for keeping fish cool, freshness loss is accelerated during high temperature season.									
Knowledge on keeping freshness and food contamination are lacking										
Knowledge on hygiene is deficient and markets and sales environment is unacceptable										
The network of fresh fish sales is confined in Pointe-Noire										
The deferment of repayment for processed fish sales in remote areas makes a processor lack of funds for the purchase of fish for continuous production.										
Activities of organisations by profession under the ACP are dissatisfied.										
Even though the stability and security of fishing canoes is insufficient, preparators and the rescue system in case of accident at sea are not put in place.										
Harmonious dialogues between Congolese community and foreign communities are scarce										
<b>Weaknesses</b>										



Threats															
	40% of fish products consumed in Congo are imported	Imported frozen fish dominate the market	Imported fish is dominant in the markets.	Supply by artisanal fishery is inferior to that of imports, continental fishery and industrial fishery	In Brazzaville people relish freshwater fish.	Transportation costs is expensive	Deteriorated fish are sold and there is a risk of food poisoning by contaminated products	Hygienic management and the regulation of markets and food products sold are not effectively secured by public services	The development of statistical data, the monitoring and control of fishery resources for sustainable management are insecure	Illegal fishing by industrial fishing vessels in the zones allocated to artisanal fisheries	Restriction of fishing near the oil rigs.	Lack of maintenance capacity for outboard engines	Debris from the hinterland accumulated on the beach	Coastal contamination caused by oil business	
Actions to come over threats with strengths		Increase volume of fresh fish distribution in Pointe-Noire by improving fish markets.			Distribute fresh fish in Brazzaville by joint shipping under the supervision of cooperatives.		Strengthen the monitoring and control for fish in the markets.		Survey on demersal fish resources to establish resource management plans by species.						
	The demand of demersal fish is high.														
	Smoking workshops and unloading beaches are close.	Provide fresh fish for processing and produce the good quality products to expand the distribution zone													
	The price of sardinella, caught in big volumes is cheap.		Strengthen the distribution network of sardinella to increase the volume of distribution for inland.												
	Fish is less expensive than meat.		Ship jointly very fresh fish and confer prestige and value added.												
	Fishers are geographically concentrated in and around Pointe-Noire								Improve the fish statistics and establish the effective resources management plan.	Strengthen the control of violations via joint surveillance AICP/DPA/oil companies	Take measures of restoration of resources (artificial reefs, etc.) in compliance with the regulation of the maritime operation zone				Strengthen the maintenance capabilities of outboard engines to secure the safety of fishing operation of boats
	Smoking workshops are geographically concentrated.		Modernize installations of processing workshops by the organization of processors or jointly working to increase the quality of products and enhance the productivity.					Strengthen the training for processors and prohibit selling of defect product							
AICP is the umbrella organisation gathering stakeholders of artisanal maritime fisheries.								Co-management of coastal fishery resources by the AICP and the Ministry of Fisheries and Aquaculture						Improve the environment of the beach and fishing grounds by the collaboration of State services and the AICP.	
Strengths															



Opportunities							
Actions to coming over weaknesses by taking advantage of given opportunities	Population growth rate is as high as about 3% with urbanization and population increase	Demand of fish products increases in tandem with urbanization and population increase	Contributes to the creation of regional jobs	The GDP per inhabitant in Congo augments significantly.	Consuming of fish products in households is 3 times higher than meat.	Fish products price is stable compared to other food products.	Marine fish is appreciated in Pointe-Noire.
	Seasonal variations of volumes of catches are significant for pelagic fishing	<ul style="list-style-type: none"> <li>Improve fishing boats capacities to reinforce fish production capacities, with funding mechanism for fishing boats</li> <li>Increase the time for distribution by avoiding loss of freshness and by keeping good freshness level of catches after landing</li> <li>Increase the final distributed quantities by avoiding the loss of freshness and the contamination of the fish on the landing beach to prevent their decay</li> </ul>			Stabilise the distribution by the development of fishery infrastructures (landing places, processing workshops, etc.)		
The supply of demersal fish is deficient							
Unstable supply of the fish for processing by artisanal fishers make many processors recourse to industrial fishing	<ul style="list-style-type: none"> <li>Increase incomes for fishers and stakeholders, via the increase of processing productivity and the assimilation of seasonal variations of catches of pelagic fish for preventing the plunge of fish price during the peak season</li> <li>Increase of processed products of good quality by avoidance of the loss of freshness between the procurement of the fish and the beginning of processing works</li> </ul>						Develop a strategy for sustainable fishery resource management such as restricted species and species for which a fishing effort shall be strengthened, relying on more precise statistical data
While pelagic fish are caught in excessive volumes, fishing trips have to be self-restricted to avoid the further fall of market price							
The capacity of fishing canoes is insufficient							
Fishing techniques are outdated.	<ul style="list-style-type: none"> <li>Increase the production by improving techniques of fishing boats and fishing techniques</li> <li>Increase artisanal fishing productivity via the improvement of techniques supported by extension specialists of fishing techniques</li> </ul>		Improve the security of fishing operations on artisanal fishing boats by building sunshades and the management of fishery resources and the control of				
Capitals are limited and the investment capability are null. Notably, financial bases of processors and vendors are fragile.							
Not only fishery infrastructures, but also social infrastructures such as power and public water supply, are falling, and there is no clean water to wash the fish	Provide the chances for fish distributor to the inlanders by improving the road						Optimize the transportation and prevent the fish deterioration by the primary processing on or near the landing beaches
The transportation infrastructure is underdeveloped, transportation is ineffective and expensive.							
Sail-drying workshops are remote from landing beaches.			Construct the fuel depots, ice storages, outboard engine maintenance workshops, etc. to secure the stable fishing operation of fishing boats.				
Fuel and ice sales points are remote.							
The price change of demersal fishes is fearsome							Increase final distribution quantities to consumers by preventing the deterioration on the landing beaches, the contamination and decay of the fish.
The working environment and processing workshops are hazardous due to smoke, waste, etc							
Fishers have defective knowledge on keeping fish fresh, and there are no measures against post-harvest losses	Increase of the time usable for the distribution by avoiding the loss of freshness upon the catching, and maintaining in good freshness condition until landed.				Augment the demand of fish products of artisanal fishing by strengthening the awareness-raising of fishers, traders, vendors and consumers for the maintaining of the freshness of fish products and security of foodstuffs.		<ul style="list-style-type: none"> <li>Augment the demand of fish products of artisanal fishing by strengthening the awareness-raising of consumers to maintaining the freshness of fishery products and security of foodstuffs</li> <li>Gain the trust by the consumers by strengthening the system for hygienic control and security of food products.</li> </ul>
Without means for keeping fish cool, freshness loss is accelerated during high temperature season					Gain the supply of foods rich in proteins in the regions by strengthening the effectiveness of the distribution after catching and the increase of quantities distributed in the country		
Knowledge on keeping freshness and food contamination are lacking							
Knowledge on hygiene is deficient and markets and sales environment is unacceptable	<ul style="list-style-type: none"> <li>Reduce food contamination in markets by the establishment of a hygiene control system in markets</li> <li>Improve the sanitary environment by strengthening the garbage collection system in markets</li> <li>Secure a safe environment for food sale by the establishment of a water supply and sanitation system and garbage dump in markets</li> </ul>		Augment the demand of fish products of artisanal fishing by strengthening the awareness-raising of fishermen, wholesalers, retailers and consumers to the maintaining the freshness of fish products and security of foods.		Supply safe food to consumers by the establishment of a control system for the security of foods		
The network of fresh fish sales is confined in Pointe-Noire							
The detriment of repayment for processed fish sales in remote areas makes a processor lack of funds for the purchase of fish for continuous production.							Augment the number of activities and production quantities by processors and vendors by the establishment of the micro-credit system
Activities of organisations by profession under the ACP are dissatisfied.			Strengthen the cooperative associations via a fishery development plan				
Even though the stability and security of fishing canoes is insufficient, preparations and the rescue system in case of accident at sea are not put in place.	Promote the fishing techniques extension workshops by extension specialist and exchange of fishers by themselves to strengthen the cooperation and reconciliation among fishers communities.						
Harmonious dialogues between Congolese community and foreign communities are scarce				<ul style="list-style-type: none"> <li>Reduce human and material losses by the establishment of a rescue system of fishing boats</li> <li>Reduce the number of accidents by strengthening the inspection system of security equipment on fishing boats</li> <li>Secure stable fishing operations by the improvement of the maintenance and inspection system of outboard engines</li> </ul>			

Weaknesses



		Opportunities							
Actions taking advantage of opportunities and strengths		Population growth rate is as high as about 3%	Demand of fish products increases in tandem with urbanization and population increase.	Contributes to the creation of regional jobs.	The GDP per inhabitant in Congo augments significantly.	Consuming of fish products in households is 3 times higher than meat.	Fish products are much cheaper than meat	Fish price is stable compared to other food products.	Marine fish is appreciated in Pointe-Noire.
Fishers are geographically concentrated in and around Pointe-Noire		<ul style="list-style-type: none"> <li>Improve fishing methods and techniques in the training workshops provided by fishery extension specialists</li> <li>Provide members of cooperative associations with fishing gears, spare parts for outboard engines, etc. by joint procurement.</li> </ul>							
Smoking workshops and unloading places are close.		Increase the productivity of smoked products							
Smoking workshops and landing beaches are close		Modernize installations of processing workshops by the organization of processors, or joint works of them to improve the quality of products and enhance the productivity.							
Fish is less expensive than meat		Supply very fresh fish to expand the distribution zone							
The price of sardinella, caught in big volumes is cheap		Establish a distribution network and increase volume of foods rich in proteins to inlands							
The demand of fresh demersal fish is high.		Improve the handling after harvest of fish and fresh fish markets, to improve the quality of fish and to increase fish consumption in Pointe-Noire							
AICP is the umbrella organisation gathering stakeholders of artisanal maritime fisheries.		Promote sustainable fishery resource management by deepening the mutual understanding of stakeholders of the fish products value chain							
		Develop processed products to optimize the use of volume of sardinella in the fishing peak season							
		Increase the level of freshness of fish on landing to confer prestige and value added							





## **5-2 Basic concepts for the Improvement plan of fish products value chain in artisanal fisheries in Pointe-Noire**

Uptrend of demand for fish products in tandem with population growth and insufficiency of fish production, fish supply that cannot meet this demand is a structural issue for fisheries in the Republic of Congo. Fish production in Congo increased of 44,000 to 64,000 tons in ten years (from 2000 to 2010), but population growth estimated to 3.13% causes significant increase of the demand, fish consumption increasing from 67,000 t in 2000 to 106,000 t in 2010. The balance of 42,000 t (2010) are covered by imported fish. The annual fish consumption per person in Congo is estimated at 26.52 kg (2009), which exceeds the average annual fish consumption in Africa of 9.1 kg, and the world average of 18.1 kg, mentioned in FAO report 2012, and corresponds to a very high level in Africa. But since the fish self-sufficiency level is low, the country depends largely on its imports. If an adapted fish supply system is not put in place, population growth in the future will put major risk of deficient supply.

In Congo, fishery is subdivided into continental fishery, industrial fishery and artisanal marine fishery. The continental fishery is representing 48% of the national fish production, but fishing in river and lakes practised with none-motorised boats is of very limited volume and the production seems to be distributed in the traditional subsistence economy of limited neighbouring areas. The rest of the production is marine fishery production. The industrial fishery represents 33% and artisanal fisheries 19%, and artisanal fisheries also plays an important role in fish supply for food. But in the value chain of Congo artisanal fisheries, not only negative elements relating to artisanal fisheries itself in all stages from catch to distribution, or processing: the inadequate capacity of canoes, the delay in the modernization of fishing techniques, the low productivity of processing, etc., but also many external negative elements such as the underdevelopment of infrastructure and the imbalance of social development as a whole, which makes many weaknesses in the segments of the value chain and as many concerns have become reality, there are numerous problems to be solved.

Based on the Sustainable development strategy for fisheries and aquaculture (2011-2020), the Government of Congo drafted its Fishery sustainable development plan in the Republic of Congo, horizon 2011-2020 (hereinafter incorporated by the « Fishery sustainable development plan) with FAO support. This Fishery sustainable development plan is a ten-year plan having the same general objects, objectives and vision for poverty reduction, economic development and insurance of food security than those stipulated in the Sustainable development strategy for fisheries and aquaculture, aiming to making the fishery sector play a major role in the balanced development of Congo. Thus, the Fishery sustainable development plan, which deals with fishery production in Congo - namely continental fishery, industrial marine fishery and artisanal marine fishery - was established for the development of the whole fisheries sector in Congo. The fisheries and aquaculture policy paper by the President of

the Republic of Congo, dated July 2013, that incorporates the above-listed plans on the Congolese government policy is considered as the way forward for achieving the general objectives of the policy by fisheries and aquaculture development.

In the Improvement plan of the fishery products value chain in artisanal fisheries – confined itself to the improvement of the value chain of marine artisanal fisheries - the contribution to economic development is planned through the insurance of fish products security as food, the augmentation of distribution and poverty reduction by increasing the income of stakeholders in artisanal fisheries.

Among actions to be undertaken for the improvement of fish products value chain in artisanal fisheries that were identified by the internal and external environmental survey of artisanal fisheries in Pointe-Noire, most urgent issues « actions for analysing weaknesses and improving them » are the starting point for value chain improvement. In other words, maintaining the quality of the fish caught being a matter of principle to enhance the value of catches, it is essential to prevent the loss of freshness and prevent the contamination of catches. These points are nearly not taken into consideration for the handling of catches of artisanal fisheries in Pointe-Noire, but the value chain will not be improved without their improvement. « Actions for analysing weaknesses and improve them » for the improvement of fish products value chain for artisanal fisheries are mainly subdivided into action for the « elimination of any kind of contamination of fishery products in artisanal fisheries all along the production and distribution process and prevention of freshness loss and quality decrease of fish products », action aiming to « the development of basic infrastructures in artisanal fisheries to increase volumes of fish products in artisanal fisheries distributed by the reduction of losses in catches, losses in processing, losses in distribution of artisanal fisheries », action aiming to « the establishment of support system for the organisation of associations of stakeholders in artisanal fisheries » , and extension/strengthening of the financial assistance to artisanal fisheries stakeholders and associations », and action aiming to « strengthening fishery administrative functions and systems, namely those related to measures taken by the Ministry of Agriculture, Livestock and Fisheries of Congo for the management of artisanal fisheries, which are falled behind to other African government commitments ».

The Master plan for the improvement of fish products value chain in artisanal fisheries in Pointe-Noire is composed of « basic concepts » indicating the basic lines for improvement, for « improvement measures » at each stage of the value chain for the achievement of the basic concept, a « roadmap » indicating the objectives to reach by the times axes and « action plans » for improvement measures to be taken at first and foremost.

**Basic concept 1 : Eliminate any contamination of fish products in artisanal fisheries all along the production and distribution processes and prevention of freshness loss and deterioration of the quality of fish products**

The quality of fish products depends largely on their freshness. Thus, it is essential to prevent the loss of freshness and contamination for improvement of the value chain but in Pointe-Noire, the handling of fishery products in artisanal fisheries from catching to processing and to distribution seems not to take into consideration these points; the improvement of these points being the most urgent, it will be the highest priority.

Development objective:

- Supply safe and clean fish food products to Congolese populations

**Basic concept 2 : Develop basic infrastructures in artisanal fisheries to increase distribution volumes of fish products of artisanal fisheries by the reduction of loss in catches, loss in processing, losses in distribution**

Preventing the loss of freshness of fish products and their contamination will enable extending the time for the distribution of fish products and increasing distributed volumes. Fish products, sources of animal proteins with high nutritional quality, are indispensable items for Congo population's food supply. However, domestic fish production covers only about 60% of the national demand, and the remaining is secured by imports. Potential for the development of marine pelagic resources and inland fresh-water fish resources is considerable, but given the high average annual population growth of 3.13%, even by promoting increment of fish production, it will be necessary from now on to secure optimal imports. It is indispensable to improve the distribution and processing, for domestic and imported fish products be consumed rationally without waste and since losses in catches, processing and distribution are particularly important for artisanal fisheries, it is necessary to eliminate these obstacles and increase volumes distributed and strive to provide for the security of fish products necessary to the population. The development of basic infrastructures for artisanal fisheries, and the augmentation of volumes of fish products distributed by the reduction of loss in catches, loss in processing, losses in distribution of artisanal fisheries will contribute to that effect.

Development objective:

- Secure the stable national supply of fish products of artisanal fisheries

**Basic concept 3 : Establish a support system for organisation of stakeholders in artisanal fisheries, and broaden financial supports to stakeholders in artisanal fisheries and their associations**

Financial bases of fishers, processors, traders, etc. supporting Congolese artisanal fisheries are very fragile, and even minimum investment and/or the employment of manpower to prevent loss of freshness and contamination of catches are difficult. Stakeholders working in the artisanal fisheries value chain are generally impeded obtaining a loan from financial institution by low social credibility. There is a traditional mutual assistance system among foreign fishermen, but the funds are confined.

Even though processors can obtain fresh fish (raw materials) in abundance during the peak season, they don't have enough funds to expand their processing facilities or buy fresh fish, and thus lose the opportunity to increase their production. Few shipowners amortize their expensive equipment such as canoes or outboard engines, and in case of loss of such equipment by an accident, many are obliged to abandon. In case of processors selling processed products to remote vendors, if the repayment of the sales amount were deferred, procurement of fresh fish for processing becomes impossible and they are sometimes compelled to give up. For building capacities of artisanal fisheries production and stable exploitation of fishers, it is essential to strengthen the financial bases of these artisanal fisheries stakeholders. In so doing, strengthening the financial assistance to stakeholders of the artisanal fisheries via the creation/expansion of micro-credit for the organisation of these actors and financing of their associations is indispensable.

Development objective:

- Augment the fish volume of production and distribution in artisanal fisheries by reinforcing fish production capacities and maintaining stable operations

**Basic concept 4 : Invigorate functions and systems in the administration for artisanal fisheries management of the Ministry of Agriculture, Livestock and Fisheries of Congo, which seems to be far behind compared to other African governments commitments**

The support and involvement of the government are very important for all activities for improvement of fish products value chain in Congo artisanal fisheries. Among measures taken by the Ministry of Agriculture, Livestock and Fisheries of Congo for artisanal fisheries, the involvement of the Congolese government in following measures must be reinforced in order to promote effectively the improvement of the value chain of fish products in artisanal fisheries : the establishment of the legal system and control of violations for the « resource conservation » determining the quality and quantity of catches, the support to fishers' associations, the support for « management structure improvement » including the micro-credit system, etc., technical training aiming to « the improvement of handling, processing and distribution », the improvement of market facilities and introduction of food products control, the « focus on human and organisational factors » necessary for the achievement of aforesaid measures, the development of fish statistics, and the « analysis of resources status, the socio-economic situations, and evaluation capacity building » necessary to sustainable management of resources based on the scientific survey of resources, etc.

Development objective:

- Sustainable fishery resource management

### **5-3 Measures to be taken for the improvement of fish products value chain in artisanal fisheries in Pointe-Noire**

#### **5-3-1 Basic Concept 1: Eliminate any contamination of fish products in artisanal fisheries all along the production and distribution processes and prevention of freshness loss and deterioration of the quality of fish products**

5-3-1-1. Elimination of contamination of fish products in artisanal fisheries along the production and distribution processes

##### **(1) Improvement of the hygienic conditions of landing beaches and prevention of the contamination of fish products**

- 1) Establishment of work sheds for primary treatment for fish, e.g. removal of gills, dismemberment of fish body on main landing beaches;
- 2) Cleaning of waste and garbage in landing beaches, and awareness-raising on cleaning activities to fishers and community members.

##### **(2) Environmental improvement of fisher's communities**

- 1) Installation of garbage bins in the area of fisher's communities and the establishment of garbage collection system;
- 2) Construction of deep wells for safe potable water supply;
- 3) Installation of water drainage channels;
- 4) Improvement of community roads;
- 5) Establishment of a community broadcast system.

##### **(3) Improvement of a hygienic conditions in processing workshops**

- 1) Construction of deep wells for safe water supply for washing fish in processing workshops;
- 2) Improvement of smoking kilns to prevent air pollution by smoke
- 3) Collection of fish remains thrown away on the beach and development of technology for their utilisation.

##### **(4) Development of hygienic conditions in fish markets**

- 1) Installation of water supply networks in the existing markets for supply of safe and contamination free running water;
- 2) Improvement of water drainage facilities in the fish sales areas of the existing markets;
- 3) Construction of hygienic public toilets on the existing markets;
- 4) Separation of fish sales and meat sales areas independently, which are bordering each other in the existing markets;
- 5) Strengthening of the garbage collection system in markets and installation of garbage dumps.

### 5-3-1-2. Improvement of the quality of fish food products

#### **(1) Prevention of the loss of freshness of fish at catching and landing**

- 1) Ice supply to keep fish fresh from their catching to landing;
- 2) Propagation of isothermal boxes to keep fish cool and to prevent contamination during fishing trip;
- 3) Technical guidances and trainings for preventing quality degradation all along the distribution process of fresh fish from their landing to consumers;
- 4) Establishment of ice-making plants for artisanal fisheries on the prime landing beaches;
- 5) Technical guidances and trainings for improving fresh fish handling.

#### **(2) Improvement of the quality of processed products**

- 1) Securing salt-drying spaces for salt-dried products on the prime landing beaches;
- 2) Strengthening the quality regulation and control of fish for artisanal processing shipped by industrial fishery;
- 3) Development and dissemination of improved smoking kilns;
- 4) Diffusion of improved salt-drying techniques;
- 5) Technical training of processors of smoking and salt-drying for improvement of the quality of processed products.

#### **(3) Improvement of food security at the sales stage**

- 1) Guidance and awareness-raising for the enlightenment of knowledge on the hygiene of stakeholders in artisanal fisheries;
- 2) Guidance and awareness raising for consumers on "safe handling of fish for food";
- 3) Improvement of the hygiene of fish selling stalls in the existing markets;
- 4) Ice supply to stalls for fresh fish sales;
- 5) Construction of fish markets with hygienic conditions for supplying safe fresh and good quality products.

### **5-3-2 Basic Concept 2: Develop basic infrastructures in artisanal fisheries to increase distribution volumes of fish products of artisanal fisheries by the reduction of loss in catches, loss in processing, loss in distribution**

#### 5-3-2-1. Augment fish products volumes distributing in Congo by the reduction of loss in catches, loss in processing, loss in the distribution in artisanal fisheries

##### **(1) Technical guidance and training for improvement of demersal fish fishing**

- 1) Improvement of the freshness of demersal fish by reduction of fishing trip days after catching;
- 2) Improvement of the keeping in ice practice of demersal fish.

##### **(2) Technical guidance and training for improvement of pelagic fish fishing**

- 1) Improvement of freshness of pelagic fish by shortening the net setting time in the sea;
- 2) Improvement of the freshness of pelagic fish by diffusion of kept catch in ice.

**(3) Fostering fishing effectiveness with introduction of new fishing techniques**

- 1) Technical guidance and training for advanced fishing techniques, such as fishing with the small round net (purse seines).

**(4) Stable production by improvement of boat capacities**

- 1) Boost production capacity of fishing boats by development and making safer fishing boats into wide use, with better stability, bigger load capacity, better workability and cheaper than the existing canoes, suitable to fishing conditions in Songolo;
- 2) Building capacity for the maintenance of outboard engines (establishment of a periodical inspection system, training on outboard maintenance techniques);
- 3) Supply and outfit of emergency equipment necessary to improve the security onboard the artisanal fishing boats and secure the stable fish production;
- 4) Mandatory outfit of safety equipment on fishing boats and establishment of a periodical inspection system;
- 5) Establishment of a rescue system for the fishing boats in distress;
- 6) Establishment and installation of broadcasting system and equipment to provide weather forecast, information on marine conditions as well as messages to community members.

**(5) Improvement of fishing techniques**

- 1) Establishment of extension specialist network enabling to strengthen the capability of instructors in the training on the sea for improvement of artisanal fisher's fishing techniques;
- 2) Create short term practical training program for artisanal fishers.

**(6) Augmentation of fish distribution volumes in the country by raising processing production**

- 1) Strengthening the production capacity for processing pelagic fish with the popularization of improved kilns;
- 2) Expansion of number of kilns to contribute to absorb seasonal fluctuations of the volume of pelagic fish caught;
- 3) Strengthening of processing capacity of workshops by joint operations of processors and/or by organization of processors.

**(7) Reducing the fish transportation time to reach consumers, minimization of the transfer cost to augment volumes distributing outside Pointe-Noire and the inland regions**

- 1) Rationalization of fresh fish transportation (materials) for salt-drying by primary treatment in landing beaches;
- 2) Development of roads toward landing beaches;
- 3) Development of the fresh fish transportation-distribution system to Brazzaville;
- 4) Improvement of national road networks and transport infrastructures.



5-3-2-2. Development of basic infrastructure for artisanal fisheries

**(1) Development of basic infrastructure for artisanal fisheries**

- 1) Construction of ice making plants on the prime landing beaches, such as Matombi, etc.;
- 2) Establishment of gas stations for fishing on prime landing beaches, such as Matombi, etc. ;
- 3) Establishment of artisanal fisheries centres on the prime landing beaches, such as Matombi, etc.

**(2) Development of operation capacities of Artisanal fisheries support centres and equipment/facilities for artisanal fisheries**

- 1) Monitoring of the operation status of artisanal fisheries support centres and equipment/facilities for artisanal fisheries;
- 2) Training on the cash flow of agents of artisanal fisheries support centres;
- 3) Training of agents of artisanal fisheries support centres to provide for the supervision of fishery products handling.

**5-3-3 Basic Concept 3: Establish a support system for organisation of stakeholders in artisanal fisheries, and broaden financial supports to stakeholders in artisanal fisheries and their associations**

5-3-3-1. Establishment of support system to organize associations of artisanal fisheries stakeholders and financial support system for them

**(1) Establishment of support system to organize associations of artisanal fisheries stakeholders**

- 1) Establishment of a support policy of the Ministry of Agriculture, Livestock and Fisheries of guidance to organize associations of fishery sector stakeholders;
- 2) Assignment of a responsible devoted to organize them within the Regional fisheries directorate.

**(2) Arrangement to organize associations and strengthening of them**

- 1) Revitalization of existing associations of artisanal fisheries stakeholders and strengthening of their organization;
- 2) Support for organizing and establishment of associations of stakeholders involved in artisanal fisheries;
- 3) Establishment of mutual insurance system within associations.

5-3-3-2. Strengthening of financial support to stakeholders and associations related to artisanal fisheries

**(1) Strengthening/expansion of the micro-credit system for stakeholders and associations in artisanal fisheries**

- 1) Establishment of a credit system for the improvement of fishing capacity (Fishing boat, fishing gears, outboard engines, etc.) of artisanal fishers;
- 2) Establishment of a micro-credit system for building processing capacity (construction of smoking kilns) and for procurement of fish (materials) for processors and/or expansion of the applicable scope of the existing credit system;
- 3) Expansion of the application scope of micro-credit for the development of fish selling stalls for vendors;
- 4) Expansion of the credit line of the micro-credit by using the mutual insurance system of the associations;
- 5) Support of development of credit activities, including savings and change activities of the associations.

**(2) Tax reduction and provision of grants related to artisanal fisheries**

- 1) Reduction of fuel tax for artisanal fisheries;
- 2) Reduction of the tax on the fishing equipment (nets, outboard engines, etc.), or granting of subsidies.

**5-3-4 Basic Concept 4: Invigorate functions and systems in the administration for artisanal fisheries management of the Ministry of Agriculture, Livestock and Fisheries of Congo, which seems to be falled behind compared to other African governments commitments**

5-3-4-1. Strict enforcement of the law on fishery resources management and strengthening of control system

**(1) Strengthening of the illegal fishing control system**

- 1) Strengthening of sanctions on industrial fishing boats fishing illegally in fishing grounds for artisanal fishing;
- 2) Attainment of the VMS (Vessel Monitoring System) mandatory for industrial ships, and the establishment of several surveillance posts in the coastal zone;
- 3) Arrangement of surveillance-rescue boats at surveillance posts;
- 4) Establishment of surveillance-rescue system 24 h seven days by surveillance-rescue boats;
- 5) Strengthening of the surveillance and control of mesh sizes of fishing nets of artisanal fishing boats.

**(2) Strengthening penalties against law violations and transgressions**

- 1) Specify in the decree on penalties, fines and legal measures, etc. against fishing boats violating fishing rules, illegal fishing boats;
- 2) Establishment of an artisanal fishing development fund sourced with the fines, penalties, etc.

5-3-4-2. Establishment of technical training system of artisanal fisheries and human resources development

**(1) Technical training of artisanal fisheries**

- 1) Assignment of fishery technical extension specialists providing the technical instructions and training on fishing techniques for fishers;
- 2) Internships in neighbouring countries for the training of fishery sector extension specialists;
- 3) Establishment of fishery training school for the improvement of fishing techniques of artisanal fishers;
- 4) Creation of training courses for fishery technical extension specialist within the fisheries training school;
- 5) Creation of training courses of mechanic for outboard engines repairing of fishing boats within the fishery training school.

5-3-4-3. Development of human resources necessary for sustainable fish resources management and its database

**(1) Development of basic data for fish resources management**

- 1) Refinement of the registration system of fishing boats and fishers, digitization of data and creation of the database;
- 2) Improvement of the fish statistics collection system, enabling the volumes caught by fish species at landing;
- 3) Digitization of fishery statistics data and establishment of the management system of these data;
- 4) Organizing scientific fishery resources surveys.

**(2) The establishment of resources management plan for sustainable fishery development**

- 1) Securing the accuracy of fish statistics necessary for the drafting of resources management plan;
- 2) Strengthening research functions on fishery resources of URRM (Research Unit on Microbial Resources);
- 3) Establishment of co-management system of fish resources between the Ministry of Agriculture, Livestock and Fisheries and fisher's associations;
- 4) Estimate of exploitable volumes of main fish species based on the fish resources in Congo EEZ, and proposal of appropriate and effective measures for resource management.

**(3) Development of human resources necessary for the resources management plan**

- 1) Training of statisticians and building their capacities by internships in neighbouring countries;
- 2) Establishment of a specialized agency in charge of resources management plan within the Ministry of Agriculture, Livestock and Fisheries;
- 3) Establishment of School of Fisheries or a Fisheries Section in higher education institutions in Congo.

#### 5-3-4-4. Establishment of inspection and control system of fish products

##### **(1) Strengthening of awareness-raising on food safety**

- 1) Strengthening the awareness-raising on food security, keeping the freshness of fish products for fishers, traders and vendors;
- 2) Strengthening awareness-raising of food security for consumers.

##### **(2) Establishment of inspection and control system and intensifying of the control to secure the safety of fish food products**

- 1) Increase of the agency for fish products quality control under the Fishery regional directorate of Pointe-Noire of the Ministry of Agriculture, Livestock and Fisheries;
- 2) Intensifying of the quality control by re-training inspectors on fish products quality;
- 3) Enforcement of strict quality control by the Centre for the quality control of fish products on catches landed by industrial fishing vessels;
- 4) Legalization of an ordinance on the compliance to instructions given by the Centre for the quality control of fish products based on inspection results;
- 5) Development of URRM functions of control and testing of food products with the procurement of quality control equipment;
- 6) Development of human resources in the control section for the quality of food products at the URRM.

##### **(3) Securing of human resources to insure the safety of fish products as food**

- 1) Re-training of inspectors so that they can give instructions for industrial fishing improvement;
- 2) Training and internship of the personnel responsible for the quality control of food products in markets;
- 3) Re-training of agents and officials of the Ministry of Agriculture, Livestock and Fisheries through the internship system of international organizations;
- 4) Strengthening of the staffing of technicians with basic scientific and technical knowledge.

#### **5-4 Roadmap towards improvement of the fish products value chain in artisanal fisheries in Pointe-Noire**

Many and various stakeholders are involving in the fish products value chain in artisanal fisheries in Pointe-Noire, and each segment of that value chain is very fragile, its improvement should take some time. Also, all the stakeholders involved in artisanal fisheries should have common understanding of the guidance for the improvement of fish products value chain in artisanal fisheries, in order to enable solving each of problems under the arbitrated priority order.

For the improvement of fish products value chain in artisanal fisheries, it is essential to pave the way for each fundamental axis according to the time frame, and continue all actions while checking the progress. Considering the time required to achieve the development objective of each fundamental

axis as the maximum time, this time was divided into several sections and the establishment of milestones and definition of roadmap for its realization were carried out.

The year 2020 being chosen as baseline year, the first two consecutive years will be devoted to the establishment of foundations to send back to the beginning all flawed components of the value chain. Specifically, the reduction of garbage on landing beaches and distribution places, capturing the information on fish resources and the creation of a legal and organizational system will begin; simultaneously, practical technical trainings on the field of fishers and processors, which should take much time and energy, will start, as well as the training of the core human resources in charge.

In the following two years, the reduction of garbage on the landing beaches and main distribution places will be attained, the quality of fresh fish will be improved and the financial support as regard to stabilisation of fisher's finance will begin. The development of basic data on human resources will also start, which will strengthen the functions of resources study.

Then 5 years later, fishing capacities will be improved thanks to tax exemption on fishing equipment, and production capacities will be improved thanks to the amelioration of fishing techniques and processing capacity by organisation and cooperation for utilisation of processing equipment. The awareness on safe fish products will then be strengthened among fishers, vendor and consumers. The controls of fish resources conservation will also be intensified, and the fish resources surveys will begin.

Moreover, 10 years later, the technical trainings on the various sites by fishery extension specialist should enable further development of production capacity. The living environment of fisher's communities will also be improved, fresh fish sales will be made in a clean environment and the development of distribution points in the country will increase the volumes of fish products distributed domestically. With the acquisition of information on increasing resources, it will be possible to estimate the exploiable volumes of main fish species.

15 years after the target year (baseline year), the production will have increased thanks to the introduction of a new type of canoe, freshness will be kept, and none contaminated fish products in artisanal fisheries will be marketed on modern and hygienic fish markets, through artisanal fisheries support centres. Conflicts between artisanal fisheries and industrial fishery will also come to an end, the management of fishers and traders will be improved and stable production will continue. The government will have proposed measures for the sustainable resources management and will go for their achievement.

Milestones up to the improvement of fish products value chain of artisanal fisheries

Basic concepts	From 2020 to 2021	From 2022 to 2024	5 years later	10 years later	15 years later	Development objective
Eliminate any contamination of fish products in artisanal fisheries all along the production and distribution processes and prevention of freshness loss and deterioration of the quality of fish products	The garbage collection will be carried out periodically on the landing beaches.	Clean water will be provided in fisher's communities.	Air pollution caused by the smoke from smoking kilns will disappear.	The living conditions of fisher's communities will be improved.	Contamination free fish products will be widely available.	Supply safe and clean fish food products to Congolese populations
	Installation of water supply networks and hygienic drainage facilities will be started in the existing markets.	Ice for keeping fish fresh is widely used and the quality of fresh fish for processing will be improved.	Awareness-raising for consumers to "Safe fish food products" will be carried out widely.	Fish sales will be made on clean vending stalls and in a clean environment.	Modern and hygienic fish markets will be constructed.	
Develop basic infrastructures in artisanal fisheries to increase distribution volumes of fish products of artisanal fisheries by the reduction of loss in catches, loss in processing, loss in distribution	The technical guidance and training for fishers in pelagic and demersal fisheries will begin.	The periodical inspections of outboard engines will be compulsory.	Much effective fishing techniques will be introduced.	Fisheries extension specialists will be posted on the prime fisher's communities	New type of fishing boats with better production capacity will be launched.	Secure the stable national supply of fish products of artisanal fisheries
	Short term practical training programs will start at the existing fishery centre.	Improved smoking kilns will be wide spread.	Processing capacity of workshops (or facilities) will be reinforced by joint operations of processors and/or by organization of processors.	The distribution system to Brazzaville for fresh fish will be established.	Artisanal fisheries centres will be established on the prime landing beaches.	
Establish a support system for organisation of stakeholders in artisanal fisheries, and broaden financial supports to stakeholders in artisanal fisheries and their associations	Establishment of a support policy of the MAAF of guidance to organize associations of fishery sector stakeholders.	Assignment of a responsible devoted to organize them within the Fisheries Directorate.	Revitalization of existing associations of artisanal fisheries stakeholders and strengthening of their organization	Establishment of mutual insurance system within associations.	Most of stakeholders involved in artisanal fisheries will join in an association.	Augment the fish volume of production and distribution in artisanal fisheries by reinforcing fish production capacities and maintaining stable operations
	Stakeholders of artisanal fisheries have enjoyed credit for fishing boats and processing facilities.	Management of artisanal fisheries have been stable thanks to tax deduction on fuel, boats and fishing gear.	Tax deduction on fisheries have attracted investments in fishing boats and gear.	Savings and credit activities of associations will be expanded.	Financial management of fishers and processors will be improved, and continuous stable production will be secured.	

Basic concepts	From 2020 to 2021	From 2022 to 2024	5 years later	10 years later	15 years later	Development objective
<p>Innovate functions and systems in the administration for artisanal fisheries management of the Ministry of Agriculture, Livestock and Fisheries of Congo, which seems to be falled behind compared to other African governments commitments</p>	<p>Sanctions on industrial fishing boats fishing illegally in fishing grounds for artisanal fishing have been strengthened.</p>	<p>The registration system of fishing boats and fishers will be refined, and data will be digitized.</p>	<p>The control of mesh size of fishing nets will be intensified.</p>	<p>Surveillance-rescue boats will secure the surveillance 24 hours a day.</p>	<p>Conflicts between artisanal fisheries and industrial fisheries will be dissolved.</p>	<p>Sustainable fishery resource management</p>
	<p>A system of extension specialists on fishing techniques have been established.</p>	<p>Trainings of extension specialists on fishing techniques in neighbouring countries will begin.</p>	<p>A fisheries training school will be established to improve the fishing techniques of artisanal fishers.</p>	<p>Extension specialists will give the technical guidance and practical training on the landing beaches.</p>	<p>Fishers will learn new techniques and will conduct effective fishing.</p>	
	<p>The development of statistical data on fishing will start.</p>	<p>The functions of research and study on URRM will be strengthened.</p>	<p>Scientific fishery resources surveys will be launched.</p>	<p>Exploitable volumes of main fish species will be identified.</p>	<p>A policy for sustainable fishery resource management will be established.</p>	
	<p>The re-training of officials of Fisheries directorate by using the internship system in international organisations will be instituted.</p>	<p>The staff and facilities/equipment of the Surveillance and Control centre of the quality of fishery products will be strengthened.</p>	<p>The quality control of the fish landed by industrial fishing vessels will be enforced.</p>	<p>The functions of control and test of food products of the URRM will be developed.</p>	<p>In the markets, there will be no food products other than safe and clean products.</p>	

Roadmap aiming to the improvement of fishery products value chain of small-scale fishing in Pointe-Noire

	From 2020 to 2021	From 2022 to 2023	5 years later	10 years later	15 years later	Development objective
Milestones	<p><b>Basic concepts</b></p> <p>Eliminate any contamination of fish products in artisanal fisheries all along the production and distribution processes and prevention of freshness loss and deterioration of the quality of fish</p> <p>Develop basic infrastructures in artisanal fisheries to increase distribution volumes of fish products in artisanal fisheries by the reduction of loss in catches, loss in processing, loss in distribution</p> <p>Establish a support system for organization of stakeholders in artisanal fisheries, and broaden financial supports to stakeholders in artisanal fisheries and their associations</p> <p>Innovate functions and systems in the administration for artisanal fisheries management of the Ministry of Agriculture, Livestock and Fisheries of Congo, which seems to be failed behind compared to other African governments commitments</p>	<p>The garbage collection will be carried out periodically on the landing beaches.</p> <p>Installation of water supply networks and hygienic drainage facilities will be started in existing markets.</p> <p>The technical guidance and training for fishers in pelagic and demersal fisheries will begin.</p> <p>Short term practical training programs will start at the existing fishery centre.</p> <p>Establishment of a support policy of the MAF of guidance to organize associations of fishery sector stakeholders.</p> <p>Stakeholders of artisanal fisheries have enjoyed credit for fishing boats and processing facilities.</p> <p>Sanctions on industrial fishing boats fishing illegally in fishing grounds for artisanal fishing have been strengthened.</p> <p>A system of extension specialists on fishing techniques have been established.</p> <p>The development of statistical data on fishing will start.</p> <p>The re-training of officials of Fisheries Directorate by using the internship system in international organisations will be instituted.</p>	<p>Clean water will be provided in fisher's communities.</p> <p>Ice for keeping fish fresh is widely used and the quality of fresh fish for processing will be improved.</p> <p>The periodical inspections of outboard engines will be compulsory.</p> <p>Improved smoking kilns will be wide spread.</p> <p>Assignment of a responsible devoted to organize them within the Fisheries Directorate.</p> <p>Management of artisanal fisheries have been stable thanks to tax deduction on fuel, boats and fishing gear.</p> <p>The registration system of fishing boats and fishers will be refined, and data will be digitized.</p> <p>Trainings of extension specialists on fishing techniques in neighbouring countries will begin.</p> <p>The functions of research and study on URRM will be strengthened.</p> <p>The staff and facilities/equipment of the Surveillance and Control centre of the quality of fishery products will be strengthened.</p>	<p>The living conditions of fisher's communities will be improved.</p> <p>Awareness-raising for consumers to "Safe fish food products" will be carried out widely.</p> <p>Fisheries extension specialists will be posted on the prime fisher's communities</p> <p>The distribution system to Brazzaville for fresh fish will be established.</p> <p>Revitalization of existing associations of artisanal fisheries stakeholders and strengthening of their organization</p> <p>Tax deduction on fisheries have attracted investments in fishing boats and gear.</p> <p>The control of mesh size of fishing nets will be intensified.</p> <p>A fisheries training school will be established to improve the fishing techniques of artisanal fishers.</p> <p>Scientific fishery resources surveys will be launched.</p> <p>The quality control of the fish landed by industrial fishing vessels will be enforced.</p>	<p>Contamination free fish products will be widely available.</p> <p>Modern and hygienic fish markets will be constructed.</p> <p>New type of fishing boats with better production capacity will be launched.</p> <p>Artisanal fisheries centres will be established on the prime landing beaches.</p> <p>Most of stakeholders involved in artisanal fisheries will join in an association.</p> <p>Financial management of fishers and processors will be improved, and continuous stable production will be secured.</p> <p>Conflicts between artisanal fisheries and industrial fisheries will be dissolved.</p> <p>Fishers will learn new techniques and will conduct effective fishing.</p> <p>A policy for sustainable fishery resource management will be established.</p> <p>The functions of control and test of food products of the URRM will be developed.</p>	<p>Supply safe and clean fish food products to Congolese populations</p> <p>Secure the stable national supply of fish products of artisanal fisheries</p> <p>Augment the fish volume of production and distribution in artisanal fisheries by reinforcing fish production capacities and maintaining stable operations</p> <p>Sustainable fishery resource management</p>
	Improvement plans	<p>Improvement of the hygienic environment of landing beaches and prevention of contamination of fish products</p> <p>Improvement of existing fishery management of hygienic environment in the processing workshop</p> <p>Development of human resources in charge of the quality control of food products in markets</p> <p>Improvement of hygienic conditions on public markets for fish products</p> <p>Development of fishing techniques (prevention of the post-harvest loss)</p> <p>Nurturing of extension specialists and improvement of fishing techniques</p> <p>Guidance for the operation and management of the artisanal fisheries center of Pointe Noire (CAPAP)</p> <p>Establishment of a support system for artisanal fishers and stakeholders. Strengthening of the organization of fishery stakeholders' associations</p> <p>Training for control of illegal fishing, strengthening of the surveillance and control system, and penalties</p> <p>Establishment of a database of fishing boats and fishers</p> <p>Training of agents for fish statistics</p>	<p>Establishment of a market for processed fish products</p> <p>Strengthening the awareness-raising on food security</p> <p>Enforcement of strict quality control of fish products of the Centre for controlling fish</p> <p>Improvement of the quality of processed products</p> <p>Improvement of the food security of fish products</p> <p>Improvement of fishing effectiveness by introduction of new fishing techniques</p> <p>Development of maintenance capability of outboard engines</p> <p>Building capacities for the management of artisanal fisheries centres</p>	<p>Strengthening of processing capacity of workshops by joint operations of processors and/or by organization of processors and quantities distributed in the country by increasing the production of processed products</p> <p>Short term practical training system for artisanal fishers</p> <p>Improvement of the capability of fishing boats by introduction of improved canoes</p> <p>Establishment of a fishery training school</p> <p>Establishment of artisanal fisheries centres</p>	<p>Strengthening of URRM functions of inspection and control for fish food products</p> <p>Establishment of the central fish market in Pointe-Noire</p> <p>Establishment of artisanal fisheries centres</p>	<p>Development of artisanal fisheries by the reduction of taxes and granting of subsidies</p> <p>Arrangement of surveillance-rescue boats</p> <p>Strengthening of study and research functions for fish resources</p> <p>Fish resource survey</p> <p>Identification of the exploitable volumes of major fish species and development of the sustainable management plan</p>
Development plan for strengthening the quality control of fish products						
Development plan for strengthening the quality control of fish products						
Improvement plan of the quality of fish products/Development plan of markets for fish products						
Development plan of fishing techniques/Development plan of fishing canoes						
Development plan for management of artisanal fisheries centers/Establishment plan of artisanal fisheries centers						
Plan for strengthening the organization of artisanal fishers						
Financial support plan for artisanal fisheries						
Plan for strengthening the capacity of surveillance and control against illegal fishing						
Development plan of fish statistics/Fish resource survey/ Plan for sustainable management of fish resources						





## 5-5 Action plans

### 5-5-1 Improvement plans which will be implemented during the first two years (2020-)

5-5-1-1. Project for development of the hygienic conditions of landing beaches (Based on basic concept 1 & 2)

#### (1) Project overview

##### 1) Construction of fish sorting sheds and spaces for primary treatment

The fisher lands fish on the beach, negotiate there with traders or consumers, sell the fish, and gills and guts of the fish is removed on the beach. But on the landing beaches, the garbage are scattered, remnants of fish are abandoned and they stinks, which makes the landed fish on the landing beaches are susceptible to contamination.

The development of hygienic fisheries facilities on two prime landing beaches of Pointe-Noire and Kouilou departments, namely, places for landing/sorting on concrete floor and roof, primary treatment spaces and deep wells for clean water supply to the working space, will enhance the hygienic conditions of the landing beach and prevent the contamination of fish.

##### 2) Environmental improvement of fisher's communities and landing beaches

Garbage bins will be installed in the communities and a garbage collection system will be organised, it is also planned to raise the awareness of fishers and their families to the promotion of the improvement of the hygienic conditions of the communities and landing beaches, by periodical cleaning activities on beach by fishers who use it as a landing beach.

#### (2) Execution period

2020 ~ 2 years

#### (3) Facilities plan

Name of the facility	Characteristics	Qty	Remarks
Deep well	Depth: 80 m	2 locations	
Water tank	1m <sup>3</sup>	2 locations	
Sorting space	Space of 50 m <sup>2</sup> with roof and concrete slab	2 locations	
Primary treatment space	Space of 50 m <sup>2</sup> with roof and concrete slab	2 locations	Made of concrete
Guard post	9 m <sup>2</sup> , in concrete blocks	2 locations	
Warehouse	9 m <sup>2</sup> , in concrete blocks	2 locations	
Pump room	9 m <sup>2</sup> , in concrete blocks	2 locations	
Septic tank		2 locations	

(4) Equipment plan

Equipment name	Qty	Remarks
Tools for cleaning beaches	2 sets	
Garbage bin	10 units	
Tools for cleaning facilities	2 sets	
Fish boxes	60 units	30 by facility
Plastic buckets	20 units	10 by facility
Washing basin	20 units	10 by facility

(5) Manpower plan

- Project coordinator: 1 pers., DPA Agent, 2 years
- Manager of landing facilities: 2 pers., 2 years
- Foreign expert (in management of landing facilities): 1 pers., 7 days x 24 months = 5.6 man-months
- Congolese Consultant (hygiene and awareness-raising for communities): 4 pers., 5 days x 24 months = 16 man-months

5-5-1-2. Project for strengthening the awareness on food security (Based on Basic concept 1)

(1) Project overview

Fish traders and vendors lack the sense of responsibility for supplying fish products to consumers as a food. They marginally try to clean their surroundings, respect of hand washing, protection against flies and other insects. for improvement of the hygienic conditions around their sales point. Not only hygienic facilities around them are catastrophic, but also personal efforts for cleaning by themselves are lacking. They do not understand that improving the hygienic conditions means improving their working environment. Physical arrangements are indispensable, but raising the awareness of fishers, traders and vendors for the hygienic conditions is vital. Awareness-raising of fishers, traders and vendors to keep fish fresh and to secure the food shall therefore be emphasized. Consumers' awareness-raising to the safety of food will also be strengthened.

(2) Execution period

2020 ~ 5 years

(3) Plan of facilities

Nil

(4) Plan of equipment

Nil

(5) Manpower plan

- Project coordinator: 1 pers., DPA Agent, 5 years
- Foreign expert (management of fish products quality): 1 Pers., 6 man-months
- Congolese Consultant (extension): 30 man-months

5-5-1-3. Project for Improvement of processing of fish products (diffusion of improved smoking kilns and improvement of the hygienic conditions of smoking workshops)  
(Based on Basic concept 2)

(1) Project overview

1) Diffusion of improved smoking kilns

Sardinella is the fish species the largest catch in artisanal fisheries. But there is widely fluctuated in volume seasonally, which causes a considerable fluctuation of fish price. In the peak season, the market is saturated and fish price drops significantly, but the existing processing capacities are insufficient to process all the fish caught, which leads to losses by fish discard. The current smoking practise that smokes fish only one side by one side requires turn over of the fish during the process, restricts production capacity of the smoking kiln lower than that of expected in numbers of kilns, does not make good use of the smoke, and the neighbours complain about smoke pollution. In PECHVAL pilot projects, Seiro (wooden basket containers) were piled up on top of the second-hand drum serving as smoking kiln and a cover placed on top to make smoke and heat circulate effectively; a kiln with improved performance has been developed and verification tests were experimented. In this project, the dissemination of the kiln, which effectiveness was proved by the pilot project will target reduction of losses in processing, increase of the production capacity, improvement of the quality of products and reduction of smoking pollution. The dissemination activities will be targeting the reduction of the production cost and to support a greater number of processors introduce the improved smoking kiln.

2) Development of the hygienic conditions in processing workshops

The hygienic conditions of smoking workshops is unacceptable, and almost all of the workshops are inappropriate for manufacturing of foods. Notably there is no clean water for washing fish, instead the water from contaminated wells is used, which spoils the quality of processed products and is a cause of losses in processing. In addition, keeping the products in smoking kilns until shipment after smoking completed - causes also spoiling of the quality of products and hampers continuous operation of smoking kilns. To ensure the reduction of losses in processing and improve processing capacities by the improvement of the working environment, the model smoking facilities including deep wells,

storages for utensils, and storages for products will be established in the 3 districts of Mazula, Songolo and Phoea, and the trainings of the smoking practice will be made by group trainings. The organization of processors' associations will be nurtured through group training, and the support to the existing micro-credit fund such as MUCODEX, etc. will enable the provision of funds for the expansion of improved smoking kilns, procurement of fresh fish and expanding the production capacity of smoked products.

(2) Execution period

2020 ~ 2 years

(3) Plan of facilities

Name of the facility	Characteristics	Qty	Remarks
Deep well	Depth: 80 m	3 locations	
Water tank	5 m <sup>3</sup>	3 locations	
Storage for utensils	50 m <sup>2</sup>	3 locations	
Storage for products	75 m <sup>2</sup>	3 locations	
Shed for primary treatment	150 m <sup>2</sup> , with roof and concrete slab	3 locations	
Guard post	9 m <sup>2</sup> , in concrete blocks	3 locations	

(4) Plan of equipment

Equipment name	Qty	Characteristics / Remarks
Tebiyama smoking kiln	45 units	Drum can
Wooden basket container (seiro)	540 units	12 Units/smoking kiln
Fish boxes	225 units	Capacity of 30 kg, 5 units/smoking kiln
Plastic bucket	180 units	4 Units/smoking kiln
Washing basin	90 units	2 Units/smoking kiln

(5) Manpower plan

- Project coordinator: 1 pers., DPA Agent, 2 years
- Manager of processing facilities: 3 Pers., 2 Years
- Foreign expert (technical guidance and traibibg for processing of fish products, dissemination):  
1 pers., 7 days x 24 months = 5.6 man-months

5-5-1-4. Project for intensifying of the quality control of fish food (training program for inspectors of food products in the markets) (Based on Basic concept 2)

(1) Project overview

The volume of industrial fishing catches is larger than that of artisanal fisheries. A lot of fish landed by industrial vessels are distributed in fresh and most of the fresh fish distributed in the markets in Pointe-Noire are from industrial fisheries. After industrial vessels land fish at Pointe-Noire, the quality inspectors of the Quality control centre of fish products of the Fisheries directorate of Pointe-Noire provide the sensory analysis at landing for the quality of catches, however, the fresh fish distributed in the city are of poor quality, which makes their value lower in the following distribution process. It is essential that quality inspectors have detailed knowledge for judgement with the freshness score, he/she is able to give instructions to fishers for correct fish handling and he/she have the legal authority to prohibit distribution of poor quality products. It is necessary for quality inspectors to have enough knowledge and capacities to make an impartial judgement. The strengthening of the quality control system of fish food products is required, and the training and retraining of quality inspectors shall be undertaken.

(2) Execution period

2020 ~ 5 years

(3) Plan of facilities

Nil

(4) Plan of equipment

Nil

(5) Manpower plan

- Project coordinator: 1 pers., DPA Agent, 5 years
- Foreign expert (inspection of quality of fish products): 1 Pers., 4 man-months

5-5-1-5. Project for development of hygienic conditions in public markets (Based on Basic concept 2)

(1) Project overview

There are 24 public markets in Pointe-Noire, in which 21 markets have fish products selling stalls, but the hygienic conditions is poor; most of them have no facility for running water, and even though it is available, it is contaminated by colibacillus. Water drainage are ignored and there is no toilet. In addition, in most markets a garbage dumping place is located close to the market building, and fresh fish are sold on the stalls on the mire in the rainy season. Public markets of Pointe-Noire are

categorized into three class according to their magnitude. The project plans the installation of water supply networks, improvement of water drainage facilities in the fish selling sections, construction of public toilets and installation of garbage dumps in the six public markets.

(2) Execution period

2020 ~ 4 years

(3) Plan of facilities

Name of the facility	Characteristics	Qty	Remarks
Installation of water supply networks		6 locations	
Improvement of the fish selling sections	100 m <sup>2</sup> . Concrete floor	6 locations	
Garbage dump	50 m <sup>2</sup> . Concrete floor	6 locations	
Construction of toilets		6 locations	
Water drainage works		6 locations	

(4) Plan of equipment

Nil

(5) Manpower plan

- Project coordinator: 1 pers., DPA Agent, 2 years
- Foreign expert (Management of Hygiene): 1 Pers., 6 man-months
- Congolese Consultant (Design and supervision): 2 Pers., 24 man-months

5-5-1-6. Project for improvement of fish quality (improvement of fishing techniques, prevention of the freshness loss of fish catches) (Based on Basic concept 2)

(1) Project overview

1) Improvement of fishing technique of pelagic fish/promotion of keep fish catch in ice

The pelagic fish caught in gill net kept long hours in the sea water at high temperature, which is the first cause of their loss of freshness. To avoid that, it is necessary to pull the net out on the boat at regular intervals, remove the fish, keep them in ice and re-start the fishing. Practical field guidance and training on effective fishing techniques shall be provided to fishers for keeping the freshness of catches, for example, to put fish caught immediately into the ice.

2) Improvement of the fishing technique of demersal fish/improvement of the preservation practice on boats.

In the case of demersal fish, to avoid deterioration of freshness of the fish caught with the net in the sea due to high water temperature, fishers shall haul the gill net at the appropriate time but as short as

possible after setting the net, and they shall put the catches into the sea water tank with ice. The ice shall be remained until the landing of the catches. Practical field guidance and training on effective fishing techniques shall be provided to fishers, and to make them widely applied by the fishers.

(2) Execution period

2020 ~ 4 years

(3) Plan of facilities

Nil

(4) Plan of equipment

Nil

(5) Manpower plan

- Project coordinator: 1 pers., DPA Agent, 2 years
- Foreign expert (fishing guidance) : 1 pers., 7 days x 24 months = 5.6 man-months
- Congolese consultant (fishing training) : 2 pers., 7 days x 24 months = 11.2 man-months

5-5-1-7. Project for extension of fishing techniques (training of fisheries extension specialists)  
(Based on Basic concept 2)

(1) Project overview

To improve artisanal fishing techniques, the most effective way is to carry out the hand-on trainings by working directly with the fishers. However there is no fisheries educational institution in Congo, and there is lack of specialists capable of providing guidance and training to fishers on fishing techniques in the Ministry of Agriculture, Livestock and Fisheries. It is necessary to establish an extension specialists system for artisanal fisheries within the Ministry of Agriculture, Livestock and Fisheries, and send trainees to neighbouring countries to train as the extension specialists.

(2) Execution period

2020 ~ 2 years

(3) Plan of facilities

Nil

(4) Plan of equipment

Nil



(5) Manpower plan

- Project coordinator: 1 pers, DPA Agent, 2 years
- Artisanal fishing extension specialists : 4 pers., 2 years

5-5-1-8. Project for guidance of operation and management of the artisanal fisheries center

(1) Project overview

To make operation and management of the CAPAP (artisanal fisheries centre at Songolo), inaugurated in June 2018, a model for artisanal fisheries centers to be established in future, an expert will provide the guidance on the operation and management of artisanal fisheries facilities, and will develop management capacities of officials assigned to the Center at intervals.

(2) Execution period

2020 ~ 2 years

(3) Plan of facilities

CAPAP

(4) Plan of equipment

CAPAP equipment

(5) Manpower plan

- Project coordinator: 1 pers., CAPAP Director, 2 years
- Foreign expert (operation and management of artisanal fisheries facilities): 1 pers., 7 man-months
- Foreign expert (fish products value chain) : 1 pers., 7 man-months

5-5-1-9. Project for strengthening the organization of stakeholders in artisanal fisheries (Based on Basic concept 3)

(1) Project overview

The Ministry of Agriculture, Livestock and Fisheries will establish its policy to support the organization of stakeholders in artisanal fisheries and appointed full time staff(s) devoted to the organizing associations for stakeholders in artisanal fisheries will be assigned in the departmental fisheries directorates. In addition, the Ministry will also support associations to have a credit line for purchasing fishing boats, fishing equipment, processing gear, funds for procurement of fish, funds for procurement of fish products, etc., while using the existing micro-credit system. The expert will

work with the appointed staff to support for strengthening organizations and activities of artisanal fisheries associations.

(2) Execution period

2020 ~ 2 years

(3) Plan of facilities

Nil

(4) Plan of equipment

Nil

(5) Manpower plan

- Project coordinator: 1 pers., DPA Agent, 2 years
- Full time staffs devoted for organizing artisanal fisheries associations : 2 pers., 2 years
- Foreign expert (organizing of associations) : 1 pers., 6 man-months
- Congolese consultant (organizing of associations) : 2 pers., 12 man-months

5-5-1-10. Project of training for surveillance and control of illegal fishings (Based on Basic concept 3)

(1) Project overview

Illegal fishings, which threatens the fish resources, security and fishing gear of artisanal fishermen, such as the destruction of artisanal fisher's gear by fishing activities on fishing grounds prohibited to industrial vessels, excessive fishing by using nets which mesh size is smaller than the regulated size by industrial vessels, the violation of the regulations on the mesh size of artisanal fishing boats, etc. is spreading. As counter measures against these illegal fishings, it is planned in the future to arrange boats for surveillance and control at Pointe-Noire, with the VMS for effective and severe control. Agents for surveillance and control will be sent to a neighbouring country as an internship to improve their surveillance and control capacities for future deployment.

(2) Execution period

2020 ~ 2 years

(3) Plan of facilities

Nil

(4) Plan of equipment

Nil

(5) Manpower plan

- Project coordinator: 1 pers., DPA Agent, 2 years

5-5-1-11. Project for development of fishery database

(1) Project overview

The fishery database necessary for sustainable fishery resources management will be developed in collaboration with the FAO and/or another fishery sub-regional organization.

(2) Execution period

2020 ~ 2 years

(3) Plan of facilities

Nil

(4) Plan of equipment

Equipment name	Qty	Remarks
Data processing computer	5 units	
Printer	1 unit	
Software	1 set	

(5) Manpower plan

- Project coordinator: 1 pers., DPA Agent, 2 years
- Foreign expert ( fishery database): 1 pers., 24 man-months

5-5-1-12. Project for training of agents for fishery statistics (Based on Basic concept 4)

(1) Project overview

Fishery statistical agents who collect fishery statistics in the field will be sent in internship to a neighbouring country for their training.

(2) Execution period

2020 ~ 4 years

(3) Plan of facilities

Nil

(4) Plan of equipment

Nil

(5) Manpower plan

- Project coordinator: 1 pers., DPA Agent, 4 years

**5-5-2 Improvement plans which implementation is scheduled for the following 2 years (2022-)**

5-5-2-1. Project for improvement of the environment of fisher's communities (Based on Basic concept 1)

(1) Project overview

The fishers' communities, main production places for artisanal fisheries of Congo, will have access to clean potable water thanks to deep wells built the previous year under the "Project for development of the hygienic conditions of landing beaches", and to water facilities installed in the neighbourhood of communities. Water drainage channels will be provided for rainwater and sewage not to stagnate in communities so that hygienic conditions without disturbances caused by insects and odor will be secured. The development of roads from public roads to communities will enable preventing the contamination of fish products in transit and improve the productivity. Equipment for broadcasting for information diffusion on sea conditions and meteorology will be provided to prevent maritime accidents.

(2) Execution period

2022 ~ 5 years

(3) Plan of facilities

Name of the facility	Characteristics	Qty	Remarks
Installation of a water pipe		2 sets	
Construction of roads and water drainages		2 sets	
Installation of the broadcasting equipment		1 set	For the community FM radio

(4) Plan of equipment

Equipment name	Qty	Remarks
FM broadcasting iequipment	1 set	

(5) Manpower plan

- Project coordinator: 1 pers., DPA Agent, 5 years
- Foreign expert (development of the hygienic conditions) 1 pers., 10 man-months

5-5-2-2. Project for construction of a market for processed fish products (Based on Basic concept 2)

(1) Project overview

In the vicinity of the CAPAP where marketing fresh fish of artisanal fisheries, a market for processed fish products enabling processors of artisanal fisheries to market smoked and salt-dried products will be constructed.

(2) Execution period

2022 ~ 2 years

(3) Plan of facilities

Name of the facility	Characteristics	Qty	Remarks
Market for processed fish products	about 700 m <sup>2</sup>	1 set	

(4) Plan of equipment

Nil

(5) Manpower plan

- Project coordinator: 1 pers., DPA Agent, 2 years
- Foreign expert (planning and design): 1 pers., 3 man-months
- Congolese consultant (supervision of construction): 1 pers., 8 man-months

5-5-2-3. Project for development of the Quality control centre for fish products (Based on Basic concept 2)

(1) Project overview

Facilities and equipment of the quality control centre for quality control of fish products from industrial fishery landed at Pointe-Noire port will be constructed to enhance the quality control level of fish products distributed in fresh to consumers and processed for food products.

(2) Execution period

2022 ~2 years

(3) Plan of facilities

Name of the facility	Characteristics	Qty	Remarks
Quality control centre	about 230 m <sup>2</sup>	1 set	

(4) Plan of equipment

Equipment name	Qty	Remarks
Microscope	1 unit	
Cold storage for the protection of samples	1 unit	
Freezer	1 unit	
Incubator	1 unit	
Printer	1 unit	
Computer	5 units	
Other	1 pack	

(5) Manpower plan

- Project coordinator: 1 pers., DPA Agent, 2 years
- Foreign expert (quality control) : 1 pers., 6 man-months
- Congolese consultant (supervision of construction) : 1 pers., 8 man-months

5-5-2-4. Project for improvement of fishing techniques (Based on Basic concept 2)

(1) Project overview

Much advanced and effective fishing techniques, such as purse seines fishing will be introduced for improvement of the efficiency of fishing. Training on the repair of outboard engines will also be provided to artisanal fishers to improve repair techniques of outboard engines and ensure the security during fishing trips.

(2) Execution period

2022 ~ 2 years

(3) Plan of facilities

Nil

(4) Plan of equipment

Equipment name	Qty	Remarks
Fishing nets, etc.	1 set	
Outboard engine for the training	4 units	
Equipment for the repair of outboard engines	1 set	
Spare parts for outboard engines	1 set	

(5) Manpower plan

- Project coordinator: 1 pers., DPA Agent, 2 years
- Foreign expert (fishing techniques): 1 pers., 12 man-months
- Congolese consultant (repair of outboard engines): 1 pers., 12 man-months

5-5-2-5. Project for capacity building for the operation and management of artisanal fisheries centres (Based on Basic concept 3)

(1) Project overview

Artisanal fisheries centres established as administrative corporation will be privatised and functions and capacities of the agents of centres, users' organizations and management committee will be established to enable the autonomous management of centers by stakeholders in artisanal fisheries.

(2) Execution period

2022 ~ 10 years

(3) Plan of facilities

Nil

(4) Plan of equipment

Nil

(5) Manpower plan

- Project coordinator: 1 pers., DPA Agent, 10 years
- Foreign expert (Guidance of the management of fisheries centres): 1 pers., 10 man-months

5-5-2-6. Project for financial support to artisanal fisheries (Based on Basic concept 4)

(1) Project overview

Financial bases of artisanal fishers in Congo are fragile. Even shipowners considered as having

relatively high income can be obliged to give up in case of loss of outboard engine or canoe by an accident. Processors, who don't have enough funds, are losing the opportunity to buy cheaper fresh fish during the peak season, to expand their smoking capacities for augmentation of their production. The organization of fisheries stakeholders' associations will be promoted, the expansion of micro-credit to organized groups will be strengthened, and the expansion/strengthening of production facilities of fishery stakeholders and the procurement of fresh fish (materials) at low prices, etc. will enable the expansion of the production.

(2) Execution period

2022 ~ 2 years

(3) Plan of facilities

Nil

(4) Plan of equipment

Nil

(5) Manpower plan

- Project coordinator: 1 pers., DPA Agent, 2 years
- Foreign expert (micro-credit) : 1 pers., 6 man-months
- Congolese consultant (organising associations) : 1 pers., 12 man-months

5-5-2-7. Project for fishing surveillance and control boat (Based on Basic concept 4)

(1) Project overview

To ensure the sustainable utilization of fish resources and proper fishing activities, a boat for fishing surveillance and control will be arranged in Pointe-Noire to control IUU (Illegal, unreported, unregulated), and illegal fishing conducted by industrial and artisanal fishing boats.

(2) Execution period

2022 ~ 2 years

(3) Plan of facilities

Nil

(4) Plan of equipment

Equipment name	Qty	Remarks
Surveillance and control boat	1 boat	



Small srveillance control boat	1 boat	
Installation of wireless radio	1 set	Onshore installations

(5) Manpower

- Project coordinator: 1 pers., DPA Agent, 2 years
- Foreign consultant (operation of surveillance and control) 1 pers., 24 man-months
- Foreign consultant (maintenance of the machines of the boat/vessel): 1 pers., 24 man-months

5-5-2-8. Project for development of a fishery statistical data management system (Based on Basic concept 4)

(1) Project overview

The statistics of catches by fish species, which constitute the resources management basis, will be developed.

(2) Execution period

2022 ~ 5 years

(3) Plan of facilities

Nil

(4) Plan of equipment

Nil

(5) Manpower plan

- Project coordinator: 1 pers., DPA Agent, 5 years
- Foreign expert (fishery statistics) : 1 pers., 30 man-months

**5-5-3 Plans which implementation will begin 5 years later (from 2024)**

5-5-3-1. Project for expansion/strengthening of joint processing workshops (Based on Basic concept 2)

(1) Project overview

With volumes of pelagic species captured varying significantly according to seasons, financial support will be provided for the construction of processing facilities for the organization of processors for joint work, in order to build processing capacities that are largely insufficient during the peak season.

- (2) Execution period  
5 years from 2024

5-5-3-2. Project for training plan of artisanal fishermen (Based on Basic concept 2 & 3)

- (1) Project overview  
A short term practical training for artisanal fishermen will be provided continuously by trained fishery extension specialists.

- (2) Execution period  
5 years from 2024

5-5-3-3. Project for development of improved canoes (Based on Basic concept 2)

- (1) Project overview  
Referring to boats with keel, new types of canoes adapted to Congolese fishing conditions, more stable, operational, with large capacity and cheap price will be developed and diffused for building the capacity of fishing boats.

- (2) Execution period  
7 years from 2024

5-5-3-4. Project of financial supporting for artisanal fisheries development (Based on Basic concept 4)

- (1) Project overview  
Materials/equipment such as fuel and nets, beacons, ropes for fishing, hooks, etc. for artisanal fishing boats will be exempted to boost artisanal fishing activities and secure the fisheries financial management.

- (2) Execution period  
From 2024

5-5-3-5. Project for strengthening in research and studies for fish resources (Based on Basic concept 4)

- (1) Project overview  
In Congo, there is no university or research organization conducting study and evaluation of fish resources. Fearing the insufficient supply of fish products because of its heavy dependence on fish products imports and its low self-sufficiency rate, the Congolese government shall undertake more

vigorously various actions for increasing the production, but neither studies nor the collection of basic data necessary to the estimation of scientific resources and the determination of the maximum sustainable yield (MSY), data required for sustainable resources management are carried out. A research section on resources will be established in the research centre under the supervision of the Ministry of Agriculture, Livestock and Fisheries on the former ORSTOM in Pointe-Noire, and the staffing and research system will be strengthened.

(2) Execution period

5 years from 2024

**5-5-4 Plans which implementation will begin 10 years later (from 2030)**

5-5-4-1. Project for implementation of URRM functions for food products control (Based on Basic concept 2)

There is in Pointe Noire a study and scientific research institute of fish products and micro-organisms called Research Unit on the Microbial Resources (URRM) under the supervision of the Ministry of Agriculture, Livestock and Fisheries. Although this research institute is equipped with dry and wet laboratories, their equipment is limited to simple kits and sample vessels, and no real control of food products is performed. The equipment for the control of food products and the staff of this unit will be increased, and functions and a more advanced control system will be established to intervene in the case of inability of the centre to control the quality of fish products.

5-5-4-2. Project for construction of a fish market in Pointe-Noire (Based on Basic concept 2)

A complex, modern and safe fish market, fitted with stalls for fresh fish and processed products (salt-dried) will be built in Pointe-Noire to promote fish products distribution.

5-5-4-3. Project for establishment of a fishery training school (Based on Basic concept 2)

A fishery training school will be built to train fishers, provide short term practical training to artisanal fishers, and training for manoeuvring modern fishing boats, operation techniques and repairing machines of boats, etc.

5-5-4-4. Project for establishment of artisanal fisheries support centres (Based on Basic concept 2)

An artisanal fisheries centers will be built on the prime landing beaches for artisanal fishing in the vicinity of Pointe-Noire, for ex. Matombi.

5-5-4-5. Project for resource survey (Based on Basic concept 4)

A survey of fishery resources in the Congolese EEZ will be carried out periodically to estimate and identify exploitable volumes of main species.

5-5-4-6. Project for establishment of a sustainable resource management plan (Based on Basic concept 4)

Based on the resources survey, a sustainable and effective fishery resources management plan will be established.

## ANNEX

1. Member List
2. Record of Discussion (R/D)
3. Minutes of JCC



## 1. Member List

Project Manager	TAKAHASHI Kuniaki	Fisheries Engineering Co., Ltd.
Vice Project Manager / Facilities and equipment plan / Engineering	OGAWA Tadashi	dito
Fishing village development 1/ Fishermen organization	TOSHIHARA Takafumi	dito
Value Chain Analysis / Fishing village development 2	YAMANE Satoshi	dito
Bid and contract assistance 1	WACHI Yuichi	dito
Coastal erosion survey • topographical • geological survey	INKI Toshihito	dito
Improvement plan / Fishing village development 1	TORII Michio	dito
Bid and contract assistance 2/ Equipment plan	MURAKAMI Sumio	dito
Environmental and social considerations 1 / Gender considerations	YASUI Kyoko	dito
Fisheries distribution facilities / Management and Maintenance planning	EBATA Hidetaka	dito
Business plan / Environmental and social considerations 2	AKAI Yuka	dito
Project Coordination / Participatory development	HAGIWARA Mikiko	dito
Interpreter	OTANI Tomoyuki	dito

## 2. Record of Discussion (R/D)

**COMPTE RENDU DE LA REUNION  
ENTRE  
LE MINISTERE DE L'AGRICULTURE, DE L'ELEVAGE ET DE LA PECHE DE LA  
REPUBLIQUE DU CONGO  
ET  
L'AGENCE JAPONAISE DE COOPERATION INTERNATIONALE  
POUR AMENDER LE PROCES-VERBAL DES DISCUSSIONS  
PORTANT SUR  
LE PROJET D'ETUDE POUR L'AMELIORATION DE LA CHAINE DE VALEURS  
DES PRODUITS HALIEUTIQUES A POINTE NOIRE  
EN REPUBLIQUE DU CONGO**

Le Ministère de l'Agriculture, de l'Elevage et de la Pêche et l'Agence Japonaise de Coopération Internationale (ci-après dénommée JICA) s'accordent par la présente que le Procès-Verbal des discussions portant sur le Projet d'Etude pour l'Amélioration de la Chaîne de Valeurs des Produits halieutiques à Pointe-Noire signé le 19 juin 2012 et amendé le 12 novembre 2015 devra être amendé comme suit :

### 1. II.9. Durée de l'exécution du Projet

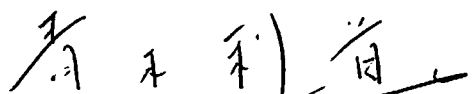
Avant	Version amendée
9. Durée de l'exécution du Projet 5,5 ans	9. Durée de l'exécution du Projet à partir du 7 octobre 2012 au 30 novembre 2018
Raison : Prolonger la durée de coopération basée sur l'accord entre le Ministère de l'Agriculture, de l'Elevage et de la Pêche et la JICA correspondant au délai des travaux de construction des installations de la pêche artisanale.	

Cet amendement sera effectif à la date de la signature.

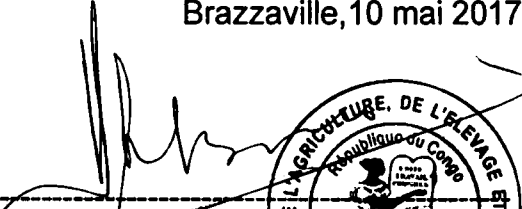
Annexe 1 : Procès-verbal des discussions signé le 19 juin 2012

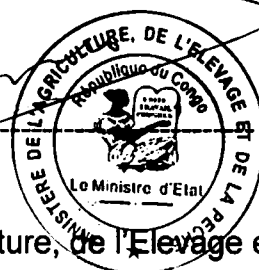
Annexe 2 : Compte rendu de la réunion sur premier amendement signé le 12 novembre 2015

Brazzaville, 10 mai 2017

  
-----  
M. Toshimichi AOKI  
Représentant Résident  
Agence Japonaise de Coopération  
Internationale  
en République Démocratique du Congo



  
-----  
M. Henri DIOMBO  
Ministre d'Etat  
Ministère de l'Agriculture, de l'Elevage et  
de la Pêche  
République du Congo





**PROCES-VERBAL DES DISCUSSIONS**

**PORTANT SUR**

**LE PROJET D'ETUDE POUR L'AMELIORATION DE LA CHAINE DE VALEURS  
DES PRODUITS HALIEUTIQUES A POINTE-NOIRE**

**EN**

**REPUBLIQUE DU CONGO**

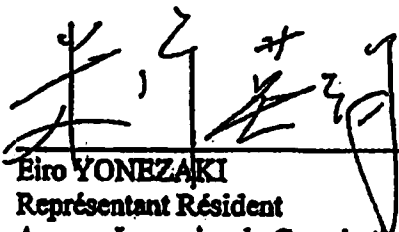
**ENTRE**

**LE MINISTERE DE LA PECHE ET DE L'AQUACULTURE  
DE LA REPUBLIQUE DU CONGO**

**ET**

**L'AGENCE JAPONAISE DE COOPERATION INTERNATIONALE**

Brazzaville, le 19 juin 2012

  
Eiro YONEZAKI  
Représentant Résident  
Agence Japonaise de Coopération  
Internationale  
en République Démocratique du Congo

  
Helot Matson MAMPOUYA  
Ministre de la Pêche et de l'Aquaculture  
République du Congo







Sur base du Compte Rendu de la Réunion portant sur l'Etude d'élaboration du plan détaillé du Projet d'Etude pour l'Amélioration de la Chaîne de Valeurs des Produits halieutiques à Pointe-Noire (ci-après désigné "le Projet") en République du Congo (ci-après désigné « le Congo ») signé le 28 mars 2012 entre le Ministère de la Pêche et de l'Aquaculture (ci-après désigné "le MPA") et l'Agence Japonaise de Coopération Internationale (ci-après désignée "la JICA"), la JICA a eu une série de discussions avec le Ministère de la Pêche et de l'Aquaculture et les organismes concernés afin d'élaborer un plan détaillé du Projet.

Les deux parties se sont mises d'accord sur la description du Projet décrit dans l'Appendice 1 et l'Appendice 2 et demandent aux Gouvernements respectifs d'entamer les procédures nécessaires pour la mise en œuvre du Projet.

Les deux parties ont également convenu que le MPA, partenaire de la JICA, sera responsable de la mise en œuvre du Projet en collaboration avec la JICA. Il collaborera avec les autres administrations concernées et s'assurera que la mise en œuvre autonome du Projet est soutenue pendant et après la période d'exécution du Projet en vue de contribuer au développement social et économique du Congo.

Le Projet sera mis en place dans le cadre des Notes Verbales échangées (le 1<sup>er</sup> décembre 2011) entre le Gouvernement du Japon et le Gouvernement de la République du Congo.

La validité du présent Procès-Verbal des Discussions est soumise à l'approbation de la JICA.

Appendice 1 : Description du Projet (avec trois annexes ci-dessous)

Annexe 1 : Liste des prises en charge.

Annexe 2 : Structure de l'exécution

Annexe 3 : Comité Conjoint de Coordination

Appendice 2: Compte Rendu de la Réunion relative au Projet d'Etude sur la Chaîne de Valeurs des Produits Maritimes à Pointe-Noire (le 28 mars 2012)

## DESCRIPTION DU PROJET

### I. CONTEXTE

1-1 En République du Congo (ci-après désigné « le Congo »), le Revenu National Brut par habitant est de 2.150 dollars (en 2010 selon la Banque Mondiale), ce qui est plus élevé que la moyenne des Etats africains. Mais, étant donné que le secteur pétrolier représente 65% du PIB, 85% de l'ensemble des recettes publiques et 90% de l'exportation (en 2006), la diversification des activités industrielles est un défi à relever. D'autre part, l'instabilité politique suite aux guerres civiles de 1997 à 2003 pourrait constituer un facteur incertain pour le développement économique du pays.

1-2 Le Congo a mis en avant la sécurité alimentaire et la promotion des secteurs de l'agriculture, de la sylviculture, et de la pêche comme les axes prioritaires du plan national de développement dans le cadre des stratégies de relance de la politique agricole élaborées en 2003. Avec l'appui de la FAO, une stratégie pour un développement durable de la pêche et de l'aquaculture (2011-2020) a été élaborée en 2011, en vue du développement durable de la pêche et de l'aquaculture.

1-3 La pêche maritime est pratiquée dans les départements du Kouilou et de Pointe-Noire, les seuls à disposer d'une côte parmi les 12 départements. Le département de Pointe-Noire produit près de 60% de l'ensemble de la pêche maritime, et environ 85% des travailleurs dans le secteur de la pêche y sont basés, ce qui fait de la ville un pôle incontournable de la pêche.

1-4 Cependant, la défaillance des infrastructures de base, à partir du débarquement jusqu'à la chaîne de transformation et de vente, ainsi que le manque de mécanisme de gestion par l'administration, font que les activités de pêche et de distribution des produits halieutiques restent inefficaces. Par conséquent, cela ne contribue ni à la hausse du revenu des acteurs des pêches ni à l'amélioration de la qualité du poisson aux consommateurs. Il faut établir une véritable chaîne de valeurs afin de relever les défis à travers la valorisation des produits halieutiques.

### II. APERÇU DU PROJET

#### 1. Titre du Projet

Le Projet d'Etude pour l'Amélioration de la Chaîne de Valeurs des Produits Halieutiques à Pointe-Noire

#### 2. Objectif du projet

Un plan d'amélioration est établi pour améliorer la chaîne de valeurs des produits halieutiques à Pointe-Noire.

### 3. Objectif du plan d'amélioration attendu après l'achèvement du Projet

#### (1) Objectif du plan d'amélioration

Une véritable chaîne de valeurs des produits halieutiques est mise en place à Pointe-Noire.

#### (2) Objectifs attendus avec la mise en application du plan d'amélioration (objectif global)

- L'efficacité des activités dans la chaîne de valeurs des produits halieutiques s'améliore dans la zone cible.
- Les conditions de travail des personnes impliquées dans la chaîne de valeurs s'améliorent dans la zone cible.
- Les conditions d'hygiène dans la chaîne de valeurs des produits halieutiques s'améliorent dans la zone cible.

### 4. Résultats

Le plan d'amélioration et le plan d'actions sont finalisés sur la base des résultats des projets pilotes.

### 5. Activités

- 1 Faire un état des lieux sur la chaîne de valeurs des produits halieutiques et analyser les résultats
- 2 Identifier des défis prioritaires sur la base des résultats de l'état des lieux
- 3 Elaborer un plan provisoire d'amélioration de la chaîne de valeurs des produits halieutiques selon des défis prioritaires identifiés
- 4 Planifier des Projets pilote appropriés pour vérifier la faisabilité du plan provisoire d'amélioration
- 5 Exécuter les Projets pilotes
- 6 Examiner les résultats des Projets pilotes et modifier le plan provisoire d'amélioration
- 7 Finaliser le plan d'amélioration y compris le plan d'actions et le valider par les autorités concernées

### 6. Apports

#### (1) Apports de la part de la JICA

##### (a) Envoi de missions (provisoirement)

Experts japonais (chef du projet, analyse de la chaîne de valeurs, renforcement et organisation de villages des pêcheurs, planification d'installation et équipements, appui sur l'appel d'offre/contrat, arpentage/investigation du sol, considération environnementale et sociale, planification du plan, coordination/développement participatif, etc.)

##### (b) Equipements

Equipements nécessaires (approuvés par la JICA)

##### (c) Stage de formation

Formations (distribution de produits halieutiques etc.)

Les apports autres que ceux indiqués ci-dessus seront déterminés à travers des consultations mutuelles entre la JICA et le Ministère de la Pêche et de l'Aquaculture

(MPA) pendant l'exécution du Projet.

**(2) Apports du MPA et du Gouvernement de la République du Congo**

Le MPA et le Gouvernement de la République du Congo devront mettre à la disposition du projet, à sa propre charge, les ressources suivantes :

- (a) Affectation du personnel homologue du MPA (y compris les salaires et indemnités) ;
- (b) Espace bureau, mobilier de bureau, climatiseur, réseau téléphonique, frais d'électricité/eau (Voir Annexe 1) ;
- (c) Equipements nécessaires pour la mise en œuvre du Projet ainsi que les frais de gestion et d'entretien des accessoires (Voir Annexe 1) ;
- (d) Informations sur la sécurité ainsi que les soins médicaux ;
- (e) Carte de séjour ;
- (f) Données et informations liées au Projet (cartes, cartes topographiques et photographies etc.) ;
- (g) Frais de transport pour les homologues congolais ;
- (h) Charges liées à la construction d'installations nécessaires pour l'exécution de Projets pilotes (terrain, terrain pour les travaux) ;
- (i) Frais de réunions régulières dans le Projet

**7. Structure d'exécution (Voir Annexe 2)**

**(1) Organisme responsable**

Ministère de la Pêche et de l'Aquaculture (MPA)

**(2) Organisme d'exécution**

**(a) [Directeur du Projet]**

Le Projet opère sous le contrôle du MPA. Le Directeur général de la Pêche Maritime du MPA, en sa qualité de Directeur du Projet, aura l'entière responsabilité de l'exécution et de l'exploitation du Projet.

**(b) [Directeur technique du Projet]**

Le Directeur départemental de Pointe-Noire du MPA exécute et exploite le Projet en sa qualité de Directeur technique du Projet.

**(3) Membres de la mission de la JICA**

Les membres de la mission de la JICA se tiendront à la disposition du MPA pour des conseils techniques et des recommandations nécessaires à la bonne exécution du Projet.

**(4) Comité Conjoint de Coordination**

Le Comité Conjoint de Coordination (CCC) sera mis en place afin de faciliter la coordination inter-administration. Le Comité Conjoint de Coordination se réunira au moins une fois par an. La liste des membres est décrite en Annexe 3. Par ailleurs, le Port autonome de Pointe-Noire et le Ministère des affaires foncières et du domaine public participent au Projet en tant que membres importants.

## 8. Site du Projet et Bénéficiaires

(1) Site : la zone concernée de la ville de Pointe-Noire au Congo

(2) Bénéficiaires :

- Bénéficiaires directs de l'Etude approfondie : Direction départementale du MPA de Pointe-Noire, Direction générale de la Pêche maritime du MPA
- Bénéficiaires indirects : pêcheurs, transformatrices, mareyeurs, consommateurs etc.

## 9. Durée de l'exécution du Projet

3,5 ans (à partir de l'arrivée de la première mission de la JICA)

## 10. Rapports

La JICA prépare et soumet au MPA les rapports suivants rédigés en français.

(1) Rapport de Démarrage

15 copies moins d'une semaine après le démarrage des activités du Projet au Congo

(2) Rapport d'Avancement

15 copies moins de 12 mois après le démarrage des activités du Projet (1<sup>ère</sup> année) au Congo

(3) Rapport Intermédiaire

15 copies moins de 12 mois après le démarrage des activités du Projet (2<sup>ème</sup> année) au Congo

(4) Rapport d'Avancement

15 copies moins de 12 mois après le démarrage des activités du Projet (3<sup>ème</sup> année) au Congo

(5) Rapport Final Provisoire

20 copies à la fin des activités du Projet (dernière année) au Congo

(6) Rapport Final

20 copies moins d'un mois après la réception des commentaires sur le Rapport Final Provisoire

## 11. Considérations Environnementales et Sociales

Le MPA s'engage à respecter « les lignes directrices relatives aux considérations environnementales et sociales de la JICA (Avril, 2010) ». Le MPA a donné son accord pour prendre des mesures nécessaires en cas d'effets néfastes causés par l'exécution du Projet.

## III. PRISES EN CHARGE DU MPA ET DU GOUVERNEMENT DE LA REPUBLIQUE DU CONGO

1. Le MPA et le Gouvernement du Congo prennent des mesures nécessaires ci-après.

- (1) Assurer que les technologies et connaissances acquises par le personnel congolais et l'équipement fourni par la JICA contribuent au développement économique et social du Congo et seront utilisés efficacement dans la mise en œuvre du Projet ;
- (2) Accorder aux membres de missions de la JICA conformément au point II-6 (1) ci-dessus, et à leurs familles des privilèges, exonérations et avantages, qui sont aussi favorables que ceux dont bénéficient des experts et leurs familles de pays

tiers ou d'organisations internationales chargées de missions similaires en République du Congo ;

- (3) Fournir les informations liées à la sécurité ainsi que les mesures sécuritaires pour les membres de la mission JICA ;
- (4) Permettre aux membres des missions de la JICA d'entrer, de sortir et de séjourner en République du Congo pendant la période d'affectation, et appliquer les exemptions des frais consulaires et l'enregistrement des étrangers ;
- (5) Exempter les membres de la mission de la JICA des taxes et toutes autres charges sur leur équipements, machines et matériels nécessaires pour la mise en œuvre du Projet ;
- (6) Exempter les membres de la mission de la JICA de tout impôt sur le revenu et autres imposition liées aux émoluments et allocations qui leurs sont payés de l'étranger pour leurs services liés à la mise en œuvre du projet ; et,
- (7) Payer les taxes et toutes autres charges sur les équipements, les machines et autres matériels (voir le point II ci-dessus), pour la mise en œuvre du projet.

2. Le MPA et le Gouvernement du Congo s'abstiennent du droit de revendications, s'il y a lieu, envers les membres de la mission de la JICA, au moment de la mise en œuvre du projet, ou bien pendant l'exécution des activités liées à celui-ci, sauf si telles revendications surviennent suite à une négligence coupable ou une faute intentionnelle d'un des membres de la mission de la JICA.

#### IV. EVALUATION

La JICA effectuera l'évaluation ex-post, en principe trois (3) ans après l'achèvement du Projet, en vue de vérifier principalement l'autonomie et l'impact de celui-ci et d'en tirer des enseignements. Le MPA fournira les supports nécessaires à cela.

#### V. SENSIBILISATION DU PUBLIC

Dans le but d'assurer l'adhésion au projet, le MPA prendra des mesures appropriées d'information et de sensibilisation des populations congolaises.

#### VI. CONSULTATION MUTUELLE

La JICA et le MPA se consultent en cas de problèmes majeurs survenus pendant la mise en œuvre du Projet.

#### VII. AMENDEMENTS

Le présent Procès-Verbal des Discussions pourrait être amendé par le Compte Rendu de la Réunion entre la JICA et le MPA. Le Compte Rendu de la Réunion sera signé par les personnes autorisées par chaque partie, qui pourraient être différentes des signataires du présent Procès-Verbal des Discussions.

FIN

Annexe 1 : Liste des prises en charge

Annexe 2 : Structure de l'exécution

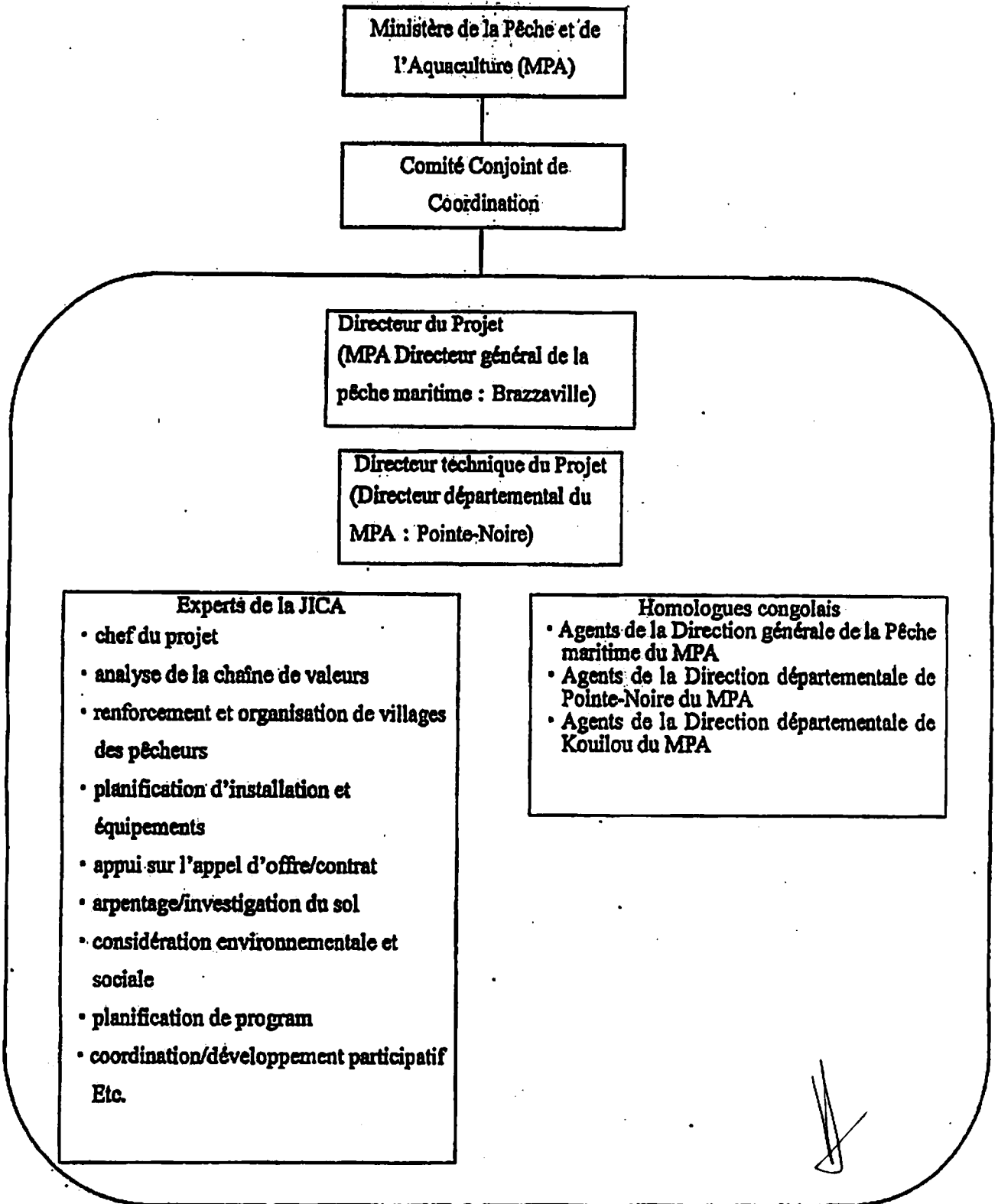
Annexe 3 : Comité Conjoint de Coordination

## Liste des prises en charge

Désignations	Apports	
	Partie Congolaise	Partie Japonaise
<b>Bureau du Projet</b>		
Espace bureau	•	
Mobiliers	•	
Climatiseur	•	
Equipements (PC, Photocopieuse, etc.)		•
Connection Internet		•
Installation téléphonique (pour les membres japonais)	•	
Frais de communication (pour les membres japonais)		•
Frais d'électricité et d'eau	•	
Autres	A discuter et après l'accord des deux parties	
<b>Frais pour l'exécution du Projet</b>		
Frais de gestion et d'entretien des équipements et matériel	•	•
Achat des Equipements et matériel		•
Moyens de déplacement à l'intérieur du pays		•
Autres	A discuter et après l'accord des deux parties	
<b>Cartes de séjour</b>		
Membres de la mission japonaise	•	
<b>Comité Conjoint de Coordination, séminaires, atelier de travail, réunion et réception de CCC tenus en République du Congo</b>		
Location de salle (sauf le bâtiment appartenant au gouvernement de la République du Congo)		•
Frais de documents à distribuer, manuel, brochure, impression		•
Frais de réunions régulières dans le projet	•	
Autres	A discuter et après l'accord des deux parties	



Structure de l'exécution du Projet

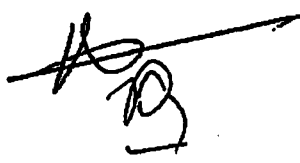



Comité Conjoint de Coordination

**Président** : Ministre de la Pêche et de l'Aquaculture (MPA)

- Membres** :
- (a) Pour le gouvernement de la République du Congo
    - Directeur général de la pêche maritime du MPA
    - Directeur départemental du MPA de Pointe-Noire
    - Directeur départemental du MPA du Kouilou
    - Représentant du Ministère des Transports, de l'Aviation civile et de la Marine marchande, Port Autonome de Pointe-Noire
    - Représentant du Ministère des Affaires Foncières et du Domaine Public
    - Représentant du Ministère de l'Economie, du Plan, de l'aménagement du territoire et de l'intégration
    - Représentant du Ministère des Finances, du budget et du portefeuille public
    - Représentant du Ministère de Développement durable, de l'économie forestière et de l'environnement
    - Représentant du Ministère des Affaires étrangères et de la coopération
    - Représentant de la Préfecture du département de Pointe-Noire
    - Représentant de la Préfecture du département du Kouilou
    - Représentant de l'association pour l'autopromotion des Initiatives Communautaires de pêche de Pointe-Noire
    - Représentants des groupements de pêche
  - (b) Pour le gouvernement du Japon
    - Représentant Résident de la JICA en République Démocratique du Congo
    - Membres de la mission de la JICA

**Observateur** : Représentant de la FAO, Brazzaville



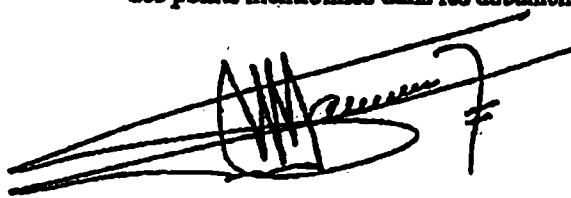
**COMPTE RENDU DE LA REUNION  
RELATIVE AU  
PROJET D'ETUDE SUR LA CHAINE DE VALEURS DES  
PRODUITS MARITIMES A POINTE-NOIRE  
EN REPUBLIQUE DU CONGO**

En réponse à la requête officielle du Gouvernement de la République du Congo (ci-après désigné « le Congo »), le Gouvernement du Japon a décidé de mener une étude d'élaboration de plan détaillé pour le Projet d'étude sur la Chaîne de Valeurs des Produits maritimes à Pointe-Noire (ci-après désigné « le Projet »), l'Agence Japonaise de Coopération Internationale (ci-après désignée « la JICA ») a effectué l'Etude.

La JICA a envoyé au Congo, pour la période du 4 mars au 10 avril 2012, une Mission d'étude d'élaboration de plan détaillé (ci-après désignée « la Mission ») dirigée par M. Biro YONEZAKI, représentant résident de la JICA en République Démocratique du Congo.

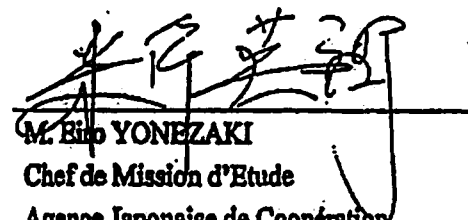
La Mission a eu une série de discussions avec le Ministère de la Pêche et de l'Aquaculture et d'autres administrations congolaises concernées. La Mission a visité le site du Projet.

A l'issue de ces discussions et des visites de terrain, les deux parties ont convenu des points mentionnés dans les documents attachés au Compte Rendu de la Réunion.

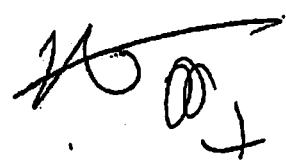
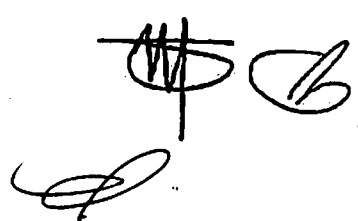


M. Hello Matson MAMPOUYA  
Ministre de la Pêche et de  
l'Aquaculture  
République du Congo

Brazzaville, le 28 mars 2012



M. Biro YONEZAKI  
Chef de Mission d'Etude  
Agence Japonaise de Coopération  
Internationale (JICA)



## Documents attachés

### **I. PROJET DE PROCES-VERBAL DES DISCUSSIONS (PVD)**

Le Procès-Verbal des Discussions est un document officiel qui définit le contenu du Projet. Suite aux discussions des deux parties, le projet de Procès-Verbal des Discussions a été élaboré comme décrit en Annexe 1.

Le présent projet de Procès-Verbal des Discussions sera transmis au siège de la JICA pour une approbation. C'est après que le Procès-Verbal des Discussions définitif devrait être signé par le Ministère de la Pêche et de l'Aquaculture et le Bureau résident de la JICA de la République Démocratique du Congo.

### **II. RESULTATS DES DISCUSSIONS**

Concernant le projet de Procès-Verbal des Discussions, les deux parties se sont accordées sur les points sousmentionnés :

#### **1. Description du Projet**

##### **(1) Titre du Projet**

Compte tenu des objectifs et du contenu du Projet, le titre du projet devrait être modifié et devenir « Projet d'étude pour l'amélioration de la chaîne de valeurs des produits halieutiques à Pointe-Noire, en République du Congo. ».

##### **(2) Objectif du projet**

Un plan d'amélioration est établi pour améliorer la chaîne de valeurs des produits halieutiques à Pointe-Noire.

##### **(3) Objectif du plan d'amélioration attendu après l'achèvement du Projet**

###### **(a) Objectif du plan d'amélioration**

Une véritable chaîne de valeurs des produits halieutiques est mise en place à Pointe-Noire.

###### **(b) Objectifs attendus avec la mise en application du plan d'amélioration (objectif global)**

- Le revenu des personnes impliquées dans la chaîne de valeurs augmente dans la zone cible.

- Les conditions de travail des personnes impliquées dans la chaîne de valeurs s'améliorent dans la zone cible.

- Les conditions d'hygiène dans la chaîne de valeurs des produits halieutiques s'améliorent dans la zone cible.

## 2. Structure d'exécution du Projet

### (1) Organisme responsable

Ministère de la Pêche et de l'Aquaculture (MPA)

### (2) Organisme d'exécution

#### (a) [Directeur du Projet]

Le Projet s'opère sous le contrôle du MPA. Le Directeur général de la Pêche Maritime du MPA, en sa qualité de Directeur du Projet, aura l'entière responsabilité de l'exécution et de l'exploitation du Projet.

#### (b) [Directeur technique du Projet]

Le Directeur départemental de Pointe-Noire du MPA exécute et exploite le Projet en sa qualité de Directeur technique du Projet.

### (3) Membres de la mission de la JICA

Les membres de la mission de la JICA se tiendront à la disposition du MPA pour des conseils techniques et des recommandations nécessaires à la bonne exécution du Projet.

### (4) Comité Conjoint de Coordination

Le Comité Conjoint de Coordination (CCC) sera mis en place afin de faciliter la coordination inter-organisme. Le Comité Conjoint de Coordination se réunira au moins une fois par an.

## 3. Prise en charge par les Gouvernements de la République du Congo et du Japon

Au cours de l'exécution du Projet, les deux parties devront prendre en charge les points mentionnés en Annexe 3.

## 4. Projets pilotes

L'aperçu des projets pilotes à mettre en œuvre, la description d'installations et de matériel ainsi que le lieu etc. nécessaires pour la coopération technique seront déterminés lors de l'exécution du Projet. Au point où nous en sommes, l'efficacité

du plan de projet pilote d'aménagement d'installations ci-après a été confirmée.

**Intitulé du Projet pilote : Aménagement des installations et équipements de la pêche artisanale de la plage de Songolo**

**Aperçu : Aménager les installations dotées de fonctions ( manutention, fabrication de glaces, conservation de poisson, éviscération du poisson, démonstration de traitement de fumage, etc) et approvisionner les équipements tels que bacs à poisson, caisses isothermiques, brouettes etc.**

**Résultats escomptés des travaux : Réalisation efficace de la manutention. Améliorer la conservation du poisson grâce à l'utilisation des glaces et de caisses isothermiques. Contribuer à l'efficacité de la transformation du poisson. Contribuer à l'amélioration des conditions d'hygiène des produits halieutiques. Contribuer à l'amélioration de l'environnement de la plage du site de projet avec une standardisation de traitement de déchets du poisson par un travail collectif et le traitement d'ordures.**

**Bénéficiaires cibles : environ 2.000 pêcheurs artisans, 500 transformatrices et 100 mareyeurs, les consommateurs.**

**5. Coopération technique type étude de projet de développement**

- Le Congo a pris connaissance de la coopération technique type étude de projet de développement.
- En cas de construction éventuelle d'installations dans le projet pilote, la construction s'inscrit dans le cadre de la coopération technique en constituant un élément de développement des capacités. A cet effet, l'infrastructure mise en place est strictement nécessaire pour examiner l'efficacité du plan d'amélioration.

**6. Responsabilité du Gouvernement de la République du Congo relative à la construction des installations**

En cas de construction éventuelle d'installations dans le projet pilote, le Gouvernement du Congo est responsable des points qui suivent :

- Approbation du choix d'installations et équipements, de la description de plan, spécifications, et de la classe de qualité
- Approbation d'examen de plan et de dossiers d'appel d'offres
- Approbation en cas de modification de plan

- Assistance et couverture des frais aux divers contrôles : achèvement de travaux
- Attribution de terrain à bâtir et de terrain pour les travaux (traitement de débris, espace d'accès pour les véhicules de travaux, stockage des matières premières etc) et identification de la délimitation.
- Préparation des travaux (desserte en l'électricité/eau/téléphone, évacuation des obstacles existants dans le site)
- Procédures nécessaires auprès des organismes concernés dans les meilleurs délais : autorisations, demandes et déclarations relatives aux travaux de construction (confirmation de construction, autorisation d'utilisation d'électricité/eau, permis de démarrage de travaux, autorisation de développement du Port Autonome du Ministère des Transports Maritimes et de la Marine Marchande ainsi que, si nécessaire, examen de sécurité de station service, autorisation d'utilisation de forage de puits; approbation de traitement d'eau usée)
- Exécution de procédures relatives aux considérations environnementales et sociales inclus les frais nécessaires (procédures suite aux décrets concernés y compris celui de 2009-415 « Décret N° 2009-415 du 20 novembre 2009 fixant le champ d'application, le contenu et les procédures de l'étude et de la notice d'impact environnemental et social »)
- Assurer la sécurité pendant l'exécution des travaux, mise en œuvre des mesures de sécurité nécessaires sur le site et ses environs (annonce des travaux et des mesures sécuritaire auprès des pêcheurs, transformateurs et habitants)
- Exonération (droits de douane, taxe sur la valeur ajoutée, et autre cotisation etc.) et facilités et avantages sur la réception des équipements et membres de missions
- Prise en charge des frais nécessaires pour l'immatriculation de bâtiment et d'infrastructures.
- Exploitation et gestion des installations après la livraison.
- Autres charges liées à la construction des installations.

### **III. PROCEDURES AVANT LA MISE EN ŒUVRE DU PROJET**

Avant la signature de Procès-verbal des Discussions, les deux parties s'engagent à prendre des dispositions ci-après :

**Partie Congolaise**

- Le MPA s'engage à soumettre au bureau représentant de la JICA en République

Démocratique du Congo, avant le 30 avril 2012, un document certifiant l'affectation de terrain du site Songolo où il est susceptible de construire des installations dans le cadre de projets pilotes de l'étude approfondie. Le document sera signé par le MPA, le Ministère des affaires foncières et du domaine public et le Ministère des Transports, de l'aviation civile et de la marine marchande. Par ailleurs, l'acquisition de terrain ne doit pas entraîner la délocalisation d'aires de transformation en cours de production, pêcheurs, transformateurs et habitants.

- Le MPA devra soumettre les documents susmentionnés en annexe 4 avant le délai fixé.

#### Partie Japonaise

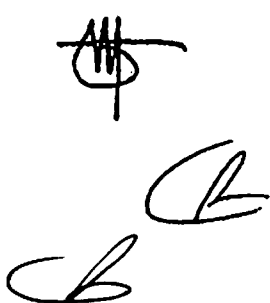
- Formalités nécessaires au Japon

Annexe 1 : Projet de Procès-verbal des Discussions

Annexe 2 : Processus de la mise en œuvre du Projet

Annexe 3 : Liste des prises en charge

Annexe 4 : Documents nécessaires pour la rédaction du Compte Rendu de la Réunion





**R/D DRAFT**

**PROJET DE PROCES-VERBAL DES DISCUSSIONS  
POUR  
LE PROJET D'ETUDE POUR L'AMELIORATION DE LA CHAINE DE VALEURS  
DES PRODUITS HALIEUTIQUES  
A POINTE-NOIRE  
EN REPUBLIQUE DU CONGO**

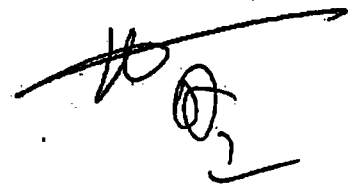
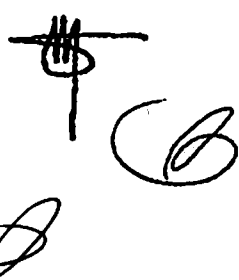
Brazzaville, le , 2012

---

**M. Hellot Matsou MAMPOUYA**  
Ministre de la Pêche et de l'Aquaculture  
République du Congo

---

**M. Eiro YONEZAKI**  
Chef de Mission,  
Etude d'élaboration de Plan Détaillé  
Agence Japonaise de Coopération  
Internationale (JICA)



Basé sur le Compte Rendu de la Réunion portant sur l'Etude d'élaboration de plan détaillé du Projet d'étude pour l'Amélioration de la Chaîne de Valeurs des Produits halieutiques à Pointe-Noire (ci-après désigné "le Projet") en République du Congo (ci-après désigné « le Congo ») signé le 30 mars 2012 entre le Ministère de la Pêche et de l'Aquaculture et l'Agence Japonaise de Coopération Internationale (ci-après désignée "la JICA"), la JICA a eu une série de discussions avec le Ministère de la Pêche et de l'Aquaculture et les organismes concernés afin d'élaborer un plan détaillé du Projet.

Les deux parties se sont mises d'accord sur la description du Projet décrit dans l'Appendice 1 et l'Appendice 2 et demandent aux Gouvernements respectifs de procéder aux procédures nécessaires pour la mise en œuvre du Projet.

Les deux parties ont également convenu que le Ministère de la Pêche et de l'Aquaculture, partenaire de la JICA, sera responsable de la mise en œuvre du Projet en collaboration avec la JICA. Il collaborera avec les autres administrations concernées et s'assurera que la mise en œuvre autonome du Projet est soutenue pendant et après la période d'exécution du Projet en vue de contribuer au développement social et économique du Congo.

Le Projet sera mis en place dans le cadre des Notes Verbales échangées (le 1<sup>er</sup> décembre 2011) entre le Gouvernement du Japon et le Gouvernement de la République du Congo.

La validité du présent Procès-Verbal des Discussions est soumise à l'approbation de la JICA.

Appendice 1: Description du Projet

Appendice 2: Compte Rendu de la Réunion portant le Projet de l'Amélioration de la Chaîne de Valeurs des Produits halieutiques à Pointe-Noire

## DESCRIPTION DU PROJET

### I. CONTEXTE

1-1 En République du Congo (ci-après désigné « le Congo »), le Revenu National Brut par habitant est de 2.150 dollars (en 2010 selon la Banque Mondiale), ce qui est plus élevé que la moyenne des Etats africains. Mais, étant donné que le secteur pétrolier représente 65% du PIB, 85% de l'ensemble des recettes publiques et 90% de l'exportation (en 2006), la diversification des activités industrielles est un défi à relever. D'autre part, l'instabilité politique suite aux guerres civiles de 1997 à 2003 pourrait constituer un facteur incertain pour le développement économique du pays.

1-2 Le Congo a mis en avant la sécurité alimentaire et la promotion des secteurs de l'agriculture, de la sylviculture, et de la pêche comme les axes prioritaires du plan national de développement dans le cadre des stratégies de relance de la politique agricole élaborées en 2003. Avec l'appui de la FAO, une stratégie pour un développement durable de la pêche et de l'aquaculture (2011-2020) a été élaborée en 2011, en vue du développement durable de la pêche et de l'aquaculture.

1-3 La pêche maritime est pratiquée dans les départements du Kouilou et de Pointe-Noire, les seuls à disposer d'une côte parmi les 12 départements. Le département de Pointe-Noire produit près de 60% de l'ensemble de la pêche maritime, et environ 85% des travailleurs dans le secteur de la pêche y sont basés, ce qui fait de la ville un pôle incontournable de la pêche.

1-4 Cependant, la défaillance des infrastructures de base, à partir du débarquement jusqu'à la chaîne de transformation et de vente, ainsi que le manque de mécanisme de gestion par l'administration, font que les activités de pêche et de distribution des produits halieutiques restent inefficaces. Par conséquent, cela ne contribue ni à la hausse du revenu des acteurs des pêches ni à l'amélioration de la qualité du poisson aux consommateurs. Il faut établir une véritable chaîne de valeurs afin de relever les défis à travers la valorisation des produits halieutiques.

### II. APERÇU DU PROJET

#### 1. Titre du Projet

Le Projet d'Etude pour l'Amélioration de la Chaîne de Valeurs des Produits Halieutiques à Pointe-Noire

#### 2. Objectif du projet

Un plan d'amélioration est établi pour améliorer la chaîne de valeurs des produits halieutiques à Pointe-Noire.

### 3. Objectif du plan d'amélioration attendu après l'achèvement du Projet

#### (1) Objectif du plan d'amélioration

Une véritable chaîne de valeurs des produits halieutiques est mise en place à Pointe-Noire.

#### (2) Objectifs attendus avec la mise en application du plan d'amélioration (objectif global)

- L'efficacité des activités dans la chaîne de valeurs des produits halieutiques s'améliore dans la zone cible.
- Les conditions de travail des personnes impliquées dans la chaîne de valeurs s'améliorent dans la zone cible.
- Les conditions d'hygiène dans la chaîne de valeurs des produits halieutiques s'améliorent dans la zone cible.

### 4. Résultats

Le plan d'amélioration et le plan d'actions sont finalisés sur la base des résultats des projets pilotes.

### 5. Activités

- 1 Faire un état des lieux sur la chaîne de valeurs des produits halieutiques et analyser les résultats
- 2 Identifier des défis prioritaires sur la base des résultats de l'état des lieux
- 3 Elaborer un plan provisoire d'amélioration de la chaîne de valeurs des produits halieutiques selon des défis prioritaires identifiés
- 4 Planifier des Projets pilote appropriés pour vérifier la faisabilité du plan provisoire d'amélioration
- 5 Exécuter les Projets pilotes
- 6 Examiner les résultats des Projets pilotes et modifier le plan provisoire d'amélioration
- 7 Finaliser le plan d'amélioration y compris le plan d'actions et le valider par les autorités concernées

### 6. Apports

#### (1) Apports de la part de la JICA

##### (a) Envoi de missions (provisoirement)

Experts japonais (chef du projet, analyse de la chaîne de valeurs, renforcement et organisation de villages des pêcheurs, planification d'installation et équipements, appui sur l'appel d'offre/contrat, arpentage/investigation du sol, considération environnementale et sociale, planification du plan, coordination/développement participatif, etc.)

##### (b) Equipements

Equipements nécessaires (approuvés par la JICA)

##### (c) Stage de formation

Formations (distribution de produits halieutiques etc.)

Les apports autres que ceux indiqués ci-dessus seront déterminés à travers des consultations mutuelles entre la JICA et le Ministère de la Pêche et de l'Aquaculture

**(a) Envoi de missions**

Experts japonais (chef du projet, distribution et transformation de produits halieutiques, gestion de qualité d'hygiène, développement de villages des pêcheurs/gestion organisationnelle, installation de la pêche et équipements, coordination/développement participatif etc)

**(b) Equipements**

Equipements nécessaires

**(c) Stage de formation**

Formations (distribution de produits halieutiques etc.)

Les apports autres que ceux indiqués ci-dessus seront déterminés à travers des consultations mutuelles entre la JICA et le Ministère de la Pêche et de l'Aquaculture (MPA) pendant l'exécution du Projet.

**(2) Apports du MPA et du Gouvernement de la République du Congo**

Le MPA et le Gouvernement de la République du Congo devront mettre à la disposition du projet, à sa propre charge, les ressources suivantes :

- (a) Affectation du personnel homologue du MPA (y compris les salaires et indemnités) ;
- (b) Espace bureau, mobilier de bureau, climatiseur, réseau téléphonique, frais d'électricité/eau (Voir Annexe 3) ;
- (c) Equipements nécessaires pour la mise en œuvre du Projet ainsi que les frais de gestion et d'entretien des accessoires (Voir Annexe 3) ;
- (d) Informations sur la sécurité ainsi que les soins médicaux ;
- (e) Carte de séjour ;
- (f) Données et informations liées au Projet (cartes, cartes topographiques et photographies etc.) ;
- (g) Frais de transport pour les homologues congolais ;
- (h) Charges liées à la construction d'installations nécessaires pour l'exécution de Projets pilotes (terrain, terrain pour les travaux) ;
- (i) Frais de réunions régulières dans le Projet

**6. Structure d'exécution**

**(1) Organisme responsable**

Ministère de la Pêche et de l'Aquaculture (MPA)

**(2) Organisme d'exécution**

**(a) [Directeur du Projet]**

Le Projet s'opère sous le contrôle du MPA. Le Directeur général de la Pêche Maritime du MPA, en sa qualité de Directeur du Projet, aura l'entière responsabilité de l'exécution et de l'exploitation du Projet.

**(b) [Directeur technique du Projet]**

Le Directeur départemental de Pointe-Noire du MPA exécute et exploite le Projet en sa qualité de Directeur technique du Projet.

**(3) Membres de la mission de la JICA**

Les membres de la mission de la JICA se tiendront à la disposition du MPA pour des conseils techniques et des recommandations nécessaires à la bonne exécution du Projet.

**(4) Comité Conjoint de Coordination**

Le Comité Conjoint de Coordination (CCC) sera mis en place afin de faciliter la coordination inter-administration. Le Comité Conjoint de Coordination se réunira au moins une fois par an. La liste des membres est décrite en Annexe 2. Par ailleurs, le Port autonome de Pointe-Noire et le Ministère des affaires foncières et du domaine public participent au Projet en tant que membres importants.

**7. Site du Projet et Bénéficiaires**

Site : la zone concernée de la ville de Pointe-Noire au Congo

**Bénéficiaires**

- Bénéficiaires directs de l'Etude approfondie : Direction départementale du MPA de Pointe-Noire, Direction générale de la Pêche maritime du MPA
- Bénéficiaires indirects : pêcheurs, transformatrices, mareyeurs, consommateurs etc.

**8. Durée de l'exécution du Projet**

3,5 ans (à partir de l'arrivée de la première mission de la JICA)

**9. Rapports**

La JICA prépare et soumet au MPA les rapports suivants rédigés en français.

**(1) Rapport de Démarrage**

30 copies en moins d'une semaine après le démarrage des activités du Projet au Congo

**(2) Rapport d'Avancement**

30 copies en moins de 11 mois après le démarrage des activités du Projet (1<sup>ère</sup> année) au Congo

**(3) Rapport Intermédiaire**

30 copies en moins de 9 mois après le démarrage des activités du Projet (2<sup>ème</sup> année) au Congo

**(4) Rapport d'Avancement**

30 copies en moins de 6 mois après le démarrage des activités du Projet (3<sup>ème</sup> année) au Congo

**(5) Rapport Final Provisoire**

40 copies à la fin des activités du Projet (dernière année) au Congo

**(6) Rapport Final**

50 copies en moins d'un mois après la réception des commentaires sur le Rapport Final Provisoire

**10. Considérations Environnementales et Sociales**

(1) Le MPA s'engage à respecter « les lignes directrices relatives aux considérations environnementales et sociales de la JICA ». Le MPA a donné son accord pour prendre des mesures nécessaires en cas des effets néfastes causés par l'exécution du Projet.

### III. Prises en charge du MPA et du gouvernement de la République du Congo

1. Le MPA et le Gouvernement du Congo prennent des mesures nécessaires ci-après.

- (1) Assurer que les technologies et connaissances acquises par le personnel congolais et l'équipement fourni par la JICA contribuent au développement économique et social du Congo et devront être utilisés efficacement dans la mise en œuvre du Projet ;
- (2) Les privilèges, exonérations et avantages seront accordés aux membres de missions de la JICA et leurs familles aussi favorables que ceux dont bénéficient des experts de pays tiers ou d'organisations internationales chargées de missions similaires en République du Congo ;
- (3) Pour la sécurité des membres de missions de la JICA, fournir les informations sur la sécurité et des mesures nécessaires de sécurité ;
- (4) Permettre aux membres des missions de la JICA d'entrer, de sortir et de les exempter des exigences d'enregistrement et de taxes consulaires à étrangers ;
- (5) Exempter de tout paiement de taxes et d'autres charges sur l'équipement nécessaire pour la mise en œuvre du Projet, emmené par les membres de la JICA ;
- (6) Exempter de tout paiement de taxes et d'autres charges sur l'équipement nécessaire pour la mise en œuvre du Projet, fourni par la JICA,;
- (7) Exempter les membres de missions de la JICA des impôts sur le revenu et les charges de toute sorte, imposées ou liées à toutes les rémunérations ou indemnités qui leur sont payées ou envoyées par les pays étrangers.

2. Le MPA et le Gouvernement du Congo s'engagent à prendre en charge des réclamations éventuelles des membres de mission de la JICA liées à l'exécution du Projet.

### IV. EVALUATION

La JICA effectuera des évaluations du Projet en vue de vérifier principalement l'autonomie et l'impact de celui-ci et d'en tirer des enseignements. Le MPA fournira les supports nécessaires à cela.

1. Evaluation ex-post, en principe trois (3) ans après l'achèvement du Projet
2. Etude de suivi selon les nécessités

### V. SENSIBILISATION DU PUBLIC

Dans le but d'assurer l'adhésion au projet, le MPA prendra des mesures appropriées d'information et de sensibilisation des populations congolaises.

**VI. CONSULTATION MUTUELLE**

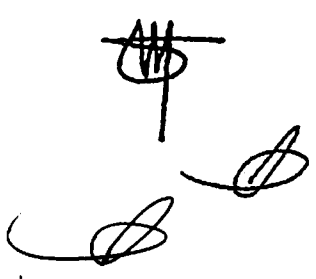
La JICA et le MPA se réuniront en cas de problèmes majeurs survenus pendant la mise en œuvre du Projet.

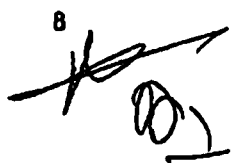
**VII. AMENDEMENTS**

Le présent Procès-Verbal des Discussions pourrait être amendé par le Compte Rendu de la Réunion entre la JICA et le MPA. Le Compte Rendu de la Réunion sera signé par les personnes autorisées de chaque partie qui pourraient être différentes des signataires du présent Procès-Verbal des Discussions.

Annexe 1 Structure d'exécution

Annexe 2 Comité Conjoint de Coordination

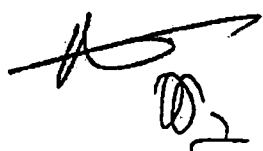
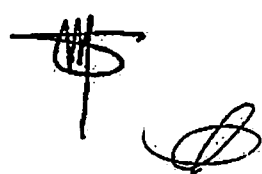
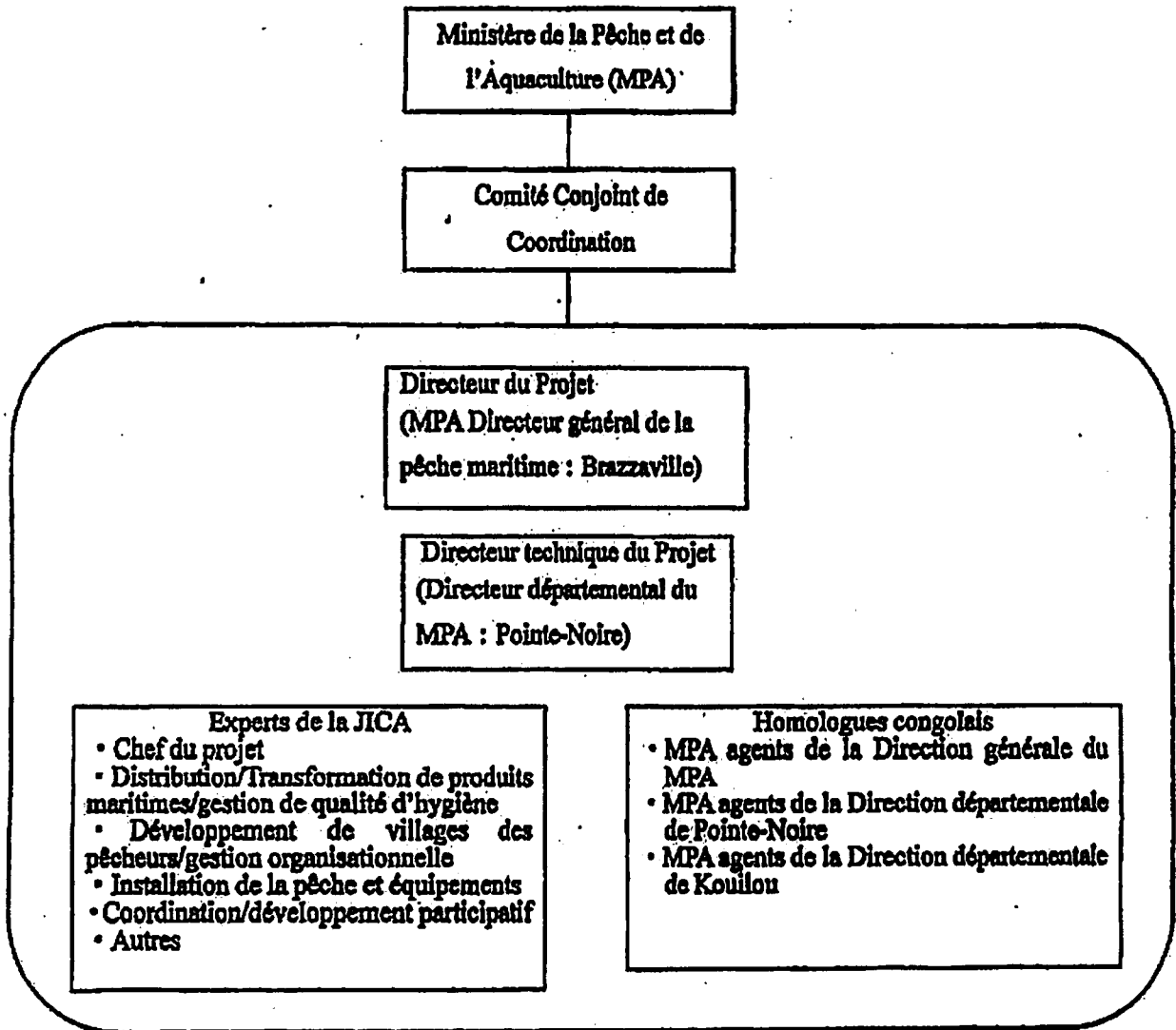


8  






Structure d'exécution du Projet



T

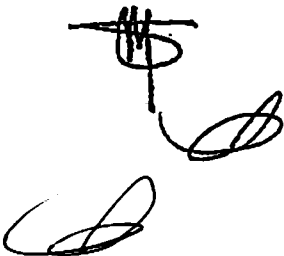


**Comité Conjoint de Coordination**

**Président** : **Ministre de la Pêche et de l'Aquaculture (MPA).**

- Membres** :
- (a) Pour le gouvernement de la République du Congo
    - Directeur général de la pêche maritime du MPA
    - Directeur départemental du MPA de Pointe-Noire
    - Directeur départemental du MPA du Kouilou
    - Représentant du Ministère des Transports, de l'Aviation civile et de la Marine marchande, Port Autonome de Pointe-Noire
    - Représentant du Ministère des Affaires Foncières et du Domaine Public
    - Représentant du Ministère de l'Economie, du Plan, de l'aménagement du territoire et de l'intégration
    - Représentant du Ministère des Finances, du budget et du portefeuille public
    - Représentant du Ministère de Développement durable, de l'économie forestière et de l'environnement
    - Représentant du Ministère des Affaires étrangères et de la coopération
    - Représentant du Préfecture du département de Pointe-Noire
    - Représentant du Préfecture du département du Kouilou
    - Représentant de l'association pour l'autopromotion des Initiatives Communautaires de pêche de Pointe-Noire
    - Représentants des groupements des pêche
  - (b) Pour le gouvernement du Japon
    - Représentant Résident de la JICA en République Démocratique du Congo
    - Membres de la mission de la JICA

**Observateur** : **Représentant de FAO, Brazzaville**



F

**ANNEXE 2. Processus de la mise en œuvre du Projet**

	1ère année (12 mois)	2ème année (12 mois)	3ème année (12 mois)	4ème année (6 mois)
1. Etude de base	██████████			
2. Mise en œuvre des Projets Pilotes		████████████████████		
3. Evaluation des Projets Pilotes				████
4. Finalisation de Plan Directeur				████
	ΔIno/R	ΔPrR(1)	ΔIn/R	ΔPrR(2)
				ΔO/R ΔFR

- Rapport de Démarrage
- Rapport d'Avancement (1)
- Rapport Intermédiaire
- Rapport d'Avancement (2)
- Rapport Final Provisoire
- Rapport Final

*[Handwritten mark]*

*[Handwritten signature]*

*[Handwritten signature]*

*[Handwritten mark]*

**Annexe 3. Liste des prises en charge**

Désignations	Apports	
	Partie Congolaise	Partie Japonaise
<b>Bureau du Projet</b>		
Espace bureau	•	
Mobiliers	•	
Climatiseur	•	
Equipements (PC, Photocopieuse, etc.)		•
Connection Internet		•
Installation téléphonique (pour les membres japonais)	•	
Frais de communication (pour les membres japonais)		•
Frais d'électricité et d'eau	•	
Autres	A discuter et avoir l'accord des deux parties	
<b>Frais pour l'exécution du Projet</b>		
Frais de gestion et d'entretien des équipements et matériel	•	•
Achat des Equipements et matériel		•
Moyens de déplacement à l'intérieur du pays		•
Autres	A discuter et avoir l'accord des deux parties	
<b>Cartes de séjour</b>		
Membres de la mission japonais	•	
<b>Comité Conjoint de Coordination, séminaires, atelier de travail, réunion et réception de CCC tenus en République du Congo</b>		
Location de salle (sauf le bâtiment appartenant au gouvernement de la République du Congo)		•
Frais de documents à distribuer, manuel, brochure, impression		•
Frais de réunions régulières dans le projet	•	
Autres	A discuter et avoir l'accord des deux parties	

**Documents nécessaires pour la rédaction de Compte Rendu de la Réunion**

**Prière de nous fournir jusqu' à fin mars 2012 (possible par email)**

- La stratégie pour un développement durable de la pêche et de l' aquaculture (2011-2020) (provisoire possible)

**Prière de nous fournir jusqu' au 5 avril 2012**

- document montrant le lieu de site dans lequel on peut construire.
- plan cadastre autour du site
- levé topographique autour du site
- plan de positionnement d' installation de fils électriques et de canalisation d' approvisionnement en eau autour du site
- directives sur les procédures d' approvisionnement des travaux publics
- Bordereaux de Prix pour les travaux publics d' Etat : tableau de prix unitaire pour budgetisation
- document type de demande de pré-qualification, d' appel d' offres, de contrat et directives
- aperçu de plan d' extension du port, étendue, calendrier, état d' avancement
- plan d' usage de Base Azip et de la plage de Songolo ou le plan de projet d' usage de terrain
- Document de Stratégie de Croissance des Emplois et de Réduction de la Pauvreté (DSCERP) 2012-2016
- Stratégie de développement de la Pêche et de l' Aquaculture
- organigramme du MPA, information sur l' insuffisance du personnel et le budget avec résultats (2010 - 2012).

**COMPTE RENDU DE LA REUNION  
ENTRE  
LE MINISTERE DE LA PECHE ET DE L'AQUACULTURE  
DE LA REPUBLIQUE DU CONGO  
ET  
L'AGENCE JAPONAISE DE COOPERATION INTERNATIONALE**

**POUR AMENDER LE PROCES-VERBAL DES DISCUSSIONS  
PORTANT SUR  
LE PROJET D'ETUDE POUR L'AMELIORATION DE LA CHAINE DE VALEURS  
DES PRODUITS HALIEUTIQUES A POINTE NOIRE  
EN REPUBLIQUE DU CONGO**

Le Ministère de la Pêche et de l'Aquaculture et l'Agence Japonaise de Coopération Internationale (ci-après dénommée JICA) s'accordent par la présente que le Procès-Verbal des discussions portant sur le Projet d'Etude pour l'Amélioration de la Chaîne de Valeurs des Produits halieutiques à Pointe-Noire signé le 19 juin 2012 devra être amendé comme suit :

**1. II.9. Durée de l'exécution du Projet**

Avant	Version amendée
9. Durée de l'exécution du Projet 3,5 ans	9. Durée de l'exécution du Projet 5,5 ans
Raison : Prolonger la durée de coopération basée sur l'accord entre le Ministère de la Pêche et de l'Aquaculture et la JICA correspondant au délai des travaux de construction des installations de la pêche artisanale.	

**2. II.10. Rapports**

Avant	Version amendée
10. (5) Rapport Final Provisoire 20 copies à la fin des activités du Projet (dernière année) au Congo (6) Rapport Final 20 copies en moins d'un mois après la réception des commentaires sur le Rapport Final Provisoire	10. (5) Rapport d'Avancement 15 copies moins de 12 mois après le démarrage des activités du Projet (4ème année) au Congo (6) Rapport Final Provisoire 20 copies à la fin des activités du Projet (dernière année) au Congo (7) Rapport Final 20 copies en moins d'un mois après la réception des commentaires sur le Rapport Final Provisoire
Raison : Suivre le progrès des activités du Projet pendant la durée prolongée.	

Etablies en versions française et anglaise, toutes deux authentiques. En cas de divergence d'interprétation, le texte anglais prévaudra.

Cet amendement sera effectif à la date ci-après...

Annexe 1 : Procès-verbal des discussions signe le 19 Juin 2012



Mr. Toshimichi AOKI  
Représentant Résident  
Agence Japonaise de Coopération  
Internationale  
en République Démocratique du Congo



Brazzaville, 12/11/2015

Mr. Bernard TCHIBAMBELELA  
Ministre  
Ministère de la Pêche et de l'Aquaculture  
République du Congo

### 3. Minutes of JCC ( 1 )

## **PROCES VERBAL DE LA REUNION DU COMITE CONJOINT DE COORDINATION DU PROJET D'ETUDE POUR L'AMELIORATION DE LA CHAINE DE VALEURS DES PRODUITS HALIEUTIQUES A POINTE-NOIRE EN REPUBLIQUE DU CONGO**

Conformément au procès-verbal de discussions portant sur le Projet d'Etude pour l'Amélioration de la Chaîne de Valeurs des Produits Halieutiques à Pointe-Noire (ci-après désigné « PECHVAL ») en République du Congo signé le 19 juin 2012, entre le Ministère de la Pêche et de l'Aquaculture de la République du Congo et l'Agence Japonaise de Coopération Internationale, la réunion du Comité conjoint de coordination (ci-après désigné « CCC ») s'est tenue le 24 juillet 2013 dans la salle de conférence du Ministère des Affaires Etrangères et de la Coopération afin de faire une évaluation à mi-parcours sur l'état d'avancement et le plan du PECHVAL.

Le CCC s'est mis d'accord sur la description du CCC décrit dans l'Appendice 1 et sur la réunion du CCC au moins une fois par an.

Le CCC a également convenu la description du PECHVAL, son état d'avancement et son plan décrits dans les Appendices 2 et l'Annexe. La partie congolaise s'est mis d'accord de l'importance « de la précondition » et « des hypothèses importantes » qui sont nécessaires pour la réussite du PECHVAL et qui sont décrits dans l'Annexe.

Au cours de cette réunion du comité conjoint de coordination, plusieurs points ont été soulevés notamment sur la propriété du site où le projet va s'implanter, la présentation des objectifs du projet d'une manière compréhensible et sur l'exonération de taxe. Sur ce, moult points de vue et commentaires ont été suivis de la part des membres du comité conjoint de coordination.

En ce qui concerne la propriété du terrain, la délégation de la communauté des pêcheurs présente à la réunion a demandé aux parties prenantes des explications à propos de la petite construction qui a été érigée par celui/celle qui se réclame propriétaire du site, et a voulu savoir la procédure en cours pour régler ce problème. De même, les membres de la JICA et du FEC ont exprimé cette inquiétude relative à la propriété du site.

Répondant à cette préoccupation, le représentant du PAPN a rappelé la loi de 1983 qui attribuait cette zone au Port Autonome de Pointe Noire pour le développement de ses activités. Cependant le propriétaire foncier n'avait jamais perçu ses indemnités vis-à-vis de cette expropriation. En 1999, le propriétaire foncier avait vendu le terrain à une



bureau du procureur de la république de Pointe Noire. Le PAPN envisage donc de lui verser une compensation, et il/elle aurait déjà accepté cette option. De l'avis du représentant des affaires foncières, une évaluation du terrain doit être réalisée aux fins de mieux déterminer la valeur de la compensation.

Quant au représentant du tourisme et de l'environnement, il a pensé que PECHVAL devrait d'abord, dans sa présentation, indiquer clairement l'objectif principal du projet, ensuite l'objectif spécifique, puis les résultats attendus pour une meilleure compréhension. Il a souligné l'importance de l'étude d'impact sur l'environnement, et a posé la question de savoir la destination finale des déchets résultant du traitement du poisson

.Sur l'exonération des taxes sur la construction et le carburant, le ministère de la pêche et de l'aquaculture, à travers le point focal de PECHVAL, Monsieur le Directeur Général de la Pêche Maritime, est en train de suivre le dossier auprès du ministère des finances. La JICA a fait des recommandations sur les aspects suivants :

- La résolution du problème du site entre le Port autonome de Pointe-Noire (PAPN) et le présumé propriétaire doit se faire de façon pacifique ;
- Le suivi du dossier sur l'exonération des taxes doit obéir aux délais prévus pour l'annonce des appels d'offre ;
- La nomination des contreparties congolaises pour les projets pilotes prévue dans la seconde phase du projet ;
- L'aménagement de la route d'accès au site du projet ;
- La budgétisation des frais opérationnels (eau, électricité, démolition de la petite construction sur le site et les restes d'un bar...).

Directeur Général de la Pêche  
Maritime

Jean Pierre YOBARD MPOUSSA



PECHVAL  
Chef de la mission  
Kuniaki TAKAHASHI

**Liste des participants à la réunion du Comité Conjoint de Coordination**

Ordre	Nom	Titre/Organisation	Contact
1	MAVOUMBA Raphaël	Conseiller à la Pêche du Ministre de la Pêche et de l'Aquaculture	05-531-24-93
2	MPOUSSA Jean Pierre Yobard	Directeur Général de la Pêche Maritime	06-954-96-81
3	MASSAMBA NALIBO Yvette	Inspectrice Générale de la Pêche et de l'Aquaculture	06-9421924 / 22-6053738 / 05-5364575
4	KALI TCHIKATI Edourd	Directeur de l'Aquaculture Marine	05-5362157 / 06-6670793
5	MISSAMOU Antoine	Directeur Départemental de la Pêche et de l'Aquaculture de Pointe-Noire	06-6293300 / 05-5595756
6	MALONGA Jean Bosco	Directeur Départemental de la Pêche et de l'Aquaculture du Kouilou	06-6883540
7	AKENZETTE Romuald	Chef de service de l'aménagement des pêcheries Maritimes (DGPM)	05-5691473
8	IBARA Luis Marie	Ministre Délégué, Chargé de la Marine Marchande	06-6640652
9	DZABA BOUNGOU Benjamin	Ministère du Tourisme et de l'Environnement	06-6610441
10	OKO DIANDAHA Julien	Ministère des Affaires Etrangères et de la Coopération	06-6685802
11	ONGOUNDOU AWANDZA Cyre Deloria	Ministère des Affaires Etrangères et de la Coopération	06-9619622
12	NYANGA Jacques Jean Luis	Ministère des Affaires Etrangères et de la Coopération	05-6779277 / 06-8661535
13	ELENGA Albert	Ministère des Affaires Etrangères et de la Coopération	05-5211286
14	MIZONZO Straub Garant	Ministère des Affaires Etrangères et de la Coopération	06-9543300
15	OBANGAZA Therlambelitch	Ministère des Affaires Etrangères et de la Coopération	04-0356948
16	OKANA MADZOU Privat	Ministère des Affaires Etrangères et de la Coopération	06-6590298
17	PINDOU Guy Charles	Ministère des Affaires Foncières	06-6778474 / 01-6778474
18	INOUA Idrissa	Président intérimaire de l'AICP	06-6583355 / 05-5536371
19	YEYE Basile	Président de l'Association des Pêcheurs Béninois (C.P.B.PN)	05-5537197
20	BAYONNE Jean Baptiste	Secrétaire Général de l'AICP	05-5071074 / 06-6482635
21	MAKOSSO MALAMBA Julienne	Présidente de l'association des femmes transformatrices de poissons salés	05-7397147
22	SENOO Yuji	Troisième Secrétaire, Ambassade du Japon	081-5146605
23	OBATA Eihiko	Représentant Résident, JICA	+243-81-549-1376

24	IGAWA Haruhiko	Directeur Adjoint, JICA	+81-3-5226-8437
25	TOKUDA Masato	Chef de Bureau, JICA	+243-81-389-5397
26	TAKAHASHI Kuniaki	Chef de la mission, PECHVAL	06-8538044
27	OGAWA Tadashi	Chef adjoint de la mission/Planification des installations et des équipements/ Conception, PECHVAL	05-0761744
28	WACHI Yuichi	Soutien à l'appel d'offres et à la passation des contrats, PECHVAL	06-8844311
29	HAGIWARA Mikiko	Coordination des activités/Développement de type participatif, PECHVAL	06-6596955
30	SAYA MABA Marius	Assistant Représentant FAO, Chargé du programme	06-6591553 / 05-6566201

### 3. Minutes of JCC ( 2 )

**MINISTERE DE LA PECHE  
ET DE L'AQUACULTURE**

**CABINET**

**DIRECTION GENERALE  
DE LA PECHE MARITIME**

**REPUBLIQUE DU CONGO**  
Unité\*Travail\*Progrès

#### **COMPTE-RENDU DE LA REUNION DU COMITE CONJOINT DE COORDINATION DU PROJET PECHVAL**

Il s'est tenu ce jeudi 24 juillet 2014 dans la salle 315 du Ministère des Affaires Etrangères et de la Coopération, la 2<sup>ème</sup> réunion du Comité Conjoint de Coordination du Projet d'Etude pour l'Amélioration de la Chaîne de Valeurs des Produits Halieutiques (PECHVAL). La cérémonie d'ouverture a été placée sous le patronage de Monsieur **Georges GANONGO**, Directeur de Cabinet du Ministre de la Pêche et de l'Aquaculture.

Plusieurs délégués venus des différentes administrations impliquées dans ledit projet ont pris part à cette réunion. La liste des participants est annexée au présent compte-rendu.

Trois allocutions ont marqué la cérémonie d'ouverture. Elles ont été prononcées tour à tour par le chef du projet PECHVAL, le représentant de la JICA et le représentant du Gouvernement congolais.

Le secrétariat de la réunion a été conjointement assuré par Messieurs **Tite Romuald AKENZE**, Directeur de la Pêche Maritime et **Benoît Claude ATSANGO**, Directeur de l'Aménagement des Pêcheries Maritimes.

##### **• Allocution du chef de projet PECHVAL**

Le chef du projet PECHVAL, prenant la parole en premier, a d'abord félicité la partie congolaise, notamment, les staffs centraux et départementaux pour leur collaboration et pour la tenue de cette 2<sup>ème</sup> réunion. Il a ensuite remercié Son Excellence Monsieur le Ministre de la Pêche et de l'Aquaculture pour son initiative.

Il a énuméré les objectifs du projet, à savoir :

- augmenter les revenus des travailleurs dans la chaîne de valeur des produits halieutiques ;
- améliorer l'environnement de travail ;
- améliorer les conditions d'hygiène et de gestion de la qualité des produits halieutiques.

Il a insisté sur l'importance de ce projet car c'est le premier du genre dans le cadre de la coopération technique bilatérale entre la République du Congo et le Japon. Enfin, il a terminé son propos en invitant les participants à faire preuve d'un esprit d'équipe et a souhaité que cette réunion soit fructueuse pour une meilleure compréhension et progression de nos projets futures.

- **Allocution du représentant de la JICA**

Après les civilités à l'endroit de tous les participants, le représentant de la JICA a noté qu'après le démarrage du Projet PECHVAL en octobre 2012, l'équipe du projet a étudié la chaîne de valeurs des produits halieutiques à Pointe-Noire et a identifié six(6) principaux sujets qui ont été sélectionnés pour concevoir les six(6) projets pilotes, qui à leurs tours ont été approuvés par le premier Comité Conjoint de Coopération pour améliorer la chaîne de valeurs des produits halieutiques.

Lesdits projets pilotes se présentent ainsi qu'il suit :

### **1. Plan d'amélioration de la qualité de poissons frais**

Le point de départ de la chaîne de valeurs est l'étape allant de la capture au débarquement de poissons. Cette première étape est la plus importante ou le point focal pour maintenir la qualité du poisson ; car les poissons commencent à se dégrader graduellement ou rapidement juste après la capture. Il est important de respecter cet acheminement afin de retarder la dégradation de la qualité et de prévenir la détérioration prématurée de poissons. Le présent projet pilote vise à maintenir la fraîcheur de poissons au moment de leur débarquement et de les acheminer en meilleur état à l'étape suivante de la chaîne de valeurs.

### **2. Gestion de la plage de débarquement**

Même si les poissons sont débarqués frais et en bon état, si la plage de débarquement est insalubre et contaminée, les poissons pourraient être pollués et leur qualité se détériorait rapidement. La négligence des ordures sur la plage et laisser la plage dans un état contaminé détériorent les poissons et déshonorent les pêcheurs.

### **3. Amélioration des méthodes de transformation des produits halieutiques**

Le plus important problème constaté dans la zone de transformation de Pointe-Noire est que les femmes transformatrices ne veulent pas que leurs enfants succèdent à leur métier à cause de la rudesse de travail et le maigre revenu. Malgré leurs plaintes et insatisfactions des conditions de leurs travaux, les équipements et les méthodes de fumage restent inchangés depuis des décennies. Il y a quelques obstacles pour réaliser l'amélioration de leur travail ; il s'agit du manque de volonté d'améliorer par elles-mêmes les conditions de travail et nous osons croire que c'est ça l'élément le plus critique. Le projet pilote vise de

montrer les équipements expérimentaux, de faire les essais et d'encourager les transformatrices à continuer elles-mêmes l'amélioration.

#### **4. Amélioration de la méthode de vente au marché public**

Dans la chaîne d'alimentation de poissons, le produit halieutique reste le plus longtemps au marché et la détérioration des poissons pourrait s'accélérer, si aucune mesure préventive n'est pas prise. D'abord, l'environnement hygiénique actuel du marché de Pointe-Noire est catastrophique ; l'eau du robinet n'est pas disponible, des ordures sont disséminées ou s'entassent sur le sol et le ramassage des ordures est très rare. Le projet pilote essaie de rendre hygiéniques les étals de poissons et cette expérience est acceptée par les vendeurs et les consommateurs. Il envisage également de trouver le chemin pour améliorer les conditions sanitaires de tous les marchés.

#### **5. Aménagement des installations et des équipements**

Le centre de la pêche artisanale sera construit pour être la base de cette activité à Pointe-Noire et il peut être également la base de l'amélioration de la chaîne de valeurs et celle des activités de l'Association pour l'Auto Promotion des Initiatives des Communauté de Pêche (AICP).

#### **6. Exploitation des Installations de pêche artisanale**

Le centre est une installation pionnière au Congo pour le développement de la pêche artisanale, et les pêcheurs n'ont aucune expérience de l'exploitation et de la gestion de telles installations et d'un tel équipement. Le projet pilote soutient les parties prenantes, soit les pêcheurs ou les organisations, pour mieux stimuler leurs activités et procède à la formation des cadres dans l'organisation en matière de l'exploitation et de la gestion du centre.

Il a enfin apprécié le soutien manifeste du projet par les autorités congolaises.

- **Allocution du représentant du Gouvernement**

C'est au nom du Ministre de la Pêche et de l'Aquaculture, que Monsieur Georges GANONGO, Directeur de Cabinet du Ministère de la Pêche et de l'Aquaculture a pris la parole. Dans son allocution d'ouverture, et après avoir souhaité la bienvenue aux participants, il est revenu sur l'objet de la réunion, notamment l'évaluation à mi-parcours des activités du projet. Il a ensuite remercié la JICA qui a choisi le Congo parmi les pays africains pour organiser la chaîne de valeur visant à optimiser la participation des pêcheurs artisans au développement de la pêche.

Il a dit en substance que c'était l'occasion idéale pour le Comité Conjoint d'évaluer l'état d'avancement du projet et d'analyser les principales contraintes qui limitent sa mise en œuvre afin d'en apporter les solutions idoines en vue de faciliter la modernisation de la pêche artisanale et d'accroître de façon significative ses performances. Cependant le Congo ne saurait se satisfaire de cette performance si le poisson consommé par les populations est conservé, transformé et commercialisé dans de très mauvaises conditions.

La mission prescrite par le Président de la République, est tout mettre en œuvre afin de satisfaire quantitativement et qualitativement les besoins des consommateurs en mettant sur le marché les produits de bonne qualité et à des prix accessibles aux revenus les plus modeste.

Il nous faut limiter les pertes post-capture qui peuvent atteindre 35% en installant une chaîne de froid appropriée et efficiente.

C'est dans ce contexte, qu'avec la JICA, il est envisagé de mettre à la disposition des pêcheurs artisans des installations et des équipements modernes de conservation et de transformation du poisson. Cela permettra d'améliorer la contribution de la pêche artisanale à l'augmentation de l'offre en poisson sur le marché intérieur.

Le représentant du Gouvernement a martelé qu'au-delà de ce projet, l'administration de la pêche et de l'aquaculture bénéficie des formations de la part de la JICA pour le renforcement des capacités techniques et managériales des cadres, des pêcheurs etc.

Résorber le déficit de l'offre halieutique, estimé à 40.000 tonnes, tel est l'objectif minimal que le Gouvernement s'est fixé dans le cadre du Programme National de Développement PND 2012-2016.

C'est en renouvelant l'engagement d'œuvrer pour la réussite de ce projet, qu'il a déclaré ouverts les travaux de la réunion du Comité Conjoint de Coordination du projet PECHVAL.

Le déroulement effectif des travaux a débuté avec l'intervention de Monsieur Antoine MISSAMOU, Directeur Départemental de la Pêche Maritime de Pointe-Noire qui a fait une présentation sur l'exécution à mi-parcours du projet en abordant les points suivants :

1. Processus d'exécution du projet
2. Etat d'avancement des projets pilotes, activités et réalisation
  - 2.1 Amélioration de la qualité de poissons frais
  - 2.2 Gestion de la plage de débarquement
  - 2.3 Amélioration des méthodes de transformation des produits halieutiques
  - 2.4 Amélioration de la méthode de vente aux marchés publics
  - 2.5 Aménagement des installations et des équipements
  - 2.6 Exploitation des installations de la pêche artisanale

3. Contribution du Ministère de la Pêche et de l'Aquaculture.

Après la présentation du Directeur départemental de la Pêche Maritime, s'en est suivie la séance des questions réponses avec débats. Ce dernier a éclairé la lanterne dans ses réponses, ce qui a rendu ces échanges très fructueux.

Commencée à 10 heures, la réunion a pris fin à 12 heures 37 minutes.

Le Chef du projet PECHVAL,

**KUNIAKI TAKAHASHI**

Le Directeur Général de la Pêche Maritime,



**Jean Pierre YOBARD MPOUSSA**

Le Secrétaire,

Le Directeur de la Pêche Maritime,

**Tite Romuald AKENZE**



### 3. Minutes of JCC (3)

## **PROCES-VERBAL**

**de la réunion du Comité conjoint de coordination du projet  
amélioration de la chaîne de valeurs de produits halieutiques  
à Pointe-Noire (PECHVAL)**

Juillet 2015

L'an deux mil quinze et le 28 juillet, s'est tenue dans la salle de conférence de l'hôtel Azur "Le Gilbert" à Pointe-Noire, la réunion du Comité conjoint de coordination du projet amélioration de la chaîne de valeurs de produits halieutiques (projet PECHVAL).

Cette réunion était placée sous le patronage de son Excellence Monsieur **Bernard TCHIBAMBELELA**, Ministre de la pêche et de l'aquaculture

Y ont participé :

Monsieur **DIMOU** fidèle, Préfet du Kouilou ;  
Monsieur **VIODAUD BOUITY Roland**, Député, Maire de Pointe-Noire ;  
Monsieur **KOFFI** ; Représentant du Consul du Benin.

La JICA a été représentée par :

Monsieur **AOKI Toshimichi**, Représentant Résident ;  
Monsieur **Kuniaki TAKAHASHI**, Chef de projet PECHVAL ;  
Monsieur **Takafuni TOSHIHARA**, Consultant.

Cette réunion a connu la participation de plusieurs délégués des ministères dont la liste est jointe en annexe.

## **I- DE LA CEREMONIE D'OUVERTURE**

La Cérémonie d'ouverture a été sanctionnée par trois allocutions.

La première allocution a été prononcée par le chef de projet qui a présenté les activités du projet en soulignant que

L'équipe du PECHVAL, en tandem avec le Ministère de la Pêche et de l'Aquaculture, exécute depuis presque 3 ans, 6 projets pilotes dans les domaines les plus importants, pour améliorer la chaîne de valeurs des produits halieutiques à Pointe-Noire.

Ces activités sont :

### **1. Amélioration de la qualité de poisson frais**

A ce titre, il a souligné que La valeur du poisson et des produits de la pêche dépend largement de leur fraîcheur, c'est-à-dire la fraîcheur mieux maintenue peut contribuer à la hausse des prix. La dégradation de fraîcheur dépend de la température de conservation et la durée que les poissons sont laissés dans cet environnement spécifique.

Il a par ailleurs illustré son propos par des exemples tel que, le taux de qualité inférieure de produits fumés diminue de 7%, lorsque des poissons conservés à froid après la capture est utilisé comme matière première de fumage.

### **2. Assainir la plage de débarquement**

Dans ce cadre il est envisagé des actions suivantes :

- Eviter la contamination des poissons aux débarquements ;
- Placer des bacs à ordures sur la plage ;
- Aménager un système de ramassage des ordures et nettoyer régulièrement la plage

### **3. Améliorer les méthodes de transformation de produits halieutiques ;**

Il s'agit de procéder à:

- l'éducation et à la sensibilisation sur l'hygiène auprès des transformatrices ;
- l'amélioration des techniques de fumage ;
- la distribution des tenues de travail appropriées

### **4. Améliorer la méthode de vente au marché public ;**

Les actions suivantes sont envisagées :

- La formation pour l'amélioration des conditions d'hygiène aux stands des produits halieutiques ;
- La sensibilisation sur l'utilisation de glace à écaille ;
- La distribution des caisses isothermes, tenues de vente et autres équipements.

L'eau étant un facteur important pour garder les poissons en bon état hygiénique, la fourniture d'eau saine dans les marchés de Pointe-Noire demeure une exigence.

### **5. Aménager des installations et des équipements ;**

Il est prévu l'établissement des plans de construction et de fournitures d'équipement suivant les procédures de passation des marchés publics

### **6. Exploiter les installations de pêche artisanale**

Dans ce contexte, le renforcement des ONG est une évidence

**La deuxième allocution a été prononcée par le Représentant de la JICA.**

Dans son mot de circonstance, ce dernier s'est félicité de la tenue de la 3<sup>ème</sup> réunion du comité conjoint dans le cadre du Don du Gouvernement du Japon du projet d'étude pour l'amélioration de la chaîne de valeurs des produits halieutiques à Pointe Noire.

Ce projet d'étude, a-t-il ajouté, est mené pour contribuer à la promotion du secteur de la pêche comme l'un des axes prioritaires du plan national de développement dans le cadre de stratégie de relance de la politique agricole élaborés en 2003, ainsi qu'à la stratégie élaborée en 2011 avec l'appui de la FAO pour un développement durable de la pêche et de l'aquaculture (2011-2020) représentant ainsi le premier grand projet du Japon dans le domaine de la pêche au Congo.



L'allocution d'ouverture des travaux a été prononcée par le Ministre de la Pêche et de l'aquaculture qui a, avant tout, remercié chaleureusement l'Agence Japonaise de Coopération Internationale en sigle JICA pour avoir choisi le Congo parmi les Pays Africains afin d'organiser la chaîne des valeurs des produits halieutiques visant à optimiser la participation des pêcheurs artisans au développement du secteur de la pêche.

Il a, ensuite demandé au Comité Conjoint d'évaluer l'état d'avancement du projet et d'analyser les différents points inscrits à son ordre du jour. Il s'agit, aussi, d'examiner les principales contraintes qui limitent sa mise en œuvre afin d'accroître de façon significative ses performances.

Poursuivant son propos, le Ministre de la Pêche et de l'Aquaculture a rappelé les grandes lignes de la Politique du Gouvernement en matière de pêche et d'aquaculture édictée par le Chemin d'avenir, projet de Société du Président de la République et a déclaré ouvert, les travaux de la 3<sup>ème</sup> réunion du Comité Conjoint de Coordination.

Après la cérémonie d'ouverture, ponctuée par un cocktail, les participants se sont retrouvés en atelier.

## II- DU DEROULEMENT DES TRAVAUX :

La réunion du Comité conjoint de coordination du projet amélioration de la chaîne de valeur des produits halieutiques à Pointe-Noire a été structurée ainsi qu'il suit :

- **Présentateur** : Antoine **MISSAMOU**, Directeur Départemental de la Pêche et de l'Aquaculture de Pointe-Noire ;
- **Chef de Secrétariat** : Maurice **NKAYA**, Directeur du Contrôle, de la Démarche Qualité et de la Sécurité Alimentaire ;
- **Rapporteur**: Pierre **MPANDOU**, Directeur des Etudes et de la Planification

Après la structuration de la réunion, le Présentateur a pris la parole pour situer le contexte dans lequel se tient la réunion.

Il a ensuite abordé les questions inscrites à l'ordre du jour, notamment :

- Situation actuelle de la pêche au Congo ;
- Contribution du PECHVAL ;
- Calendrier global des activités réalisées ;
- Formation au Sénégal ;
- Recommandations pour le bon fonctionnement de notre centre

S'agissant de la Situation actuelle de la pêche au Congo, le présentateur s'est, dans un premier temps, penché sur la dépendance de plus en plus de l'importation. Il a noté qu'avec l'augmentation de la population, la demande des produits halieutiques est de plus en plus importante.

La consommation des produits halieutiques est passée de 67.000 tonnes en 2000 à 106.000 tonnes en 2010, ce qui correspond à une augmentation de 58% en 10 ans.

Pendant cette même période, l'augmentation de la production a été de 5.000 tonnes pour la pêche continentale, 6.000 tonnes pour la pêche artisanale et 9.000 tonnes pour la pêche industrielle. La production totale de la pêche nationale n'a augmenté que de 48%, passant de 44.000 tonnes en 2000 à 64.000 tonnes en 2010.

Les produits halieutiques de la pêche nationale sont tous destinés à la consommation locale, l'écart entre la production et la consommation est comblé par l'importation d'une grande quantité de poissons.

Les quantités de poissons importés sont passées de 23.000 tonnes en 2000 à 41.000 tonnes en 2010, soit une augmentation de 79%. L'importation de poissons a dépassé en 2009 la production nationale de la pêche maritime (industrielle et artisanale). En 2010, 39,1% des poissons consommés dans le pays étaient importés.

Il a affirmé que le Congo dépend fortement de l'importation et cette dépendance va s'accroître de plus en plus avec le rythme de croissance de la population.

En ce qui concerne la distribution et la commercialisation des produits de pêche artisanale, le présentateur a souligné que, pour les poissons pélagiques, si l'on considère les quantités distribuées sur le marché congolais par source d'approvisionnement, les poissons congelés importés représentent 83% de part du marché à côté de 10% seulement pour la pêche industrielle et 7% pour la pêche artisanale.

Pour les poissons démersaux distribués, la pêche industrielle compte 52%, l'importation représente 47% distribuée en poissons salés et séchés et les captures de la pêche artisanale se limitent seulement à 1%.

Il a enfin conclu que le volume de distribution des produits halieutiques est lié non seulement au volume de production mais aussi aux conditions de manipulation dans la chaîne de valeurs desdits produits à savoir, leur traitement depuis la capture jusqu'à la consommation.

Abordant les aspects concernant les Poissons congelés importés qui dominent le marché, le présentateur a souligné qu'auparavant l'approvisionnement des marchés en poissons capturés sur le territoire national était important et dominant au Congo, mais depuis quelques années, les quantités de poissons importés dépassent la production nationale de poissons de mer, et l'influence de l'approvisionnement en poissons importés augmente de plus en plus.

En 2010, le pourcentage des poissons importés dans la consommation nationale était de 39,1%.

Les quantités de poissons importés se subdivisent comme suit: 87% de poissons congelés, principalement les espèces pélagiques, et 13% de poissons salés-séchés, principalement les espèces démersales.

Quant à l'estimation de la demande de poisson dans l'avenir, l'orateur a notifié que si l'on suppose que le taux de croissance moyen de la population congolaise qui est de 3.13% se maintient, et si l'on considère la consommation moyenne annuelle de poisson par habitant comme invariable, la quantité de poisson demandée au Congo pour les années 2015, 2020 et 2025 prévue respectivement est de 189,2%, 220,8% et 257,5% par rapport à la production nationale de la pêche qui était de 64.720 tonnes en 2010. Si la production de la pêche nationale n'augmente pas, les écarts de 57.749 tonnes, 78.157 tonnes et 101.965 tonnes de poisson devront être comblés par les poissons importés.

S'agissant de la réduction du déficit en poissons et du renforcement de la sécurité des produits halieutiques, le présentateur a souligné que pour réduire le déficit afin de renforcer la sécurité des produits halieutiques, il faut maintenir la qualité de poissons (réduire le volume de perte post-capture et assurer la fraîcheur de poissons).

Pour cela, tenant compte de l'état actuel de la chaîne de valeurs des produits de la pêche artisanale de Pointe-Noire, plusieurs points sont à améliorer à chaque niveau de celle-ci.

Il a mentionné que la pêche maritime artisanale présente plusieurs points faibles qui constituent des menaces. L'analyse et l'amélioration de ces points sont considérées comme point de départ pour améliorer la chaîne de valeurs des produits halieutiques. Par exemple, maintenir la fraîcheur des produits et éviter leur contamination sont des actions qui doivent être prises le plus urgemment possible pour assurer la sécurité alimentaire.

Malheureusement, ces points ne sont pratiquement pas pris en compte dans le traitement actuel des produits de la pêche artisanale à Pointe-Noire.

Abordant les aspects des actions pour analyser les points faibles et les améliorer, le présentateur a fait des propositions pour analyser les points faibles et les améliorer.

Il a noté que le Congo dépend de plus en plus de l'importation des poissons et l'approvisionnement par la pêche artisanale est très limité.

Parmi les facteurs déterminants qui constituent les points faibles de la pêche artisanale au Congo, il a cité entre autres:

- Premièrement, les variations saisonnières pour les poissons pélagiques et l'insuffisance de l'approvisionnement en poissons démersaux.

- Pour améliorer ces points faibles, nous pensons qu'il est nécessaire d'augmenter la production en réduisant le volume de perte post-capture.
- Deuxièmement, l'abondance des produits sur le marché due à l'intensité de l'activité de pêche non régulée. Il est donc nécessaire de réduire l'effort de pêche et aménager les infrastructures de conservation pour éviter la chute de prix.
- Troisièmement, l'insuffisance des infrastructures de pêche. Pour améliorer ce point, il faut aménager les infrastructures de pêche (lieux de déchargement, ateliers de transformation, tables de vente etc.)
- Quatrièmement, le non aménagement de l'infrastructure de transport. Pour améliorer ce point, il faut maintenir la fraîcheur des produits (de la capture jusqu'au débarquement) et éviter la contamination des produits pendant le transport.

Pour répondre à la demande de poissons, il a noté qu'il faudrait d'abord éviter le rejet de poissons après la capture et augmenter la sécurité des produits halieutiques.

Il a ensuite souligné l'ignorance sur l'importance de la fraîcheur et le manque de moyen de maintien de fraîcheur comme étant des points faibles.

Pour améliorer ces points, il a estimé nécessaire de :

- renforcer le système de contrôle sanitaire et infliger des infractions en cas de non observation, pour assurer la sécurité des produits vendus;
- Sensibiliser les pêcheurs, mareyeurs, détaillants et consommateurs au maintien de la fraîcheur des produits halieutiques et à la sécurité des aliments.
- Rehausser le niveau de conscience sur les pratiques d'hygiène en aménageant les tables de vente des produits halieutiques et des équipements sanitaires sur les marchés.

Aussi, pour améliorer les techniques de transformation, il est indispensable que les poissons avant transformation soient de bonne qualité.

Concernant l'AICP, il a fait constater une faiblesse dans la gestion organisationnelle. D'où la nécessité de renforcer les capacités de ses dirigeants et celles des organisations annexes.

Abordant le point sur la Contribution du PECHVAL, l'orateur a noté que PECHVAL contribue à l'amélioration des points faibles cités ci-haut.

Le Présentateur a ensuite présenté le Calendrier global des activités réalisées. Celles-ci se présentent comme suit :

En première année (2012.9-2013.8), l'étude de base a été effectuée. Cette étude a permis de clarifier la situation et les problèmes actuels dans la chaîne de valeurs de produits halieutiques à Pointe-Noire et de se refléter dans les Projets pilotes.

En 2ème année (2013.9-2014.8) et en 3ème année (2014.9-2016.2), les projets-pilotes sont en cours de réalisation.

L'avis de soumission et l'appel d'offres de construction du centre de pêche a été effectués à la fin de la 2ème année par le bureau de JICA Kinshasa.

Cependant, la société sélectionnée ne pouvait pas poursuivre les travaux de construction et le contrat entre cette société et la JICA a été résilié. Quoique cela devra engendrer un grand retard dans l'avancement du projet, une nouvelle société devrait être sélectionnée dans les meilleurs délais pour la poursuite des travaux.

À la dernière phase de 4ème année (2016.2-), sera soumis au Comité Conjoint de Coordination (C.C.C.) le plan d'amélioration et d'actions pour obtenir l'approbation.

S'agissant du Processus d'exécution du projet, le présentateur a souligné que l'objectif du présent projet est d'élaborer les plans d'amélioration et d'action pour améliorer la chaîne de valeurs des produits halieutiques à Pointe-Noire avec la collaboration de deux parties à savoir la partie congolaise et la partie japonaise.

Il a ensuite notifié qu'après la fin du projet, la partie congolaise devra commencer à exécuter les plans d'amélioration et d'action par elle-même pour atteindre l'amélioration de la situation de la pêche en augmentant la sécurité alimentaire.

Le présentateur a relevé que PECHVAL n'ayant commencé ses activités que depuis octobre 2012, avec l'approche de la fin de ce projet, une période de prolongation est en train d'être envisagée.

S'agissant de la liste des projets pilotes, le présentateur a noté que dans le cadre du PECHVAL, 6 projets pilotes sont en cours de réalisation depuis le mois de mai 2013.

Il s'agit de :

1- Amélioration de la qualité de poissons frais ;

Le PECHVAL exécute le projet pilote de « l'Amélioration de la qualité de poissons frais »

Pour contribuer à la réduction des pertes post-capture, le maintien de fraîcheur des poissons et le renforcement de la sensibilisation des pêcheurs et mareyeurs.

Les activités principales de ce projet pilote sont:



- a- Expérimentation de la méthode améliorée de la pêche en vue d'atténuer la dégradation post-capture de poissons (pour le filet dormant et ligne de fond) ;
- b- Diffusion de traitement amélioré des produits halieutiques en vue de préserver la fraîcheur de poisson à l'étape de mareyages, etc ;
- c- En troisième année du PECHVAL, de septembre 2014 jusqu'à présent, nous avons expérimenté la pêche améliorée en réduisant la durée de la marée et du filet dans l'eau. On a également expérimenté l'utilisation de la glace pendant la marée et le mareyage. Une étude a été menée sur l'espace de stockage de la glace dans la pirogue petit modèle.

A travers ces activités, se présentent des difficultés du fait que les pêcheurs refusent d'utiliser de la glace à cause du coût supplémentaire de l'achat de glace et de l'insuffisance d'espace dans la pirogue et que les pêcheurs et les mareyeurs restent encrés dans des vieilles pratiques et refusent l'innovation.

## 2- Gestion de la plage de débarquement

Le deuxième projet pilote du PECHVAL s'intitule «la gestion de la plage de débarquement» il vise à:

- éviter la contamination des poissons sur la plage;
- placer des bacs à ordures sur la plage;
- organiser un système de ramassage des déchets;
- nettoyer régulièrement la plage;
- développer la conscience de propreté environnementale chez les acteurs de la pêche.

Le contenu des activités du présent projet pilote est:

- l'établissement du plan et du manuel de nettoyage et de gestion de déchets;
- la sensibilisation sur l'importance du nettoyage auprès des acteurs de la pêche;
- l'établissement et le renforcement du comité du nettoyage;
- la réalisation des journées de nettoyage de la plage de Songolo.

En troisième année du PECHVAL, les activités de nettoyage de la plage qui ont commencé depuis le mois de l'avril 2013, se poursuivent.

Avec la Mairie de Mongo-Mpoukou, le PECHVAL a organisé des réunions pour sensibiliser les acteurs de la pêche sur l'importance du nettoyage. Grâce à l'implication de Monsieur le Maire, les acteurs ont pris conscience de la nécessité d'assainir leur environnement professionnel.

A travers ces activités, des difficultés sont encore présentes du fait que certains acteurs résistent encore à participer aux journées de nettoyage, d'autres continuent à enterrer les déchets de poissons à la plage et le problème de manque de bacs à ordures demeure.




### 3- Amélioration des méthodes de transformation de produits halieutiques

Le troisième projet pilote du PECHVAL s'intitule «l'amélioration des méthodes de transformation de produits halieutiques», il vise à:

- renforcer la capacité de transformation;
- éviter la perte de fraîcheur de poisson avant la transformation;
- améliorer le fumoir.

Le contenu des activités du présent projet pilote est la sensibilisation sur l'hygiène et l'expérimentation de la méthode améliorée de fumage.

En troisième année, l'expérimentation du fumoir amélioré s'est poursuivie, la formation aussi a été effectuée sur les bonnes pratiques d'hygiène et de manipulation des produits halieutiques et sensibilisé par media (Télé Pointe-Noire) sur les bonnes pratiques d'hygiène et de manipulation des produits halieutiques.

Dans la réalisation de ces activités, des difficultés persistent du fait que les transformatrices refusent l'innovation et ne veulent pas utiliser le fumoir amélioré. Aussi elles n'observent presque pas les règles d'hygiène pendant la manipulation de poissons.

### 4- Amélioration de la méthode de vente au marché public

Le quatrième projet pilote du PECHVAL est «Amélioration de la méthode de vente au marché public ». Il vise à:

- renforcer la sensibilisation auprès des détaillants sur le maintien de la fraîcheur des produits et sécurité des aliments;
- aménager les tables de vente des produits halieutiques et les équipements sanitaires aux marchés publics.

Dans le cadre du présent projet pilote, la formation se réalise pour l'amélioration de condition hygiène aux stands de produits halieutiques, la sensibilisation sur l'utilisation de glace lors de la vente de poissons frais et la distribution des glacières et des tenues pour la vente de poisson.

En troisième année du PECHVAL, la formation se poursuit sur les bonnes pratiques d'hygiène et de manipulation des produits halieutiques, l'aménagement des tables de vente de poisson et l'expérimentation de la méthode de vente améliorée au marché central.

Cependant, les vendeurs ne sont pas prêts à l'innovation, ils refusent d'utiliser la glace pendant la vente, ils observent difficilement des règles d'hygiène pendant la manipulation de poissons et mettent rarement la tenue appropriée lors de la vente. Les



glacières distribuées sont utilisées à d'autres fins, certains vendeurs mettent toujours du sable sur le poisson.

#### 5- Aménagement des installations et des équipements

Le cinquième projet pilote du PECHVAL est «Aménagement des installations et des équipements».

Dans le cadre de ce projet pilote a:

- défini le site du projet;
- établi les plans de construction et du dossier d'appel d'offres.

En troisième année, il a été conclu le contrat avec le contractant et commencé les travaux de construction.

Le contrat était arrivé à son terme mais les travaux n'ont pas avancé.

Le PECHVAL programme la conclusion du nouveau contrat avec un autre contractant dans un délai raisonnable.

#### 6- Exploitation des installations de pêche artisanales

Le sixième projet pilote du PECHVAL qui s'intitule «Exploitation des Installations de pêche artisanale » vise à renforcer l'organisation de l'AICP et celle des organisations annexes ainsi que les capacités des membres du comité de gestion.

En troisième année, l'organisation du comité de gestion de la SOVAGHAS devrait être soutenue, la rédaction des règlements et du statut du SOVAGHAS, la formation du comité de gestion.

Cependant, comme ces activités (surtout la formation pratique) se déroule parallèlement avec l'avancement des travaux de la construction, le programme de ce projet pilote est en retard à cause du retard desdits travaux.

Concernant la formation au Sénégal, le Présentateur a indiqué que du 17 au 23 mai 2015 s'est tenue la formation au Sénégal, du comité de gestion du futur centre de pêche de Pointe-Noire (SOVAGHAS). Ayant bénéficié de la coopération japonaise la construction de plusieurs centres de pêche, marchés de poisson et autres infrastructures, le Sénégal a servi de modèle pour abriter ladite formation. Ce comité de gestion est composé de: Ministère de la pêche et de l'aquaculture (MPA), le Conseil départemental et municipal et l'Association pour l'autopromotion des initiatives communautaires de pêche (AICP).

Le but de cette formation était de renforcer les capacités des membres du comité de gestion de la SOVAGHAS, par des échanges avec les dirigeants des certaines infrastructures construites par la JICA au Sénégal à savoir: le Centre de pêche de Lompoul, le Complexe de pêche de Kayar, le Marché central au poisson de Kaolack et le Marché Central au Poisson de Dakar.



La formation s'est déroulée du 17 au 23 mai 2015, les participants étaient les membres du comité de gestion du SOVAGHAS composé des dirigeants de l'AICP, des représentants du MPA et de la mairie de Pointe-Noire. Les autres participants étaient les agents du MPA à Pointe-Noire et les représentantes de femmes transformatrices de poisson.

La formation dans les différents centres de pêche et marchés de poissons s'est focalisée sur trois objectifs principaux, notamment:

a) Pour comprendre la responsabilité des dirigeants, les programmes suivis visaient:

- l'organisation et activités de gestion ;
- le rôle et les attributions des dirigeants.

b) Pour comprendre le rôle de l'organisation, les programmes suivis ont concerné:

- l'organigramme des comités concernés par la gestion ;
- la coopération entre les pêcheurs sédentaires et migrants.

c) Pour comprendre le contenu des activités de gestion, les programmes suivis ont concerné:

- les activités de gestion
- la pratique d'hygiène, le nettoyage de la plage et des installations
- La visite des sites comme un tour sur les aires de transformation, de débarquement et de transaction des produits
- Les échanges d'expériences

Enfin, pour le bon fonctionnement du Centre, le Présentateur a insisté sur la nécessité de :

- Avoir une bonne coopération entre l'Etat et les acteurs (AICP) nationaux et non nationaux, hommes et femmes ;
- mettre des personnes compétentes aux postes de Directeur Gérants, de comptable et secrétaire Gestionnaire ;
- mettre en place des procédures transparentes de gestion, surtout au niveau des finances ;
- introduire le système des tickets ou carnet pour toute prestation ;
- utiliser au maximum de la prestation extérieure

Après l'exposé du présentateur, les participants ont eu à s'échanger sur l'ensemble des questions à l'ordre du jour. Au terme des débats, ils ont émis le vœu pour une bonne réussite du projet.



Commencé à 10 heures 30, la réunion du Comité Conjoint de Coordination a pris fin à 14 heures.

Fait à Pointe- Noire, le 28 juillet 2015

POUR L'AGENCE JAPONAISE DE  
COOPERATION INTERNATIONALE  
(JICA)

POUR LE MINISTERE DE LA PECHE ET  
DE L'AQUACULTURE

Le chef de Mission du Projet PECHVAL

Le Directeur Général de la Pêche  
Maritime

高橋邦子  
Kuniaki TAKAHASHI



Jean Pierre YOBARD MPOUSSA

Le Secrétaire de la Réunion,  
Directeur du Contrôle, de la  
Démarche Qualité et Sécurité Alimentaire

Maurice NKAYA

Liste des participants à la réunion du Comité Conjoint de Coordination du 28 juillet 2015

N°	Nom	Structure / Organisation	Fonction
1	KOUYEKIMINA MILANDOU François Aimé	AICP	Secrétaire général
2	INOUA IDRISSA	AICP	2e vice-président
3	POATY TATY Bernard	AICP	membre
4	TCHISSAMBOU Blaise Fresné	AICP	Représentant pêcheurs congolais
5	DOSSAH AHLOU Jean Marc	AICP	1er vice-président
6	MAKAGNI PEMBA Jean Baptiste	DDPA-PN	chef de service pêche maritime
7	MBAKOU Ange Kader	DDPA-PN	chef de service contrôle qualité
8	LOCKO Alain Claude	DDPA-PN	CSAF
9	EYABI MFOUMOU Ange Karelle	DDPA-PN	Agent
10	ONGUE Fortuné	DDPA-PN	chef de bureau
11	KENGUE Serge Justin	DD domaine de l'Etat	Directeur
12	MBOUSSA AMAN	DDPA-K	chef de service
13	MALONGA Jean Omer	DDPA-PN	chef de service
14	MATOUTY Parfait	Mairie PNR	
15	MIZELE SAMBA Yvette	DDPA-PN	Agent
16	MAMPASSI Patrice	DDPA-K	Collaborateur
17	MBOKO Joseph	DDPA-PN	Regisseur
18	POUNOUMA OPOUGOU Joachim	DDPA-K	CSAF

19	PAKA-PAKA	DDPAK	chef de service
20	TCHICAYAT Cyriaque	DC	chef du centre
21	MILANDOU Jean Albert	MPA	Directeur des affaires administratives et financière
22	MPANDOU Pierre	MPA	Directeur études et planification
23	NDOUCKY Patrick Perel	PECHVAL	Agent de liaison
24	KAYA Maurice	PMA	Directeur contrôle démarche qualité
25	YOBARD MPOUSSA Jean Pierre	MPA	DG pêche maritime
26	MALONGA Jean Bosco	DDPA-K	Directeur
27	BOKETSU Marianne	JICA	Directrice adjointe des programmes formation
28	PEMBE MOUNTSOUKE Julia Sylvie	PECHVAL	Secrétaire
29	ELOMBO AYOMA Marie Blaise	DD environnement	chef de service
30	LOEMBA MAKOSSO	Mairie Mongo-Mpoukou	chef de cabinet
31	ADJIWANOU Luis Coffi	Consulat Benin	Secrétaire général
32	MISSAMOU Antoine	DDPA-PN	Directeur
33	DJIMBI MAKOSSO	DDPA-PN	Agent
34	MBAYE SENE	AICP	Secrétaire adjoint
35	DIMOU Philippe	Préfecture du Kouilou	Préfet
36	BOUITY VIAUDO Roland	Mairie centrale	Maire
37	TCHIBAMBELELA Bernard	MPA	Ministre

**PROCES-VERBAL**

**de la quatrième réunion du Comité conjoint de coordination du  
projet d'Etude pour l'amélioration de la chaîne de valeurs des  
produits halieutiques à Pointe-Noire (PECHVAL)**





L'an deux mil dix-sept et le 17 février, s'est tenue dans la salle de conférence de l'hôtel Azur "DIEGO CAO" à Pointe-Noire, la quatrième réunion du Comité conjoint de coordination du projet amélioration de la chaîne de valeurs de produits halieutiques (projet PECHVAL).

Cette réunion était placée sous le patronage de son Excellence Monsieur Henri DJOMBO, Ministre d'Etat, Ministre de l'Agriculture, de l'Elevage et de la Pêche.

La délégation de la JICA était composé de :

Monsieur AOKI Toshimichi, Représentant résident de la JICA à Kinshasa ;

Monsieur SHIBUTANI Michitsugu, Directeur de programmes, Chargé du Développement des Ressources Humaines et Industriels ;

Madame BOKETSU Marianne, Directrice Adjointe de Programmes, secteur Formation, Gouvernante et Développement Rural

Monsieur TAKAHASHI Kuniaki, Chef de projet

Y ont participé : voir la liste en annexe

## **I- DE LA CEREMONIE D'OUVERTURE**

La Cérémonie d'ouverture a été sanctionnée par trois allocutions.

La première allocution a été prononcée par le Chef de projet. Il a rappelé qu'après le démarrage du projet PECHVAL en octobre 2012, une étude réalisée au sein de la chaîne de valeurs des produits de la pêche artisanale à Pointe-Noire a permis de concevoir six projets pilotes, parmi lesquels celui de la construction du centre de la pêche artisanale dont l'achèvement des travaux est attendu en juin prochain.

Il a souligné l'importance du centre de pêche tant dans l'amélioration de la chaîne de valeur des produits halieutiques que pour les activités de l'association des acteurs de ladite chaîne de valeurs.

Le Chef de mission a aussi notifié que le centre de pêche sera doté d'un certain nombre d'équipements parmi lesquels la machine de production de glace d'une capacité journalière de 2,5 tonnes. La glace est d'une importance capitale pour la préservation de la qualité et le maintien de la fraîcheur des produits débarqués. Ce qui favoriserait la réduction des pertes post capture.

L'eau étant la principale source de contamination dans l'industrie alimentaire, le Chef de mission a insisté sur la nécessité d'utiliser une eau saine dans la manipulation des produits halieutiques. C'est ainsi qu'il est prévu un forage dans le centre de pêche en construction.

Il a également interpellé les autorités gouvernementales de la République du Congo à multiplier les efforts pour que l'eau mise à la consommation de population soit toujours saine et propre.

Il a aussi rappelé au Ministère de l'Agriculture, de l'Elevage et de la pêche, principal partenaire dans la réalisation du Pechval, de remplir ses obligations, notamment la connexion de

l'électricité à partir de la moyenne tension sans laquelle le centre ne sera pas opérationnel à la date prévue.

Le Chef de mission a terminé son allocution par la reconnaissance de la collaboration et du soutien du gouvernement congolais dans la réalisation du projet Pechval.

La deuxième allocution a été prononcée par le Représentant Résident de la JICA.

Pour commencer le représentant s'est félicité au nom de la JICA de la tenue de la 4<sup>ème</sup> réunion du comité conjoint de coordination dans le cadre du Pechval.

Il a ensuite rappelé que ce projet d'étude qui est le premier grand projet du Japon dans le domaine de la pêche au Congo, est mené pour contribuer à la promotion du secteur de la pêche qui constitue l'un des axes prioritaires du plan national de développement dans le cadre de la stratégie de relance de la politique agricole élaborée en 2003, ainsi qu'à la stratégie élaborée en 2011 avec l'appui de la FAO pour un développement durable de la pêche et de l'aquaculture.

Le représentant a aussi notifié que dans une vision de développement inclusif, la JICA a mis sur pied le projet d'étude pour l'amélioration de la chaîne de valeurs des produits halieutiques qui pourra contribuer à relever les défis à travers la valorisation de ces produits.

Il a poursuivi son allocution en rappelant le contenu des activités du Pechval ainsi que le processus de leur exécution.

Avant de terminer, le représentant de la JICA a remercié le comité conjoint de coordination, à travers son Président, pour les efforts fournis dans le suivi de la mise en œuvre du Pechval. Il a souligné que la réussite de ce projet repose principalement sur la coordination des activités et la complémentarité des informations entre les différents acteurs du secteur, ceci avec l'appui et le soutien du Ministère de l'Agriculture, de l'Élevage et de la Pêche.

Il a conclu en remerciant très sincèrement tous ceux qui contribuent à la réalisation du projet.

La troisième et dernière allocution a été représentée par le Ministre d'Etat, Ministre de l'Agriculture, de l'Élevage et de la pêche qui a déclaré ouvert, les travaux de la 4<sup>ème</sup> réunion du Comité Conjoint de Coordination.

Prenant la parole, le Ministre d'Etat, Ministre de l'agriculture, de l'Élevage et de la Pêche, a, au nom du Gouvernement de la République et en son nom personnel, souhaité la bienvenue et un agréable séjour à Pointe Noire à tous les membres du Comité Conjoint de Coordination du projet PECHVAL.

Il a particulièrement remercié l'Agence Japonaise de Coopération Internationale en sigle JICA, qui a choisi le Congo pour organiser la chaîne des valeurs des produits halieutiques visant à optimiser la participation de nos pêcheurs artisans au développement du secteur de la pêche.

Il a noté que le secteur de la pêche demeure encore confronté à plusieurs difficultés exogènes et endogènes, notamment les pertes post capture.

Il a rappelé que la mission prescrite par son Excellence Monsieur le Président de la République au secteur de la pêche, est de tout mettre en œuvre pour satisfaire quantitativement et qualitativement les besoins nationaux en poisson, de mettre sur le marché des produits de bonne qualité sanitaire, à des prix accessibles à toutes les bourses.

S'agissant des problèmes encore non résolus, parmi lesquels ceux liés à l'électrification du centre, le Ministre d'Etat a pris bonne note et a promis de tout mettre en œuvre pour remédier à cela.

Le Ministre d'Etat a souligné que le Congo attend encore beaucoup de la coopération japonaise dans le domaine de la pêche, notamment des investissements dans le domaine de la surveillance de la pêche maritime et de l'évaluation des ressources halieutiques.

Il a noté que ces besoins ne peuvent être comblés sans l'acquisition des bateaux de surveillance maritime et de recherche halieutique qui permettront de lutter contre la pêche illicite, non déclarée et non réglementée d'une part et d'évaluer les ressources halieutiques que dispose le Congo d'autre part.

Avant de déclarer ouvert les travaux, Le Ministre d'Etat a renouvelé ses remerciements aux différents partenaires techniques et financiers dans le domaine de la pêche, parmi lesquels la JICA,

## II- DU DEROULEMENT DES TRAVAUX :

La réunion du Comité conjoint de coordination du projet amélioration de la chaîne de valeur des produits halieutiques à Pointe-Noire a été structurée ainsi qu'il suit :

- Modérateur. ; Patrice MAMPASSI, chef de service aménagement des pêcheries à la Direction Départementale de Pointe -Noire
- **Chef de Secrétariat : Maurice NKAYA**, Directeur du Contrôle, de la Démarche Qualité et de la Sécurité Alimentaire ;
- **Rapporteur: Pierre MPANDOU**, Directeur des Etudes et de la Planification

### b) Présentation

Trois présentations ont été déroulées au cours de cette réunion à savoir

- Situation de la production de la pêche maritime au Congo présenté par **Jean Omer MALONGA**, Chef de service de l'aménagement des pêcheries maritimes et des statistiques;
- Contribution du PECHVAL présenté par **Ange Kader MBAKOU**, Chef de service de la démarche qualité;
- Calendrier global d'exécution des activités réalisées, présenté par ; **Patricia MOKOBI**, Chef de service au laboratoire de microbiologie

En ce qui concerne la Situation de la production de la pêche maritime au Congo,

Le présentateur a souligné la demande des produits halieutiques est de plus en plus importante. La consommation des produits halieutiques est passée de 106.000 tonnes en 2010 à 120.000 tonnes en 2015, ce qui correspond à une augmentation de la consommation de 13,2% en 5 ans. Cependant la production est loin de satisfaire cette demande. On assiste également à une raréfaction de la ressource halieutique. La possibilité d'augmenter l'offre halieutique demeure aussi une exigence. Pour combler cette demande le pays fait recours aux importations massives de poissons qui subissent une augmentation exponentielle

Pour illustration, les quantités de poissons importés sont passées de 41.000 tonnes en 2010 à 57.749 tonnes en 2015, soit une augmentation de 71% en 5 ans.

Le présentateur a souligné que pour combler le déficit en poissons et renforcer la sécurité des produits halieutiques, il faut maintenir la qualité de poissons (réduire le volume de perte post-capture et assurer la fraîcheur de poissons).

Pour cela, tenant compte de l'état actuel de la chaîne de valeurs des produits de la pêche artisanale de Pointe-Noire, plusieurs points sont à améliorer à chaque niveau de celle-ci.

Il s'agit

- renforcer le système de contrôle sanitaire pour améliorer la qualité des produits vendus;
- Sensibiliser les pêcheurs, mareyeurs, détaillants et consommateurs au maintien de la fraîcheur des produits halieutiques par l'utilisation des procédés appropriés (glaçage, salage séchage, fumage).
- Rehausser le niveau de conscience sur les pratiques d'hygiène en aménageant les tables de vente des produits halieutiques et des équipements sanitaires sur les marchés.

Aussi, pour améliorer les techniques de transformation, il est indispensable que les poissons avant transformation soient de bonne qualité.

Concernant l'Association pour l'auto promotion des initiatives communautaires de pêche, regroupant la majorité des acteurs de la pêche artisanale, le Présentateur a fait constater quelques faiblesses dans la gestion organisationnelle de cette structure. D'où la nécessité de renforcer les capacités de ses dirigeants et celles des autres organisations socio professionnelles de la filière pêche.

En ce qui concerne la deuxième présentation sur la Contribution du projet PECHVAL; l'orateur a noté que pour contribuer à l'amélioration des points faibles cités en amont le PECHVAL réalise depuis 2013 six projets pilotes, dont trois toujours en cours de réalisation.

Il s'agit de :

- 1- Aménagement des installations de la pêche artisanale : Les activités menées dans ce projet pilote sont : l'élaboration des plans de construction et de fourniture des équipements, la préparation du dossier d'appel d'offre et la publication de l'appel d'offre, la réception des offres et la passation du marché.
- 2- Exploitation des installations de la pêche artisanale : ce projet pilote vise à renforcer les capacités organisationnelles de la société de gestion du centre de pêche (SOVAGHAS) qui a été créée et enregistrée.
- 3- Amélioration de la qualité de poisson frais : Ce projet pilote est réalisé pour contribuer à la réduction des pertes post-capture, le maintien de la fraîcheur de poissons et le renforcement de la sensibilisation des pêcheurs et mareyeurs. Les activités réalisées dans ce projet pilote sont : l'expérimentation de la méthode améliorée de la pêche en vue d'atténuer la dégradation post-capture de poisson, la diffusion de traitement amélioré des produits halieutiques en vue de préserver la fraîcheur de poisson à l'étape de mareyage etc. Dans ce projet pilote il est prévue la formation pratique sur le traitement des poissons après le débarquement au nouveau centre de pêche.

En outre, le présentateur a rappelé les activités des trois projets pilotes arrivés à terme à savoir :

- Gestion de la plage de débarquement



- Amélioration des méthodes de transformation des produits halieutiques
- Amélioration de la méthode de vente au marché public

Le troisième orateur a déroulé les résultats attendus par le Pechval qui sont :

- a) Amélioration de la sécurité des aliments ;
- b) Amélioration des prix et de la productivité ;
- c) Amélioration de la qualité des produits

Pour obtenir ces résultats, la réalisation des activités du Pechval et d'autres projets porteront essentiellement sur :

1. Augmentation de la production de la pêche artisanale et l'approvisionnement stable en produits halieutiques dans le pays.
2. Développement des techniques appropriées de traitement et de conservation et de transformation
3. Renforcement des capacités organisationnelles des acteurs de la pêche

L'orateur a aussi présenté le processus d'exécution du projet Pechval qui se décline ainsi qu'il suit ;

- 1) Elaboration des plans d'amélioration nécessaires et de réalisation des actions pour l'analyse et l'amélioration des points faibles ;
- 2) Présentation des plans à la partie congolaise ;
- 3) Exécution des plans par la partie congolaise ;
- 4) Amélioration de la situation de la pêche en augmentant la sécurité alimentaire.

L'orateur a rappelé qu'au terme du marché public sur la construction du centre de pêche maritime artisanale, il a été signé avec la société OCEANA un contrat de marché de travaux et d'équipement dont l'échéance est fixée au mois de juin 2017.

L'orateur a renchérie que la réussite de ce projet dépendra également, de la réalisation de activités de contrepartie du Gouvernement à savoir :

- Fourniture d'électricité (acquisition d'un transformateur de 200 KVA et connexion au réseau électrique de moyenne tension ;
- L'exonération des taxes sur le carburant de la pêche artisanale ;
- La facilitation des procédures administratives

Après l'exposé des présentateurs, les participants ont eu à échanger sur l'ensemble des questions à l'ordre du jour.

Le ministre d'Etat a réprécisé le contexte du secteur par quelques questions essentielles sur l'avenir de ce secteur à savoir : comment faire pour corriger le déficit en poisson de manière efficace et planifié et comment faire pour augmenter l'offre en poisson. Le Ministre d'Etat a ajouté dans son propos que nous ne devons pas subir le déficit en produits de pêche mais nous devons plutôt le corriger. Il a estimé qu'il faudrait développer la pêche maritime dans un cadre responsable, d'où le besoin de réviser le cadre législatif existant.

Le Ministre d'Etat a rassuré l'auditoire sur les dispositions à prendre afin d'assurer la réussite du projet Pechval.

Par ces propos du Ministre d'Etat, et à la suite des débats fructueux, les participants ont émis le vœu de bonne réussite du projet.

Commencé à 10 heures 30, la réunion du Comité Conjoint de Coordination a pris fin à 14 heures.

Fait à Pointe- Noire, le **17 février 2017**

**POUR L'AGENCE JAPONAISE DE  
COOPERATION INTERNATIONALE (JICA)**

**POUR LE MINISTERE DE L'AGRICULTURE,  
DE L'ELEVAGE ET DE LA PECHE**

Le Représentant résident de la JICA

Le Directeur Général de la Pêche et de  
l'Aquaculture



**Toshimichi AOKI**



**Appolinaire NGOUEMBE**

Le Secrétaire de la Réunion,  
Directeur du Contrôle, de la  
Démarche Qualité et Sécurité Alimentaire



**Maurice NKAYA**

**Liste de participants du Comité Conjoint de Coordination du 17 février 2017**

N°	Nom	Structure/organisation	Fonction
1	DJOMBO Henri	MAEP	Ministre de l'Etat
2	MPIANDION Victor	MAEP-Cabinet	Conseiller Fiancier
3	MPANDOU Pierre	MAEP-Cabinet	DEP
4	ATSANGO Benoît Claude	MAEP-Cabinet	Conseiller Pêche et Aquaculture
5	NGOUEMBE Appollinaire	MAEP-DGPA	DG Pêche et Aquaculture
6	POATY MALANDA Virginie	MAEP-DGPA	Chef de service pêche maritime
7	NKAYA Maurice	MAEP	Directeur Contrôle, démarche qualité et sécurité alimentaire
8	MAPOLOKI Ben	MAEP	Protocol
9	DONGOU Brice	MAEP	Attaché Protocol
10	MISSAMOU Antoine	DDPA-PN	Directeur Départementale
11	MIENANZAMBI Léon	DDPA-PN	Chef de Service Pêche maritime
12	MALONGA Jean Omer	DDPA-PN	Chef de service
13	MBAKOU Ange Kader	DDPA-PN	Chef de service
14	MOKOBI Patricia	DDPA-PN	Chef de service
15	MIZELE Yvette Iea	DDPA-PN	Chef de service
16	SAKAMESSO Adèle	DDPA-PN	Chef de bureau, Finance et matérielle
17	MOUSSA Françoise	DDPA-PN	Chef Secrétariat
18	MAPASSI Patrice	DDPA-PN	Chef de Service
19	MAFOUKILA Maryse	DDPA-PN	Stagiaire
20	MISSAMOU Peyrera	DDPA-PN	Collaborateur
21	DIAFOU Florance	DDPA-PN	Collaboratrice
22	LOEMBA Doris	DDPA-PN	Collaboratrice
23	TCHIKAYAT Cyriaque	DDPA-PN	Responsable des balises
24	DIATOU Hoateuse	DDPA-PN	Collaboratrice
25	ETOU LOUEMBA Doris	DDPA-PN	Collaboratrice
26	EYABI MFOUMOU Karelle	DDPA-PN	Collaboratrice
27	DIMI Basil	DDPA-PN	Chef de service
28	BOKENDZA Yvon Magloire	DDPA-PN	Collaborateur
29	NZAOU PAMBOUD Venus	DDPA-PN	Collaboratrice
30	OKOUMILA OLEMBE Joachin	DDPA-PN	Collaborateur
31	MOBOMA Stephane	DDPA-PN	Superviseur
32	MVOUAMA Idemme	DDPA-K	Collaboratrice
33	MOKELO MBUMA Lambert	DDPA-K	Chef de Service
34	MATOUTY Parfait	D ASA Mairie PN	Directeur Sécurité Alimentaire
35	MABEKET EMBOS Maurice	DD Aménage de terre	Directeur Départemental
36	MOUNGUENGUI Jean Aimé	DD Env. PN	Directeur Départemental
37	TATI Yves	DDDE-PN/MAFDP	Chef de service
38	NZOULANI Milandou Dieulevue	Port Autonome de PN	Chef de division Étude Technique
39	BAYA Cyrille	Préfecture de PN	Attaché Développement durable
40	MBIA Christian	Préfecture de PN	Conseiller Agro-pastoral/pêche
41	N'SITOU Antoine	Préfecture du Koulou	Conseiller
42	Col MOLONGO Romuald	Région de Gendarmerie	Commandant de région

43	MANDA Aubin	Représentant DD Urbanisme	Collaborateur
44	OKO OKAKDZE Alphonse	Marine Marchande	Chef de service flotte équipement naval
45	ETA Daniel	Marine Marchande	Chef bureau Étude Technique
46	CDT NSANA Michel	Marine National	Officier en charge des OPS
47	BEREKIBARE Germinal Dorelle	Ministère Affaire Étrangère	Collaboratrice
48	ADJIWANOU Louis Coffi	Consulat Bénin	Secrétaire général
49	NGOMA Louis Gabriel	Raffinerie	Chef de Quartier
50	INOUA Gisele Marcelline	AICP	Transformatrice
51	BANTOU Dieudonné	AICP	Trésorier Adjoint
52	MAKAYA Didier Lazarol	AICP	Président de Mareyeur
53	YEYE Basil	AICP	Responsable Béninois
54	DOSSAH Jean Marc	AICP	1 <sup>er</sup> vice président
55	MBAYE Sene	AICP	Secrétariat
56	DIOUF Ismael	AICP	Membre
57	MBOUNGOU Marie	AICP	Membre
58	INOUA Idrissa	AICP / APPAC	2em vice président
59	MILANDOU Aimé	AICP / APPAC	Secrétaire général
60	BOUSSOUHOU Iuora	APPAC	Patron pêcheur
61	AOKI Toshimichi	JICA	Représentant résident de la JICA
62	BOKETSU Marianne	JICA	DPA
63	SHIBUTANI Michitsugu	JICA	Chargeur du Programme
64	TAKAHASHI Kuniaki	PECHVAL	Chef de projet
65	OTANI Tomoyuki	PECHVAL	Interprète
66	HAGIWARA Mikiko	PECHVAL	Coordinatrice
67	NDOKY Patrick	PECHVAL	Secrétariat
68	MOUNTSOUKE PEMBA Julia	PECHVAL	Secrétariat
69	BAHOUAMIS Nicaise	EDAU Scp Congo	Chef Projet
70	SALIOU Faïssal Franck	EDAU Scp Congo	Contrôleur des travaux
71	KIZIMBOU Rivière	OCEANA	Répresentant DG
72	DAUDA Olivier	SOCOPEC	Superviseur
73	TATY BAMONAPHITY Gasmine	La Bouée Couronne	PF
74	TATY Jean Baphiste	La Bouée Couronne	Membre
75	MALOUEKI Rucien	Projet FAO ATP	ATP
76	Guy François L	DRTV	Journaliste
77	ITOUA Heritier	DRTV	Cameraman



3. Minutes of JCC (5)

**PROCES VERBAL DE LA CINQUIEME REUNION DU COMITE  
CONJOINT DE COORDINATION DU PROJET D'ETUDE POUR  
L'AMELIORATION DE LA CHAINE DE VALEURS DES  
PRODUITS HALIEUTIQUES A POINTE-NOIRE (PECHVAL)**

Décembre 2018

9

  
ANNEX-67

1



L'an deux mil dix huit et le 14 décembre, s'est tenue dans la salle de conférence de l'hôtel **AZUR le GILBERT'S** à Pointe-Noire, la cinquième réunion du Comité conjoint de coordination du Projet d'Etude pour l'amélioration de la Chaîne de Valeurs des produits halieutiques de Pointe-Noire (projet PECHVAL).

Cette réunion était placée sous le patronage de Monsieur **Dieudonné KISSIEKIAOUA**, Conseiller à la pêche et à l'Aquaculture, représentant le Ministre d'Etat, Ministre de l'Agriculture, de l'Elevage et de la Pêche.

La délégation de l'Agence Japonaise de Coopération Internationale (JICA) était composée de :

Monsieur **KURIMOTO Masaru**, Représentant Résident Adjoint de la JICA ;

Monsieur **YOSHIKAWA Naoki**, Responsable du projet PECHVAL ;

Madame **BOKETSU Marianne**, Directrice Adjointe des Programmes, secteur Formation, Gouvernance et Développement Rural ;

Monsieur **TAKAHASHI Kuniaki**, Chef de projet PECHVAL ;

Y ont également participé : voir la liste en annexe

## I- DE LA CEREMONIE D'OUVERTURE

La cérémonie d'ouverture a été sanctionnée par trois allocutions.

La première allocution a été prononcée par Monsieur **TAKAHASHI Kuniaki**, Chef de projet PECHVAL. Il a rappelé qu'après six ans de pilotage du projet (depuis 2012) son équipe a réalisé six projets pilotes, dont l'un est la construction du Centre d'Appui à la Pêche Artisanale de Pointe-Noire(CAPAP) qui est une base pour l'amélioration de la chaîne de valeurs du poisson. A ce titre, le chef de projet a affirmé que la construction du CAPAP a été achevée et fonctionne depuis juin 2018.

Néanmoins, la gestion et le fonctionnement du CAPAP nécessitent des améliorations qui pourront être possibles avec des expériences pratiques en matière de coopération avec les parties prenantes.

Il a également souligné que dans le plan directeur pour l'amélioration de la chaîne de valeur des produits de la pêche artisanale à Pointe-Noire, quatre concepts de base ont été établis, notamment :

- l'élimination de toute contamination des produits à base de poisson tout au long des chaînes de production et de distribution ;
- le développement des infrastructures de base ;
- la mise en place d'un système d'appui aux acteurs de la pêche artisanale et l'extension de l'assistance financière aux acteurs et à leurs associations.

- la consolidation du système administratif de la pêche artisanale par le Ministère.

Cinq ans plus tard, les capacités de pêche doivent être intensifiées par la réduction et /ou l'exonération des taxes sur les engins et les embarcations de pêche.

Le Chef de mission a terminé son allocution par la reconnaissance au Gouvernement congolais quant à son soutien au projet.

La deuxième allocution a été prononcée par Monsieur **KURIMOTO Masaru**, Représentant Résident Adjoint de la JICA.

Celui-ci a encouragé les associations de pêcheurs à utiliser le CAPAP dans le cadre de leurs activités, afin de favoriser le développement du secteur de la pêche artisanale et de contribuer au bien être des populations.

Il a souligné que le CAPAP, qui est le premier centre de pêche artisanale au Congo se trouvant dans sa phase expérimentale, n'a pas la prétention de résoudre tous les problèmes, mais plutôt de trouver un début de solutions aux problèmes qui minent la pêche maritime artisanale.

Au terme de son allocution, le Représentant a assuré que la JICA fera tout son possible pour accompagner le Ministère en charge de la pêche dans la promotion de la pêche artisanale.

L'allocution d'ouverture des travaux a été prononcé, au nom du Ministre d'Etat, Ministre de l'Agriculture de la pêche, par **Dieudonné KISSIEKIAOUA** Conseiller à la pêche et à l'Aquaculture qui a, avant tout, remercié l'Agence Japonaise de Coopération Internationale pour son appui à la chaîne de valeur des produits halieutiques visant à optimiser la participation des pêcheurs artisans et d'autres acteurs au développement de la pêche.

Il a rappelé aux membres du comité conjoint de coordination la forte consommation du poisson par la population congolaise (environ 26,5 Kg/hab/an) et a indiqué que le souci du gouvernement est que le poisson pêché soit conservé, transformé, commercialisé dans des bonnes conditions et vendu à des prix accessibles aux revenus les plus modestes.

Il a également rappelé aux membres du Comité, la mission du gouvernement qui consiste à satisfaire quantitativement et qualitativement les besoins des consommateurs en mettant sur le marché des produits de bonne qualité sanitaire et organoleptique à des prix accessibles aux revenus les plus modestes. Il a exhorté les membres du Comité à identifier les principales contraintes qui entravent le bon fonctionnement du CAPAP et d'y proposer les pistes de solutions.



Il a terminé son adresse en soulignant l'importance de la coopération du Congo avec le Japon qui devrait se poursuivre dans la mise en œuvre d'autres projets similaires et a déclaré ouverts les travaux de la réunion du Comité conjoint de coordination.

Une présentation du plan directeur pour l'amélioration de la chaîne de valeurs des produits de la pêche artisanale à Pointe-Noire a été faite par Madame **Julia PEMBE MOUNTSOUKE**, Secrétaire du projet, chargée à la communication.

## II- DES INTERVENTIONS

Après les différentes allocutions, le modérateur, Monsieur **Guy Barthélémy MOUSSOKI**, Directeur de la communication au cabinet du Ministère de l'Agriculture, de l'Elevage et de la Pêche a donné la parole à tout intervenant qui avait des préoccupations particulières.

- Monsieur **BIMBI Jean Marc**, agent de la Marine marchande a remercié la JICA pour le travail abattu et a souhaité l'amélioration du document présenté pour s'en imprégner et s'y impliquer ;
- Monsieur **Célestin LOEMBE**, Conseiller économique du Préfet du Kouilou quant à lui a demandé ce qui a été prévu concernant la santé des acteurs économiques (transformateurs, mareyeurs).

A cette question, le chef de projet a répondu que cette question a été largement évoquée dans le rapport final de la JICA ;

- Monsieur **POUGUI**, Directeur Départemental des affaires foncières a demandé à savoir lesquels étaient les bénéficiaires des crédits qui seraient alloués et quels seraient les critères de sélection.

Madame **Julia PEMBE MOUNTSOUKE** a répondu que le critère de sélection portait sur l'organisation en coopérative et que lesdits crédits seraient remboursables et destinés aux acteurs de la pêche artisanale ;

- La deuxième question du Directeur Départemental des affaires foncières a porté sur la réglementation des mailles des filets.

A cette question, le Conseiller à la pêche et à l'Aquaculture du Ministre d'Etat a répondu, qu'il existe un texte qui réglemente les mailles des filets, conformes aux normes du COPACE.

- Monsieur **DOSSA Jean Pierre**, vice-président de l'AICP a demandé quelles sont les mesures prises pour faire face aux menaces de l'espace réduit de la

pêche artisanale qui fait naitre des conflits entre la pêche artisanale et la pêche industrielle.

La réponse a été apportée par le Conseiller à la pêche et à l'Aquaculture, qui a rappelé que le Ministère en était conscient et que cette question a été prise en compte dans la nouvelle loi en cours de révision.

- Monsieur **NZENGUE Jean Michel**, chargé au programme de l'association bouée couronne a proposé l'organisation d'un atelier pour analyser les propositions de la JICA.

Commencée à 12 heures 00, la cinquième réunion du Comité Conjoint de Coordination a pris fin à 15 h 30 minutes.



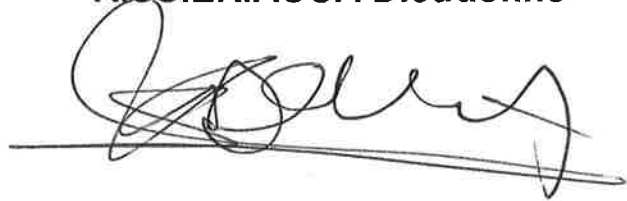
Fait à Pointe-Noire, le **14 décembre 2018**

Pour l'Agence Japonaise de Coopération  
Internationale

Pour le Ministère de l'Agriculture, de  
l'Elevage et de la Pêche

  
**KURIMOTO Masaru**

**KISSIEKIAOUA Dieudonné**



Pour PECHVAL



**TAKAHASHI Kuniaki**