Governo dos Açores

OKEANOS



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ISSUES FOR PRODUCTION UNITS (FISHING VESSELS) AND PRODUCERS (FISHERMEN) FOR SMALL SCALE FISHERIES.

Financial Well-Being of Azorean Fishermen

(Pico- Graciosa –São Jorge–Faial)

FPA FEDERAÇÃO DAS PESCAS DOS AÇORES

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We are hoping that our work will be useful for the Local Fishing Communities, Local Coastal Development, the Direção Regional das Pescas (DRP), the Federação das Pescas do Açores and mainly to all fishermen and shipowners for them to have a better Financial Well Being and the survival of Small Scale Fisheries (Too Big To Ignore)[1].

[1] TBTI GLOBAL Small-Scale Fisheries are Too Big To Ignore

2. ABSTRACT

Financial Well Being is the most important topic for Social Well Being and survival of small and coastal communities including Small-Scale Fisheries. Other critical matters related to Social Well Being for the members of these communities are: i) Local basic services (education, health services); ii) Fisher distribution in the 4 Islands; iii) Management of natural resources. Producers, fishermen, sea workers and farmers are key elements for small local coastal communities, directly related to exploitation of local natural resources on land and sea. By defining the concept and boundaries of the Financial Well Being of Fishermen, it would be possible to promote the fishermen profession, target the needs and insure the survival of local coastal communities.

To be able to ensure the subsistence and viability of Small-Scale Fisheries (SSF) in the outermost regions of the European Community, we need to understand the financial conditions of local producers (fishermen) and production units (fishing vessels). In this report current data of the fleet was collected and analysed, in four islands of the central group of the Archipelago of Azores, Graciosa, São Jorge, Pico and Faial. A Financial evaluation was conducted as the result of fishing operations for each production unit, as well as the level of revenues, working conditions (number of landings), estimates the percentage (%) of the categories of operational expenses per year were assessed. While estimating the average level of profits per meter and per landings, Revenues vs Expenses (fix and operational) per landing per vessel per year, using five (5) segment of fishing fleet: < 6 meters, 6 to 8, 8 to 10, 10 to 12,12 to 15 and > 15 meters.

This study will propose management tools to target and address describe the issues to achieve the Financial Well Being. By understanding human behaviour at sea, it can be added value for promoting Responsible Fishing Operations (RFO), induce modifications of the Fishermen Paradigm, stabilizing revenues for all sea workers and improve sustainable and responsible fishing activities.

3. NOTE OF THE AUTHORS

With this study is intended to show and delimit the boundaries of Financial Well Being for Fishermen in Small Scale Fisheries (SSF). Although financial issues are not culturally important for producers (shipowners – captains and crews), coastal communities and local associations show a growing concern about the future of the sector, specially by the fact of only 7,8% of the producers are between the age of

15 to 24. This new generation of producers are underlying assets capable of establishing the equilibrium between revenues and costs of responsible fishing, sustainable management of the natural resources, as well as the assuring the future of their local community.

Financial Well Being can be reached by applying methods of financial management to the producers and implement new ways to establish “Responsible Fishing Operations”.

Responsible Human Behaviour at sea is the key to generate a new Ocean Conscience and be able to use responsible fishing effort, sustainable and profitable fishing operations, consolidating Financial Well Being of producers.

Boats don’t fish, people do!

4. INTRODCTION

Considering that Financial Well Being of fishermen has a direct correlation with the viability of small-scale fisheries and local coastal development, fisheries are considered as the main commercial activity of a coastal community. By assessing the level of Financial Well Being of fishermen for Small Scale Fisheries (SSF) the first step is to better understand human behaviour at sea (HBS), all social and financial aspects of fishing activities and the idea that it can modify fishermen’s paradigm related to responsible and sustainable fishing operations.

By understanding social financial factors associated to fishermen’s production units, management strategies can be improved. New ways and approaches to manage fishing operations at the same time, improving fishermen financial and coastal community’s Social Well-Being. Working with the same financial framework, is possible to generate increase of revenue and added value to the products. By considering the financial issues and conditions of the different fishing fleet segments, different social strategies can be thought and applied to improve social well-being of all members of local coastal communities.

The most important objectives for fisheries management (FM) would be to maintain and improve sustainable by proposing responsible fishing operations, monitoring the fishing effort and protect and conserve ocean’s natural resources. Local fleet management is presumed to be an efficient way to

establish responsible fishing operations, using for example, technical measures of handling and distributing the fishing licences. Still, there is an existing need to monitor the fishing operations and behaviours, due to the Illegal, Unreported and Unregulated (IUU) fishing, that still difficult the achievement of sustainable objectives. More than numbers, is important to manage the people and its behaviours, being only possible when there is education and understanding of sustainability.

4.1. DISTRIBUTION CHAIN

The concept of **distribution chain** is a group of businesses or intermediaries through which a good or service passes until it reaches the final buyer or the end consumer. Distribution channels can include wholesalers, retailers, distributors, and even the Internet (*www.investopedia.com › Business › Business Essentials).*

To fully comprehend to current financial dynamics, it is important to understand the traces since the fish is hooked to the purchase by the final client. In Azores considering the producer (fishermen) as the primary product supplier, an economic overview of operations of all members of the chain should be assessed. All members of the chain are essential to establish and operate all Economic level of the Trade for fisheries. It is intended to describe the global processes and try to identify all the categories of members of the regional distribution chain.

All members of the distribution should be working together to establish a good synergy between all components or phases of the commercial operations. A good collaboration between producers and First Buyers could have a very positive impact and all members of the Azorean Distribution Chain.

4.2. OVERVIEW OF THE AZOREAN EXPORTATION IN FISHERIES

The Azorean fishing activities are producing a to small quantity of fish to be able to influence the European or American Markets. The Azorean fishing volume is too low to be able to influence market prices even if the quality is better than many countries because of the usage of artisanal fishing techniques. We could say that prices and selection of species are establish by second Buyers in European and America. For the same price Azorean offer a better quality than over producers. Between 2007 and 2013 the average landings of fish in the Azores was 14 088 956,5 Kg for a value of €36 202 389,12 and an average reference price of €2,65.

At this time, 65 to 75% (APCA, 2013) of fish landings are exported to Europe and US. The fluctuation of percentage is related to the volume of tuna un relations with prices and weight. So only about 20% of Azorean fish is distributed in the local market. Local market could be defined by local stores (fish Counters or Fish stores), fish both by restaurants and local industry (Fish canning – Santa Catarina). Local commercial fishermen are allowed to use 10% of theirs catches for personal consumption. We could than say that 25 to 30% of declared landings are locally or Regionally consumed. Azorean fisheries are depending about 75 to 80% of the commercial landings on exportation. They are playing with major actors of world fish Trade and Distribution.

To be able to export fish Azorean members, until now, only depend on maritime transport and airplanes. The Azorean fishery infrastructure are to big to serve only local markets but to small to influence international trades and prices. Azores are able to sell fish based on artisanal quality of their products but cannot hope to have better fish prices because they are competing with very big players. They do not have access to a Hight Quality market similar to Japanese Tuna Market. It has been shown that the level of communication between producers and exporters or distributors is very low if non existing.

4.3. SHORT DESCRIPTION OF AZOREAN FISHING FLEET (2018)

The small-scale Azorean fleet is polyvalent having different segments targeting different groups of fishes, as well as same segments targeting the same organisms. The fleet and its segments are distributed unevenly by each island or group of islands, i.e. oriental group, central group, or occidental group of the archipelago.

Table 3 - Overview of the Azorean Fishing Fleet (DRP,2018)

SEGMENT OF AZOREAN FISHING FLEET	NUMBER OF VESSELS	Ilhas	Azores
≤ 6 meters	65	22,8%	10,0%
> 6 to ≤ 7,5 meters	89	31,2%	13,7%
>7,5 to ≤ 9 meters	45	15,8%	6,9%
> 9 to ≤ 12 meters	48	16,8%	7,4%
> 12 meters.	25	8,8%	3,8%
No lenght	13	4,6%	2,0%
650	**285**		
TYPE OF BOAT			
OPEN	157	54,9%	24,2%
CLOSED	129	45,1%	19,8%
650	**286**		
PROPULSION			
DIESEL	226	78,2%	34,8%
GASOLINE	60	20,8%	9,2%
OTHERS	3	1,0%	0,5%
650	**289**		
HULL MATERIAL			
STEEL	7	2,4%	1,1%
ALUMINIUM	24	8,4%	3,7%
FIBER GLASS	158	55,1%	24,3%
WOOD	98	34,1%	15,1%
650	**287**		
FISHING LICENSES			
FAIAL	86	30,1%	13,2%
PICO	90	31,5%	13,8%
SÃO JORGE	36	12,6%	5,5%
GRACIOSA	40	14,0%	6,2%
Other types of licenses	34	11,9%	5,2%
650	**286**		

Note: List of vessels Active and Non-Operational

We can observe that 54,0% of the vessels are ≤ 7,5 meters for and that the fleet of the 4 islands represent 23,7% of the Azorean Fishing Fleet.

4.4. SOCIO ECONOMIC DATA

Our study is essentially treating financial issues, but it has a direct relation with the socioeconomic aspects. An overview of the Azorean socio-geo-economic of the 9 islands, notice that 12,7% of the fishers are women, the average age of fishers is 45,1 years and that the islands in this study represent 21,5% of the Azorean fishers. More than 50% of the fishers are between 35 to 54 years and only 7,8% of them are from 15 to 24 years of age. This cohort gathers attention, since is this generation will be the active workers in the year of 2045. Being one of the main concerns related to the future of SSF of Azores, its financial well-being and level of safety at sea.

A more detailed look at the socio demographic portrait of our four islands we can observe that only **3,9%** of the population of fishers are between **15 to 24 years old, when** compared to 150 Azorean fishers for the region the Azorean Region that only has **7,8%** for the same age group. For our four (4) island for the same group of age we have only 3,9% of fishers, a total of 17 fishers.

Table 4 – Sociodemographic data for the active fishers in Graciosa, São Jorge, Pico and Faial (DRP - FRAGA 2019)

SOCIO DEMOGRPPHIC DATA (FISHERS)										
				POPULATION STRATES						
ILHA DE OPERAÇÃO	GÉNERO FEMININO	GENERO MASCULINO	AVERADE AGE	15-24	25-34	35-44	45-54	55-64	65	TOTAL
GRACIOSA	14	86	42,0	4,00	25,00	30,00	25,00	13,00	3,00	100
FAIAL	22	148	46,2	9,00	21,00	42,00	49,00	41,00	8,00	170
PICO	8	102	48,8	3,00	12,00	23,00	33,00	30,00	9,00	110
SÃO JORGE	6	49	54,2	1,00	1,00	4,00	20,00	22,00	7,00	55
TOTAL	50	385	Total	17	59	99	127	106	27	435
	11,5%	88,5%	47,8	3,9%	13,6%	22,8%	29,2%	24,4%	6,2%	
	435					76,3%				

To achieve these goals, there is the need to better understand the financial dynamics of local fishing communities on each island or each local coastal community, i.e. understand the existing (or non-existent) financial management processes and how the distribution chain for fish products is organised.

At this time, local producers do not consider the operational costs and profits made per landing, not functioning as an enterprise, as they are. It is important to differentiate the elements of the small production units where is the boat owner and boat captain most of the times is the same person, the crew that can be less than three people or around ten, and the accounting systems, using the simple type or less commonly the organized type. The revenues obtained by each landing are divided into equal shares,

according with the hierarchical structure of this "work organisation". The small-scale fishing operations are done mostly every day, if the climate allows it, starting and ending on the same day. In Azores, the fishing fleet is mostly artisanal, called as subsistence fishing, but fishing the more as possible at each trip to have more income.

We are proposing new management tools and trying to estimate fishing capacity of the local fishing fleet, analysing the current financial conditions of the local production units. At the same time consolidate the data regarding the fix expenses of the operations and respective percentage of revenues of a production unit, organized in a financial model to optimize for maximum profit.

5. METHODS AND PROCEDURES

We are respecting the privacy of the local fishing communities by not using nominal information to present our study results.

This report is divided in three main parts, the workshop, the surveys, and the financial model created by the collected data in the previous named activities. To be able to build an adapted financial model to the sector, information regarding the costs needed to be collected. For this, a workshop with the fishers was planned to gather the financial and economic aspect of the production units. As is explained bellow, the workshop was only possible to do in one island, Graciosa. In alternative, the data retrieved in this first workshop was used to build a survey to apply in the other islands.

5.1. A FINANCIAL MANAGEMENT MODEL

The Financial activities were considered if that are directly related to the production unit and that Economic operations related to all sequences from departure of the harbour, fishing to the arrival to the consumer. Financial aspects are events interrelated with Revenues, Costs and Profits of the production unit, while and Economic aspects are interrelated with the production, consumption and distribution of services or goods for a country or an organisation (http://www.differencebetween.net/business/difference-between-economics-and-finance/#ixzz6Ls2i865U).

The Azorean Fishing Fleet was used to estimate Revenues vs Costs (fix and operational) including salaries and do finally estimate percentage of costs and profits per fleet segment. The six Azorean Fishing Fleet Segments that we will using are:

1. < 6 meters
2. 6 to 8 meters

3. 8 to 10 meters
4. 10 to 12 meters
5. 12 to15 meters
6. > 15 meters

Our objective is to collect field Data to be able to estimate financial values per segments of the Azorean Fishing Fleet:

1. Revenues (Sales)
2. Fix Costs
3. Operational Costs of fishing operations
4. Salaries for:
    a. Shipowners
    b. Shipowners - Captains
    c. Captains
    d. Fishing Crew (Land and Sea)
5. Net Profits for each share or partition (using 3 shares or percentage repartition of 45 – 55% or other repartition of percentage)
6. Fishing Power (using an average number of Sea and Land Crew)
7. Profits and Revenues per landings, per segment and per meters.

6. RESULTS

Using DRP data for our four (4) islands we were about to compile existing data to draw a first portrait of the financial framework. For results of data collecting please refer to the next table:

FISHING FLEET SEGMENTS

Table 5 -Financial Framework Results

SUMMARY OF LANDINGS FOR 2017-2018-2019 (4 Islands)														
	3 YEARS		PER YEAR											3 YEARS
ISLAND	WEIGHT (kg)	VALUES € (3 Years)	VALUES PER YEAR €	PRICE REF	NUMBER OF SPECIES	FISHERS	REVENUES PER FISHER	NUMBER OF BOATS	REVENUES PER BOAT	AVERAGE LANDINGS PER YEAR	WEIGHT PER AVERAGE LANDING	REVENUES PER AVERAGE LANDING	NUMBER OF TRANSACTIONS (SALES) FOR SPECIFIC SPECIES
SÃO JORGE	877 286,2	€2 550 231,31	€850 077,10	€2,91	60	55	€15 455,95	27	€31 484,34	41,5	61,2	€358,80	5 678,0
PICO	5 457 969,2	€11 583 445,67	€3 861 148,56	€2,12	76	110	€35 101,35	142	€27 191,19	49,5	96	€428,18	17 032,0
GRACIOSA	427 704,4	€3 838 895,37	€1 279 631,79	€8,98	65	100	€12 796,32	33	€38 776,72	65,5	79,,4	€664,94	7 676,0
FAIAL	1 238 910,1	€8 512 088,88	€2 837 362,96	€6,87	77	170	€16 690,37	51	€55 634,57	29,6	2 398,6	€4 958,52	11 253,0
TOTAL	8 001 869,9	€26 484 661,23	€8 828 220,41	€3,31	€278,00	435		253	€1,56				41 639,0

Source of data (DRP, 2020)

The fishing fleet of our 4 islands represents about 20% of the Azorean Fleet. Except for Faial the fishing vessels are small boats what could be explain by small and not very protected fishing ports. The average number of crew (including the captain) would be 1,93 meaning that it is normally a captain and one crew member. Fisher are using manual fishing gears and artisanal fishing techniques, mainly hand lines.

Table 6 - Fishing Fleet (2020)

ISLAND	Number of Fishing Vessels	Number of Crew	RATIO CREW / Vessels
1. FAIAL	51	170	3,3
2. GRACIOSA	33	100	3,0
3. PICO	142	110	0,8
4. SÃO JORGE	27	55	2,0
TOTAL	253	435	1,93

7. DISCUSSION

The main issues are described below, the most common to the financial study and the main concerns of the participants.

GENERAL COMMENTS

- The local and regional fishing community did not show concern by financial issues of the production units or producers.
- Only about 10% of the production units have organised accounting made by external accountants as an obligation as declared companies. In this case, financial reports are mandatory, but all justified expenses are calculated to establish the level of profits and related taxes.
- 90% of producers are using simple account and do not have to present bills for IRS. For major maintenance expenses like engine they would have to ask for subsidies and the production would be generating profits.

7.1. FRAMEWORK AND FINANCIAL WELL BEING FOR FISHERMEN

We found some documents, but also using workshops and surveys, to define local perceptions and human behaviour related to fishing effort and profits of fishing activities. It was perceptible that financial issues are not integrated to fishing activities and that we would have to propose a management tool to present a practical vision of Revenues – Expenses – Profits and Salaries for fishers. As well as the of human effort before evaluating the fishing effort of the units of production and the fishing capacity of the local fleet.

7.2. FINANCIAL MODEL FOR PRODUCTION UNITS FOR SMALL SCALE FISHERIES VESSELS

The objective of the financial model is to present an overview of what could be a management tool for shipowners and captains to establish the operational costs of fishing activities to manage sustainable and responsible fishing activities and optimising profits by controlling costs and the fishing effort of their production units. It can be observed in Table 7..

Table 7 – Financial Model of the Azores fish fleet (Annexe 6)

	FINANCIAL MODEL	June 2020	
Fleet Segmente 6-8 metros			
	Number of Landings	56	POR ANO
	Average Revenue per Landing	€531,25	PER LANDING
	Average price per kilo	€8,50	
	Number of crew (Including Captain)	2,0	KG
	REVENUES	€29 750,00	3500,00
	EXPENSES		
	OPERATION EXPENSES	€	%
	Food	€892,50	3,0%
	Gaz	€89,25	0,3%
	Diesel fuel	€1 487,50	5,0%
	Oil	€208,25	0,7%
	Ice	€476,00	1,6%
	BAIT	€1 547,00	5,2%
	Salt	€0,00	0,0%
	Areia	€0,00	0,0%
	Other Expenses	€595,00	2,0%
	Total Depensas for Operation	€5 295,50	17,8%
	FIX EXPENSES		
	Selling House (Lota) (4%)	€1 190,00	4,0%
	Social Securidade (10%)	€2 975,00	10,0%
2,0	Insurance for Defiecency and Mortality Insurance for Accidents and Responsabilities	€1 306,90	Per member 653,45€
	Boat Insurance	€0,00	0,0%
Variable	Associations (0,5%)	€148,75	0,5%
	Transport (car or truck)	€148,75	0,5%
Variable	Accouting (15€/month)	€180,00	0,8%
	Total Fix Expenses	€5 949,40	15,8%
	MAINTENANCE		
	Deck and Hull	€743,75	2,5%
	Engine	€446,25	1,5%
	Fishing Gear	€148,75	0,5%
	Equipmento Poerações (Cordas- Fenders)	€89,25	0,3%
	Electronic	€89,25	0,3%
	Equipement Update	€148,75	0,5%
	Hydrolic System	€238,00	0,8%
	Other Expenses	€297,50	1,0%
	Total for Maintenance	€2 201,50	7,4%
	TOTAL EXPENSES	€13 446,40	41,0%
	REVENUES AFTER EXPENSES	€16 303,60	
	SUBSIDIES		
	POSEI: 0,50€/Kg for specific species	€1 750,00	€0,50 per Kg
2,0	Insurances for Invalidity or Mortality	€400,00	200€ per member
Variable	Fishery Fund	€300,00	Not for All Fishermen
	TOTAL Subsidios	€2 450,00	For Shipowner

SALARIES (3 Shares)		
Trêrs parte	€16 303,60	Maintenance Surplus
Shipowner	€5 434,53	€2 201,50
Captain	€5 434,53	
Crew	€5 434,53	
Total	€16 303,60	
Shipowner-Captain	€10 869,07	
Crew	€2 717,27	
Crew	€2 717,27	
Total	€16 303,60	
Percentage (%) of Revenues for Salaries	55%	

- To be able to define what could the financial structure of small-scale fishing fleet we are presenting a new financial mode for unit of production.
- The level of information provided by fishermen and ship owners is to disparate and very hard to represent by a local or regional model.
- To do our management model for financial processes, we used documents financial document that is used by some local shipowners and some document that where already used by Lotaçor administrator to help fishermen to understand their financial situations.
- We would believe that presenting a financial model to all shipowner would be an added value for them to understand the relation between

The model is a management tool to allow fishers to establish their costs, salaries and profits based on their revenues. Proposing to use this total to anticipate revenues and financial issues using landings, such as fish prices. For these purposes, we are considering, for fishing operations fix expenses are at **20%** and operational expenses are in the same range **20%** which means that **60%** of the revenues are for salaries and boat maintenance, while the remaining is profit.

8. RECOMMENDATIONS

Some recommendations are proposed to be able to continue to follow the Financial Well Being for fishermen in Small Scale Fisheries to improve financial issues.

8.1. REGIONAL CONSENSUS BY AZOREAN INSTITUTES

SHORT TERM

- Validate new Financial model for regional Fisheries
- Financial Training program for Fishers and Shipowner

MID TERM

- Establish an Administrative network for Local Associations and Coop
- Promote Regional and Local Coastal Development
- Collaboration with SRAM and OKEANOS to evaluate the option of using other types of space management, such as Territorial Use for Fishing (TRUFs), or Co-management plan to protect fish prices and minimise operational fishing costs

LONG TERM

- Propose an integrated management system for Responsible Fishing Operations System (RFOS). (Integrated data Collecting and Management system for Coastal development)
- Propose a Proof of concept (POC) to reorganised local, regional and national institutes to implant an Azorean Local Management Institutes to Co-Management of Responsible Fishing Operations.

MANAGEMENT OF FISHERIES

1. Continue the study for the other five islands of São Miguel with Santa Maria, Terceira with Flores and Corvo;

2. Propose basic and practical training for shipowners and fishermen related to responsible fishing operations;
3. Propose basic training related to financial issues of a production unit for shipowners and fishermen (autonomous course);
4. Propose modular training for fishermen, shipowners, members of local associations, managers and members the Azorean Distribution Chain;
5. Prepare a case study (technical aspects, monitoring, problem solving and costs) for the maintenance of the production units;
6. Prepare a case study (technical aspects, use and costs) for bait acquisition.
7. Propose a case study for Crew Management at Potential level (real situation) and propose a Dynamic Crew Management System (DCMS) to monitor the daily fishing effort levels of each fishing vessel.
8. Propose the working group to better define the High Quality Fish Quality Standards and the development of the local market.
9. Improve the Azorean Local Transport and Export Logistics markets.

8.2. AZOREAN DISTRIBUTION CHAIN

Description of the distribution Chain

The Distribution Chain is an essential component of the economic operation for any commercial fishing operations.



The process goes from the producers to the consumer.

Our main recommendations would be :

1. Establish a communication system between Producers and Distributors Buyers):
    a. Publish Markets Info:

i. About prices ask by Distributers and market demand and needs;
ii. Abundance of products (offer is more important than demand (low prices);
iii. Opportunities for new markets (collaboration between Producers and sellers);
iv. Options for Virtual auctions (Producer – Selling House – Buyer (First and second level)
v. Improve quality controls and High Quality criteria;
vi. Establish quality system to evaluate fish quality (new technologies);
vii. Inform producers of Cultural events (in buying countries)

b. Organise Work Shops in collaboration with local or Regional Institutes for Producers and Buyers:
   i. To establish efficient collaborations infrastructures between Producers and Buyers (Associations);
   ii. Quality Criteria and High Quality Categories and criteria;
   iii. Practical workshops for Evaluation of products Quality, freshness, and conservation
   iv. Financial commercials issues;

c. Better define Azorean needs concerning Transport logistic regional – national and international markets
   i. For Areal Transport:
      1. Regular Flights
      2. Cargo Flights
      3. Airport infrastructures (loading time and conservation units)
   ii. For Maritime Transport;
   iii. Establish commercial agreements with Transporters (Methods – Procedures and Schedules)
   iv. Improve quality controls of shipping operations and application of management rules (Fishing calendar – Minimum sizes of Products – Exportation documents (Buyers)- ... ;

2. Propose new options for direct contracts between producers and buyers;
3. Improve Local markets for better local prices for local products and diversify fish sub products (frozen fish, baits...)

As it was understood, Azorean production in much is more important than the needs the actual local demand and the Azores are exporting most of their fishery products. At the same time, the global capacity of local catches is to low and not be able to influence national and international markets. By establishing better communication between the Producers and Buyers it should be possible to adjust the dynamics of fishing operations to better respond to markets demands. The objective should be to control the Global Fishing Fleet Capacity and Fishing Effort per production unit to respond to the market demand and not to overfish certain species and be able to protect selling prices of first sale. A Fair Fishing model, is based in catching less amounts of fish per season, better selecting the species, improve quality of the products to generate more revenues with at the same level of costs.

8.3. FISHING CAPACITY OF THE AZOREAN FISHING FLEET (FCF):

Regarding the Fishing power, there is no evidence of any administrative processes to manage the active workers of each production unit.

It is suggested a better management of the fleet, specifically decrease of fishing efforts, number of landings, number of days at sea, and increase the volume of the same landings and respect of storage capacity of each vessel. While new rules are established for the selection of targeted species and fishing areas. Although the entities have at disposal all the data, it is still not known the real overall fishing capacity of the local fleet.

NOTION OF FISHING EFFORT FOR FISHING FLEET MANAGEMENT (RFO) TO EVALUATE GLOBAL FISHING CAPACITY PER ISLAND:

- Fishing Power is the number of crew members including the captain in each production unit
- Fishing Capacity (FC) is defined by the number of landings and the number of days at sea (DAS) of each production unit
- Storage Capacity, the capacity of the production unit to storage fish

For Financial Issues, the fishing effort is established by number of crew on board, the number of landing per year and to store capacity for fish. Not considering the size of the fishing vessels, HP and GTR could continue to be used mainly for administrative indicators with the European Union.

8.4. PROPOSITION TO IMPROVE AND STABILISE REVENUES OF PRODUCTI ON UNITS

1. THE PRICE OF FISH:

To improve quality of the products by defining new Azorean categories of Quality of products. At this time, the quality of fish is only defined by visual condition of the fish at the landing time. No quality controls related to treatment of the fish related to slaughter, conservation methods on the production unit and land storage. We would need to evaluate the competencies of the personal doing quality controls in the selling house in the Azores it is Lotaçor. Quality is not only obtaining by via small scale fisheries and artisanal fishing. We would need to consider the quality of product when arriving on destination for exportation and local markets.

8.5. ACTION PLAN FOR FINANCIAL WELL BEING FOS FISHERMEN

To continue the study for all five (5) others other Azorean islands to validate results of the surveys establish a Regional Overview Implementation to the community the concept of Responsible Fishing Operations System (RFOS)

- Establish a new Administrative network for Local Associations
- Promote the concept of Regional and Local Coastal Development to be the motor for promoting Small Scale fisheries and Social Well Being of members of these local communities
- Creation of a forum to gather all actors of the sector, in person, into the introduction and presentation of the results of this study.

9. MANAGEMENT TOOLS

After gathering local information about the financial issues for local fishing communities:

- Human Behaviour at Sea
    - Number of Landings
    - Weight of Landings
    - Values of landings

After viewing the new generation of Socio-Economic results (DRP Fraga, 2020)

- Percentage (%) of Fisher in the age group of 15-24 years fort the Azores being only 7,8% and for our four (4) islands 3,9%

After establishing the fleet segments for average landings Weight and Values

- Revenues per Fleet segments fleet for landings Weight and Values for 2017 - 2019

- Average Revenues per Year for Fleet segments fleet for landings Weight and values
- Average Number of Landings per Year for Fleet segments
- Average Value per Landings per Year for Fleet segments
- Average Weight per Landings per Year for Fleet segments
- Average Prices of Fish per island for 2017-2018-2019
- After analysing results of all fleet segments for landings Weight and Values for 2017 - 2019

After applying our new Financial Model for Production Units of Small-Scale Fisheries (FMPUSSF) a new generation of data for Local Management of Fisheries is now created, promoting Responsible Fishing Operations.

DASHBOARS

A DASHBOARD could be defined as being a Control Panel having an overview of the operating conditions of a transportation mode. A dashboard for Management could be perceived using the same approach and give function data of ongoing conditions of the operations to be managed and present a holistic view of each organisation.

By reorganising the DRP Data we were able to create three (3) Dashboards to be used for Managing Responsible Fishing Operations. Our intention is to present an overview of results for boundaries settings for the Financial Well Being of Fishermen and fishing operations for our four (4) islands. We are presenting the 3 dashboards in Annexe 1, 2 and 3.

9.1. DASHBOARDS RESULTS FOR FLEET SEGMENTS

For the first Dashboard, to be able to set up the results for Fishing operations by Fleet Segments, we analysed the landings data for each fleet segment using Weight (kg) and Value (€) of landings for three years (2017-2018-2019) and calculated the average per year and by adding the number of average landings per year, we were able to establish the average revenues per segment, the average revenues per meter. Doing so we were able to set Financial Boundaries for each fleet segment of the fishing fleet of our Four (4) islands. For the second Dashboard to propose Financial Boundaries per Fleet Segment, we used the final results of the first dashboard and by using our Financial Model to estimate Operational and Fix Expenses, we were able to propose, using 2 calculations approaches (3 shares system and 45% for Shipowner and 55% for drew members), the salaries of fishers.

The practical conception of our Financial Model is that 20% of the gross revenues would be Operational expenses, 20% would be Fix Expenses, 10% of gross revenues would be for Boat Maintenance so 50% of gross revenues to calculate Salaries. We would probably have to better adapt the Financial Model to respond to specific needs of the different fleet segments. Table 11 is presenting the final sections of the proposed Financial Boundaries. The third Dashboard can be found in Annex 3, presenting the total Catches and average prices of 2017-2018-2019 for the four (4) islands. We can now compare the results of the different Fishing operations of the four islands.

Table 8 - RESULTS OF FINANCIAL BOUNDARIES

FISHERMEN'S SALARIES

	3 SHARES	CREW Captain included		Per Year AVERAGE	
FLEET SEGMENT	FOR SALARIES 67%	VESSEL	Per Fisherman	LANDINGS	Type of Fishing
< 6m	€3 558,71	1	€3 558,71	37,25	DIA
6-8m	€7 709,63	1,5	€5 139,76	49,7	DIA
8-10m	€42 223,52	3	€14 074,51	50,4	DIA + VIAGEM
10-12m	€12 961,91	4	€3 240,48	46,85	VIAGEM
12-15m	€24 601,23	5	€4 920,25	12,7	VIAGEM
15-18m	€20 782,92	7	€2 968,99		VIAGEM
18-24m	€29 094,31	10	€2 909,43		VIAGEM
24-40 m	€35 200,14	12	€2 933,35		VIAGEM

FLEET SEGMENT	55% Équipa
< 6m	€4 868,88
6-8m	€10 548,01
8-10m	€57 768,50
10-12m	€17 733,96
12-15m	€33 658,39
15-18m	€28 434,34
18-24m	€39 805,65
24-40 m	€48 159,40

10. CONCLUSION

According with our main objectives, we were able to gather the financial indicators for the socio-economic wellbeing of the fishermen in a small-scale fishery as well as applying a financial economic feasibility analysis.

We did not find any regional information related to the Azorean Distribution Chain at this time. We were not able to go and scope information from the different associations and regional compagnies because of the social displacement restrictions and absence of air or maritime transport services. We are hoping to be able to gather basic information in collaboration with the Federação das Pescas dos Açores (FPA). To update Although we did not fully understand the distribution chain, this topic will be better approach in our future studies.

By the end of this study a financial management gap was found. The producers are not applying and considering the currents costs of their business. With this fact and supported by the results, it is shown what are the issues, needs and how can it be optimized.

Financial issues are directly related to Responsible Fishing Operations. Running for fish in a context of tragedy of the commons with having no perception of operational cost and fishing effort could be the most non sustainable human behaviour that is jeopardising the local fish stocks and minimising fishing profits. Many factors are threatening the protection and conservation of fish stock and biodiversity of the Azores.

Now financial aspects of Small-Scale Fisheries in the Azores are better understood. There is problem of human behaviour at Sea misunderstanding of Financial Well Being related to optimising profits for producers and production units.

Concerning the dashboards, we are only presenting our results and much more analyses could be done but it was not the objective of our case study.

WE NEED TO FISH LESS WITH BETTER PRICES.
LOWER FISHING EFFORT AND IMPROVE FISH PRICES