REPUBLIKA E SHQIPËRISË
MINISTRIA E BUJQËSISË
DHE ZHVILLIMIT RURAL

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Carrying out selected sectoral analysis as a solid ground for the preparation of IPARD III programme and of Strategy for Agriculture, Rural Development and Fishery 2021-2027

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Fishery Sector Study Report

Final

AGT INTERNATIONAL

DSA DEVELOPMENT SOLUTIONS ASSOCIATES

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ALL	Albanian Lek
ANES	Albanian National Extension System
ARDA	Albanian Rural Development Agency
ASIG	State Authority of Geo-space Information (Autoriteti Shtetëror për informationin Gjeohapsinor)
ATTC	Agricultural Technology Transfer Center
AUT	Agricultural University of Tirana
AWR	Agriculture Water Reservoir
AZA	Allocated Zone for Aquaculture
BO	Business Operator
BRC	British Retail Consortium
CA	Competent Authority
CAP	Common Agricultural Policy
CEFTA	Central European Free Trade Agreement
CFP	Common Fishery Policy
DCM	Decree of Council of Ministers
DSA	Development Solutions Associates
EC	European Commission
EIA	Environmental Impact Assessment
EU	European Union
FADN	Farm Accountability Data Network
FAO	Food and Agriculture Organization
FBO	Food Business Operator
FMO	Fishery Management Organisation
GAP	Good Agricultural Practice
GDIP	General Directorate of Industrial Property
GFSI	Global Food Safety Initiative
GoA	Government of Albania
HL	Hectolitres
IDRA	Institute for Development and Research Alternatives
IFS	International Featured Standard
ILO	International Labor Organization
INSTAT	1Albanian Institute of Statistics
IPARD	Instrument of Pre-Accession in Rural Development
IPM	Integrated Pest/Production Management
ISARD	Inter Sectoral Agricultural and Rural Development Strategy
ISUV	Food Safety & Veterinary Institute: Instituti i Sigurisë së Ushqimit dhe Veterinarisë
IUU	Illegal Unreported and Unregulated fishery
MARD	Ministry of Agriculture and Rural Development
MTE	Ministry of Tourism and Environment
MEFA	Ministry of Europe and Foreign Affairs
NAVPP	National Authority of Veterinary and Plant Protection
NEA	National Environmental Agency
NAPA	National Agency for Protected Areas
NFA	National Food Authority
NGO	Non-Government Organization
PDO	Protected Designation of Origin
PGI	Protected Geographical Indications
PPP	Plant Protection Products
PRP	Pre-Requisite Programme
RAAE	Regional Agency of Agricultural Extension

SARDF	Strategy for Agriculture and Rural Development
SHBB	Association of Agricultural Collaboration (Shoqëri e Bashkëpunimit Bujqësor:)
SME	Small and Medium Sized Enterprises
SMR	Statutory management requirements
TSG	Traditional Speciality Guaranteed
VAT	Value Added Tax
VMP	Veterinary Medicinal Product
WUA	Water User Association
WHO	World Health Organization

CHAPTER 1 - INTRODUCTION

1.1. BACKGROUND

Albania is preparing the IPARD III Programme for the period 2021-2027. This study serves as a background for the preparation of the Strategy for Agriculture and Rural Development (SARDF) 2021 – 2027 as well as provides the analytical background for the design of the Measure 3 (Investments in physical assets concerning processing and marketing of agriculture and Fishery products). Because the analysis involves the whole fishery sector, the outputs are also consistent with the scope of Measure 7 (farm diversification and business development) for what relevant to aquaculture.

The objective of the sector analysis is to give a quantitative and qualitative description of the sector trends with special focus on the needs for investments and technical assistance. A SWOT analysis is prepared to identify the potential and weak points as a base to provide guidance for the support (namely investments). In addition to the recommendations in the frame of IPARD III program the study also aims to provide other recommendations for the development of the objective of the sector analysis is to give a quantitative and qualitative description of the sector trends with special focus on the needs for investments and technical assistance. A SWOT analysis is prepared to identify the potential and weak points as a base to provide guidance for the support (namely investments). In addition to the recommendations in the frame of IPARD III program the study also aims to provide other recommendations for the development of the sector and for SARDF preparation. Some of the recommended actions cannot be implemented within the framework of IPARD III, but are nonetheless considered as important steps for balanced development in the sector and for strategy development.

Following the transition process initiated in 1991, the fisheries sector started a development process still progressing based on the capacities inherited from the past. Indicators of such development include, for instance, the frequent consumption of fish among the Albanian population in the northeast that once did not consume fish at all or the fact that not long time ago only 10 fish shops were established in Tirana, whilst today they are over 100. Further, the trend of the average annual per capita consumption of fisheries and aquaculture products is also gradually increasing from the 4.9 kg/year assessed in 2010 to the estimated 5.3 kg/year in 2016.

Today fisheries (including wild fisheries and fish farming) take important place in Albanian economy, even though the contribution of the sector to the Gross Domestic Product (GDP) is relatively low at 0.3%. The sector embeds high growing potentials to be exploited through formulation and adoption of appropriate policies sustained by efficient investments.

Marine fishing provides more than 52% of the catch and 61% of the value with coastal lagoons and inland waters yielding respectively 21% of the catch but only 13% of the value. Aquaculture has been increasing in importance with 27% of the catch and 26% of the value.

The total full-time employment in the fisheries and aquaculture is estimated at more than 4,200 persons with a significant number of women employed by the processing industry to which the indirect employment of women engaged in the ancillary services like fishing net repair and maintenance, inland aquaculture and fish processing shall be added.

The fishing fleet includes 651 vessels and is concentrated in the four main fishing ports of Durrës and Vlorë, followed by Saranda and Shëngjin. The total production of the fisheries sector increased in the last years. However, the primary production does not significantly contribute to supply the raw material to the processing sector. The latter is represented by relatively small number of processors. Twenty-four companies process fish that is destined for export markets.

Concerning the market of fisheries products, the destine of the production indicates that about 25-30% is traded in the local market (preferentially supplied with the products from artisanal fishing), something less in the region where less attractive prices are offered than in the European countries and the remaining is oriented to the export to EU market. In 2017 the export value of edible fisheries products amounted to €82 million. Since 2013 the export of fish and seafood has been quadrupling, as per the data published by the Ministry of Agriculture and Rural Development (MARD). Only during 2019 the value of Albanian fish exports reached 99.8 million euros. A further increase of

24.5% was recorded during the first six months of 2020[1], reaching at the end of 2020 a total value of 104.1 million euro (MARD)

The development of the aquaculture sector in the last several years is following a constant growing trend better performing than fishery. Nevertheless, import of marine aquaculture products, mainly sea bass and sea bream, is necessary to fully cover the domestic demand.

1.2 METHODOLOGY

1.2.1 Primary data collection

The primary data collection consisted of semi structured in-depth interviews carried out with key informants, representing value chain actors and sector experts (see list in Annex 10).

More specifically, there are two modalities for the primary data gathering:

- Semi-structured in-depth interviews.
- Interviews with value chain operators. The interviewed BOs were from the primary production, the processing and the wholesale sectors.
- Interviews with sector experts from both the public and private sectors and with leading operators at each stage in the value chain.

  For semi-structured in-depth interviews, there were prepared interview guidelines, which were tested and fine-tuned before implementation.
- Structured survey with extension service. The structured questionnaire included likert-scale questions on each of the types or risks analysed through a score. In this questionnaire, the first section collects information about the respondent's profile. The second section has detailed questions related to farm structure, trends of the number of farms by size, and also past trends and expected trends of investments, which is crucial information related to IPARD III program. Another similar section is designed for agro-processing, differentiating by subsector and size when applicable. There was added also a subsection on the impact of COVID on key agriculture sectors. In addition, there are two detailed section on training/advice needs and investments needs. Other questions which address the needs for IPARD III program and for the strategy were added, also in close consultation with the team of the strategy project.

Structured survey with regional ARDA offices. The structured questionnaire was based on a selection of sector-based questions aimed at (i) identifying the type and size of investments expected at both primary production and processing and (ii) describing the trend in the number of investments (at primary production and processing) in comparison to the last 7 years.

Semi-structured in-depth interviews with key informed stakeholders (alongside desk research), enabled the obtaining of up-to-date understanding about the main patterns for the key sectors, more in qualitative terms. Also the findings from the structured survey with extension service enables us to understand sector trends, enabling to incorporate quantitative assessment.

1.2.2 Secondary data collection

The secondary data was retrieved from MARD (Ministry of Agriculture and Rural Development), INSTAT (Albanian Institute of Statistics), UNSTAT COMTRADE (for international trade), FAOSTAT (for production and consumption) and EUROSTAT (for production and international trade), etc. In addition, a review of other relevant studies and reports was carried out (see list in Annex 9). The constraint faced is that for some indicators (related to domestic production and trade) there are no available statistics, while for some others there are no recent statistics. However, regarding international trade, latest data are available and were analysed.

[1] https://thealbanianprofile.com/eksportet-e-peshkut-u-rriten-ne-rreth-8-mije-tone-kapin-vleren-50-milione-euro-ne-6-mujorin-e-pare-te-vitit/

1.2.3 Data analysis

Regarding data/information analysis, secondary statistical data has been subject of standard descriptive analysis including tables and graphs depicting statistic and historical trends. Comparison of production and consumption trends with world, European and some cases with neighbouring countries was done, when applicable/necessary.

Regarding VC expert/actor interviews, notes are analysed by using simple content summarizing approach and qualitative content analysis techniques, with the aim to sum up the most relevant and interesting topics emerged from the interviews. Value chain analysis was adopted as general framework for analysis of value chain structure and flows.

1.2.4 Limitations of the available data

There are various gaps in the availability and quality of secondary data. The main gaps lie in structural statistics (e.g. categorisation of holdings and establishments by structure, processing capacities etc.) and lack of market information.

More specifically, several constraints were found:

- Lack of proper Market Information System in place. Since 2012, the Market Information System was closed within the Ministry of Agriculture. Thus, Albania no longer has a Market Information System related to the agriculture sector. So, it was not possible to carry out in-depth price analysis.
- Farm data are missing, so preventing a more accurate analysis of the productions and related markets.

Several inconsistencies in production data were observed. Most classical, the important discrepancy between the theoretical and actual capacity of the processing pants. Such inconsistencies are both a consequence of the general informality that dominates the Albanian economy (industries do not declare all their output for fear that data will be transferred to the tax administration), and of the inadequacy of the agriculture statistical system.

Needs for information were addressed through field interviews, however, COVID19 deeply impaired field operations – it was often difficult to interview operators especially in case of COVID19 contraction and those who showed special caution. Some of the interviews were done online or on telephone, although most were done face to face.

1.2.5 Assumptions for the sector study

Here below few critical assumptions are formulated.

1. No more stringent marine environment protection measures are taken impacting the fishery sector.
2. The EU market remains attractive for the Albanian primary and processed production.
3. No further global-wide events disrupting the movement of persons, their habits and consequently the trade take place in the medium term, at least.

1.2.6 Adopted conventional criteria

Wherever in the study the classification of enterprises is presented, the definition of SMEs (Small & Medium Enterprises) adopted by the European Commission[2] applies limited to what related to the number of persons employed due to the difficulty in retrieving financial data from the enterprises. Accordingly, the following table presents the applied criteria to the full categorisation of the SMEs including the micro, small and medium enterprises.

[2] Commission Recommendation 2003/361/EC

Table 1-1 Criteria for medium, small and micro-sized enterprises

Enterprise category	Persons employed
Medium	< 250
Small	< 50
Micro	< 10

Source: Commission Recommendation 2003/361/EC.

In the presentation of data related to the import and export of fishery products, often the custom codes (HS codes) are used to exactly identify the commodity categories. Here below the related legend is provided.

Table 1-2 Customs codes

Customs Code	Description
030	Live fish, frozen or cold fish, fish fillets etc.
0301	Live fish
0302	Fresh or cold fish
0303	Frozen fish
0304	Fish fillets and other fish meat
0305	Fish, dried, salted, smoked, flours, grains not for consumption
0306	Underwater shellfish
0307	Molluscs, whether or not in the shell
0308	Aquatic invertebrates, unlike underwater shellfish and molluscs
1604	Prepared, canned fish; caviar and its substitutes
1605	Crustaceans, molluscs, other aquatic invertebrates, prepared or preserved

Source: WCO-World Custom Organisation – HS codes.

CHAPTER 2 FISHERY/AQUACULTURE PRIMARY PRODUCTION

This section describes the producers, providing a quantitative and qualitative description of the producers. The information is intended to provide those information and data from which to understand if and how primary production influences the processing (e.g. stability of the production or possible increasing or decreasing fluctuations or trends observed and expected).

2.1 PRODUCTION BUSINESS OPERATORS

2.1.1 The fishery sector

Commercial fishing is made up of Professional Commercial Fishing and Artisanal Commercial Fishing. According to the Law No. 64/2012 On Fisheries, the professional commercial marine fishing includes fishers using fishing vessels more than 12 meters long with an engine power greater than or equal to 56 kW (75 hp) whilst the artisanal commercial fishing or artisanal coastal fishing includes commercial fishing practiced with fishing vessels of less than 12 meters long, not using bottom-end fishing gears, with or without a steering wheel, towed fishing gear with pelagic wheel or pelagic pair, twin wheeled nets and hydraulic dredges.

Coastal fishing (coast, lagoon) involves small-scale artisanal but important local-level fishing. Lagoon fishing follows traditional methods such as gill-nets and fish barrier. This fixed fishing gear based on the principle of V shaped traps is made of plastic pipe in the channels connecting the lagoon to the sea.

Along the Albanian coast there are eight coastal lagoons, with a total area of about 10 thousand ha, average depth of 1 m, maximum can reach 5 m, the most important are: Velipoja (200 ha); Patok (480 ha); Vaini, Karavasta (3800 ha): Narta (2800 ha); Butrinti (1600 ha). The main species are migratory species of the sea: mullet (*Mugil spp*, *Liza spp*), sea bass (*Dicentrarchus labrax*), sea bream (*Sparus aurata*), European eel (*Anguilla anguilla*).

Number of Operators

The marine, brackish and freshwater fisheries operators are presented in the below table.

Table 2-1 Number of marine and freshwater licensed fishery operators

Environment	Activity	Operators with NIPT
Inland	Fishery	14
Inland	Aquaculture & Fishery	144
Sub-total		**158**
Marine	Fishery	27
Marine	Aquaculture & Fishery	21
Sub-total		**48**
Total		**206**

Source: Ministry of Agriculture and Rural Development

The figures from the above table indicate how the majority of the operators have licenses allowing them to practice both aquaculture and fishery. Only a reduced number of operators can practice only fishery in freshwater or marine separately.

As far as the fishing activity in inland waters is concerned, it is noted that it does not exist a register of fishing vessels classing them on tonnage and engines.

The Shkodra Lake is the largest of the Albanian lakes and the fishery there is managed by the local Fishery Management Organisation (FMO). It includes 427 members organised in 210 units composed by two people and one boat. Members are allotted a certain part of the lake in which they can fish, but they can apply to the FMO to change the area if they wish to move to another part.

Professional organisations

Fishery Management Organizations (FMOs) are established according to Law No. 8870 on some amendments to the Law on Fisheries and Aquaculture (2002). They are legally private subjects in exercising their activity in the fishery sector, which complies with relevant EU concepts. Each FMO pays an annual fee of about 40 euro per fisher (Albanian Lek equivalent) to the ministry.

There are seven FMOs, as presented in the below Table 10. It is noted that all but one FMO lack onshore facilities (e.g. storage, processing, ice-making machines), market and office spaces, as well as boats for supervision. FMOs receive from MARD a license with validity for 5–10 years. MARD is responsible for issuing permissions to fishers, supervising their daily activities and regulating the seasonality of the fishing activity.

The FMOs main management duties include the planned restocking of waters and patrolling for poachers and illegal fishing. However, the matter is constantly disputed with MARD because FMOs expect the latter to financially support such actions. To this purpose, it is worth to mention that, beyond the availability of state budget, the EU rules prohibit the financing with public funds the stocking of waters which are leased to organizations or private enterprises. The restocking of leased waters, as committed at bidding, is the sole duty and in the sole economic interest of the leaseholders and the role of government is limited to the supervision and enforcement of contracts and law.

FMOs issue permissions to their fisher members on an annual basis, who in return pay a yearly membership fee of about 120 euro (about 80 euro for the license and 40 euro for taxes) for one boat of two fishers on big lakes.

FMOs on inland waters are affiliated under the Federation of Inland Fisheries Organizations (FIFO), which is based in Shkodra. This young organization is to provide uniform voice, representation and lobbying for the inland fishery subsector.

Table 2-2 Key information on FMOs

Name of FMO	Managed waters		Fishers		Boats (No.)	Captured fish per fisher (kg)		Licence of		Observation
	Name	(ha)	No.	No./ha		At	Potential			
Fierza	Fierza	5 000	300	17	150	0.7	1.7-2.0	No	No	Operates on paper.
Uleza and Shkopeti	Uleza	1 250	20	63	10	NA	5.0-6.3	No	No	Operates on paper.
	Shkopeti	80	5	16	NA	NA	1.2-1.6	No	No	Operates on paper.
	Total	**6 330**	**325**	**19**	NA	**NA**	**1.9-2.3**	**-**	**-**	**-**
Narta and Orikum	Narta	2 600	35	74	NA	0.6	4.9-9.7	Yes	Yes	Operating.
	Orikum	130	6	22	NA	0.3	0.3	Yes	Yes	Operating.
	Total	**2 730**	**41**	**67**	**NA**	**0.5**	**4.2-8.3**			
Ohrid	Ohrid	11 890	300	40	150	0.3	0.5	Yes	Yes	Operating.
Butrinti	Butrinti	1600	150	11	NA	0.07	0.2-0.4	No	No	Fails to get licence.
Shkoder	Shkoder	14 790	420	35	210	0.7	1.5-2.0	Yes	Yes	Operating.
	Komani	700	25	28	NA	NA	2.8-3.4	Yes	Yes	Operating.
	Vau i Deja	1 000	30	33	NA	NA	3.3-4.0	Yes	Yes	Operating.
	Vilun	280	30	9	15	NA	0.5-1.1	Yes	Yes	It is operating.
	Total	**30 260**	**955**	**32**	NA	**NA**	**1.0-1.3**	**-**	**-**	
FMO Prespa	Large	4 940	78	63	NA	0.7	1.0-1.2	Yes	Yes	It is operating.
	Small	400	10	40	NA	0.5	1.0	Yes	Yes	It is operating.
	Total	**5 340**	**88**	**61**	NA	**0.7**	**1.0-1.1**	**-**	**-**	
Total of FMOs		**44 660**	**1409**	**32**	NA	**0.5**	**1.3-1.7**	**-**	**-**	

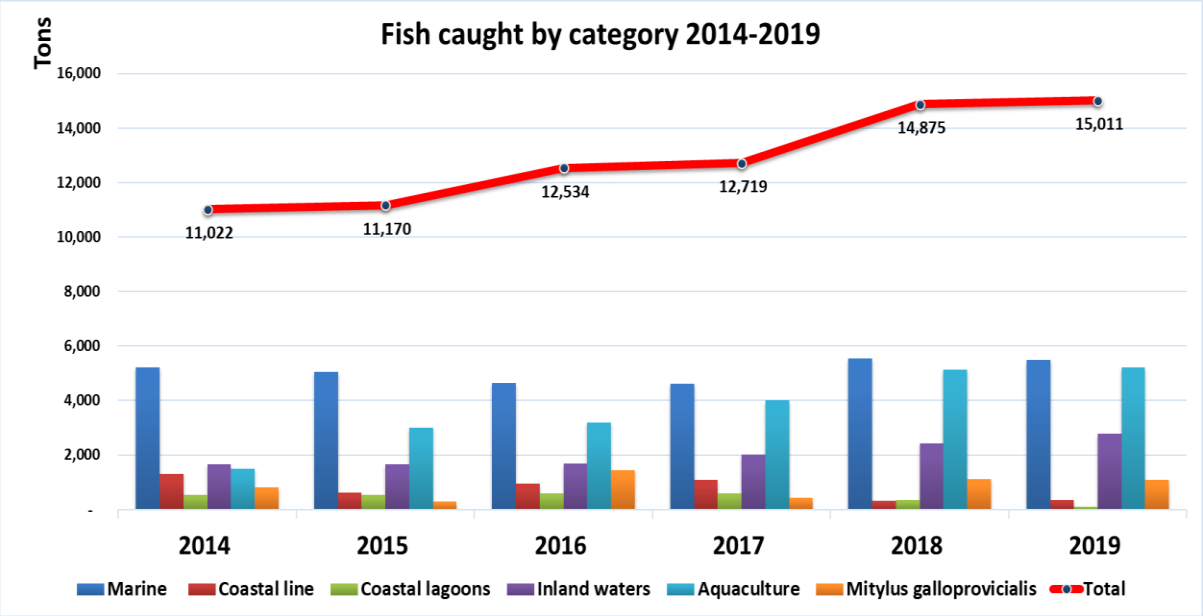
Source: GCP/ALB/014/EC (2013) – Confirmed with MARD and modified by the Authors

The Ministry of Agriculture and Rural Development attributes the fishing area to each FMO without the possibility to access areas belonging to other FMOs.

Size of the fishery business

In 2019, catches in all fish categories was 15,011 tonnes from 14,875 tonnes in 2018, increasing by 0.91% only. The following chart allows to appreciate the contribution of the different fishery components to the total capture.

Figure 2-1 Fish caught in Albania (2014-2019)

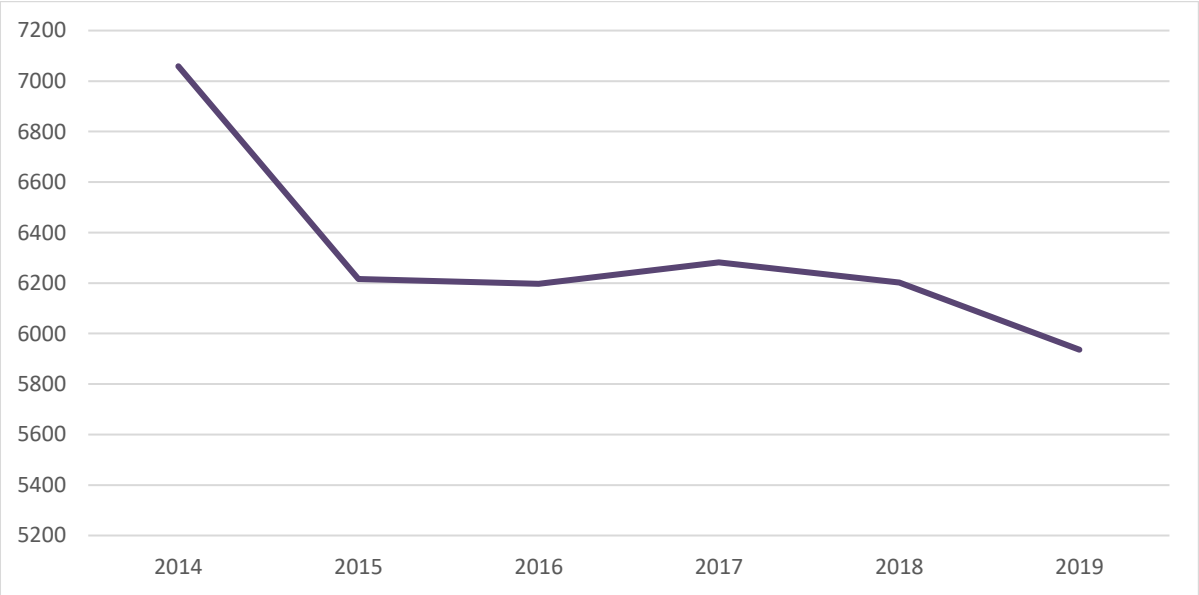


Source: Ministry of Agriculture and Rural Development.

Fishing water categories are: marine, brackish waters, lagoons, inland waters, aquaculture and molluscs. Two are the main categories which represent the biggest percentage of fish catches, respectively “Marine” fishing with 36.64% and "Aquaculture" with 34.83% followed by Inland waters with 18.46% of the total catches.

The total fishery captures in 2019 in marine, costal line and costal lagoons did not reach 6,000 tonnes. Since 2014 decreasing quantities are recorded, as clearly shown in the below figure (see original data in Annex 4).

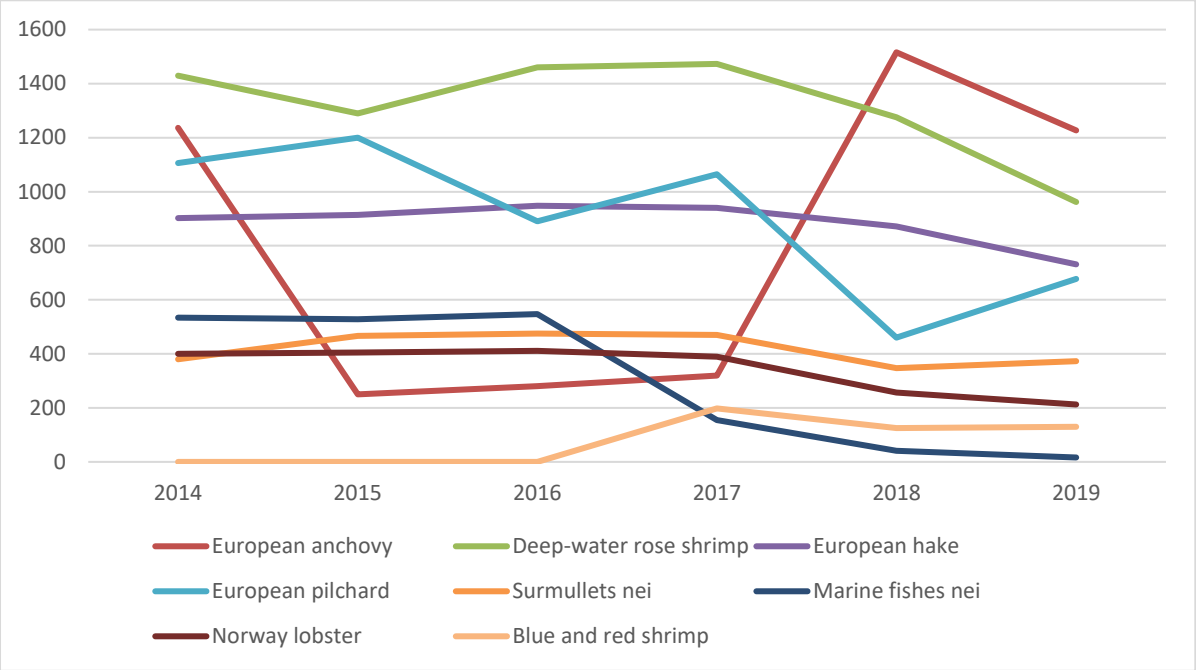
Figure 2-2 Total marine fishery capture 2014 - 2019



Source data: Ministry of Agriculture and Rural Development

Looking at the data in more detailed way, only some of the captured species corresponding also to the most caught seem responsible for the above trend, as highlighted in the below figure.

Figure 2-3 Catches of main marine species in Albania



Source data: Ministry of Agriculture and Rural Development

From the above chart it arises clear how all the considered species show decreasing quantities, apart the extreme trend shown by the anchovies and the apparently growing trend of the blue and red shrimp. For what related to sea bass and gilthead sea bream the relatively small quantities captured, ranging between something more than 40 and less than 70 tonnes/year, do not show relevant variations over the period.

Overall, the situation is aligned with the many warnings launched at worldwide level about the sustainability of fisheries and it justifies the corrective measures to invert the denounced overexploitation of most of the small pelagic and demersal species fished. Accordingly, the tendency is to reduce the fishing effort in the attempt to reach the maximum sustainable yield.

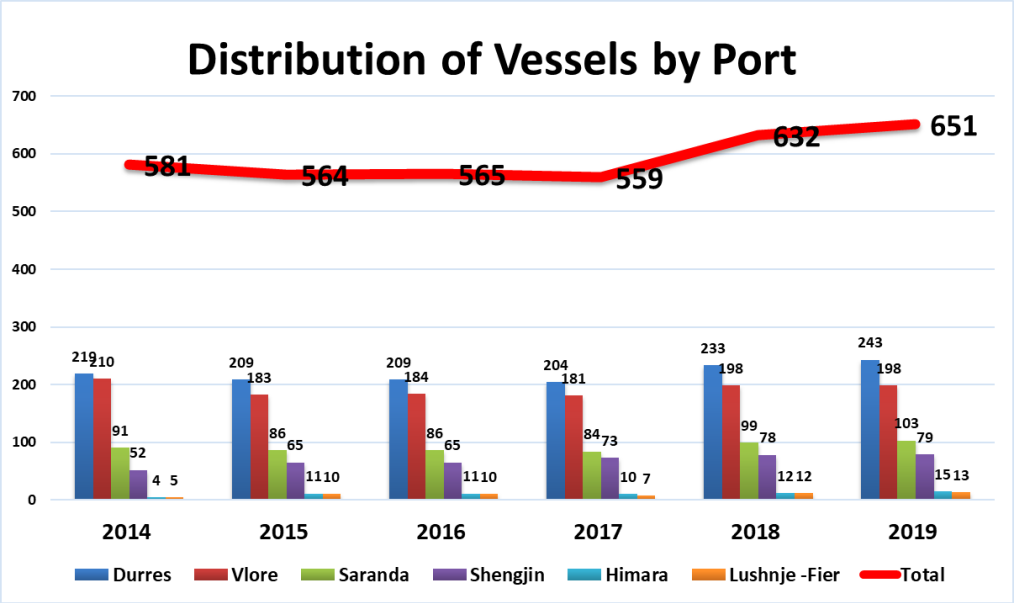
The consideration relevant to the present study is that fishery cannot apparently provide sufficient guarantees to fully satisfy the demand of the processing sector. The latter requiring the regular supply of raw material in the ideally growing of the business. Hence the complement to the supply the processing BOs seek with the import, as better discussed in the following sections.

The marine fishing fleet includes 658 vessels, as per the National Fleet Register, updated in compliance with the Regulation (EU) 2017/218[3], out of which 423 or (64.3%) are active. An apparent discrepancy could arise with the quantity of the captures. Actually, it is noted that the fishing vessels do not leave the ports every day on regular basis and most of them are still registered but not operational. The major fishing vessels owners have fleets of 10-15 ships with different tonnage and fishing gears to respond to the possibly different fishing activity. The vessels can be owned or rented and their age varies, the same fleet hosting for instance new vessels together with 50 years old ships.

The fishing fleet is concentrated in the four main fishing ports of Durrës and Vlorë, followed by Saranda and Shëngjin, as depicted in the figure below, updated to 2019.

[3] Commission Implementing Regulation (EU) 2017/218 of 6 February 2017 on the Union fishing fleet register

Figure 2-4 Distribution of vessels



Source: Ministry of Agriculture and Rural Development (2019)

Here below the composition by size of the Albanian fishing fleet updated to 2020 is presented.

Table 2-3 Composition of the Albanian fishing fleet

Length	No of vessels	Gross tonnage	Engine power kW	Average years
< 12 m	441	502	11994	
12 – 24 m	173	3706	58260	45
> 24 m	44	3807	23069	30
Total	**658**	**8015**	**93324**	**42**

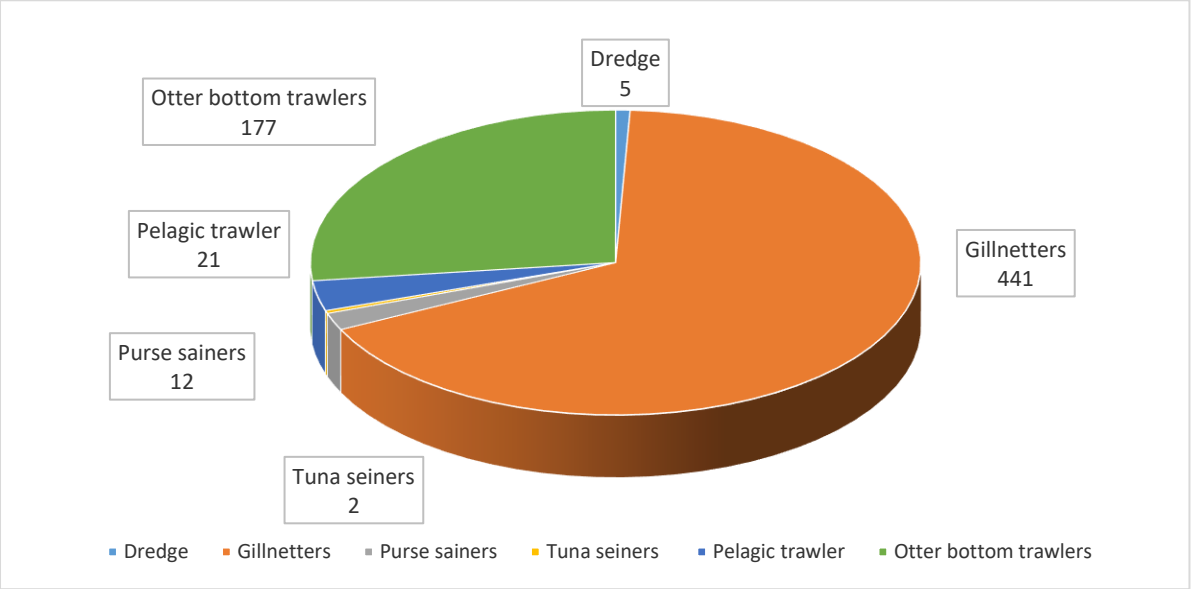
Source: Ministry of Agriculture and Rural Development (2020)

More than 95% of vessels with length < 12 m are undecked and with outboard engine 10 to 40 kW. In addition, 348 of them have a length < 6m (data from 2019_EU-Albania Subcommittee[4]).

In the following two figures the fleet segments are presented according to the gear equipment and the vessel size.

[4] 2019_EU-Albania Subcommittee State of play of the Albanian Fishery Strategy

Figure 2-5 Fleet composition by gear



Source: Ministry of Agriculture and Rural Development

Table 2-4 Fleet composition by segment

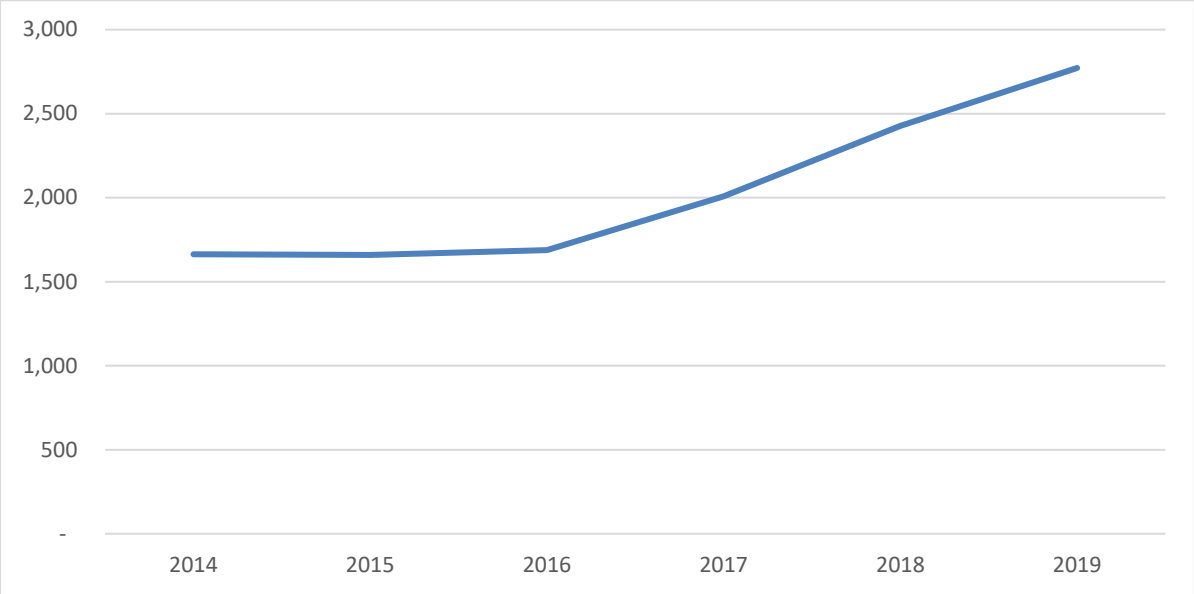
VESSEL GROUPS			LENGTH CLASSES (LOA)			
			< 6 m	6–12 m	12-24 m	> 24 m
Polyvalent	P	Small-scale vessels without engine using passive gears	8	1		
			9			
		Small-scale vessels with engine using passive gears	340	92		
		Polyvalent vessels				
Seiners	S	Purse seiners			10	2
					12	
		Tuna seiners				2
Dredgers	D	Dredgers			5	
					5	
Trawlers	T	Otter bottom trawlers			*141*	*36*
		Pelagic trawlers			15	6
		Trawlers			156	42
Long liners	L	Long liners		(data from 2019_EU-Albania Subcommittee[5]).		

Source: Ministry of Agriculture and Rural Development

The inland fishery production shows a growing trend even if the total production is at a level less than half of the marine fishery (about 2,800 tonnes), as presented in the following chart (see original data in Annex 5).

[5] 2019_EU-Albania Subcommittee State of play of the Albanian Fishery Strategy

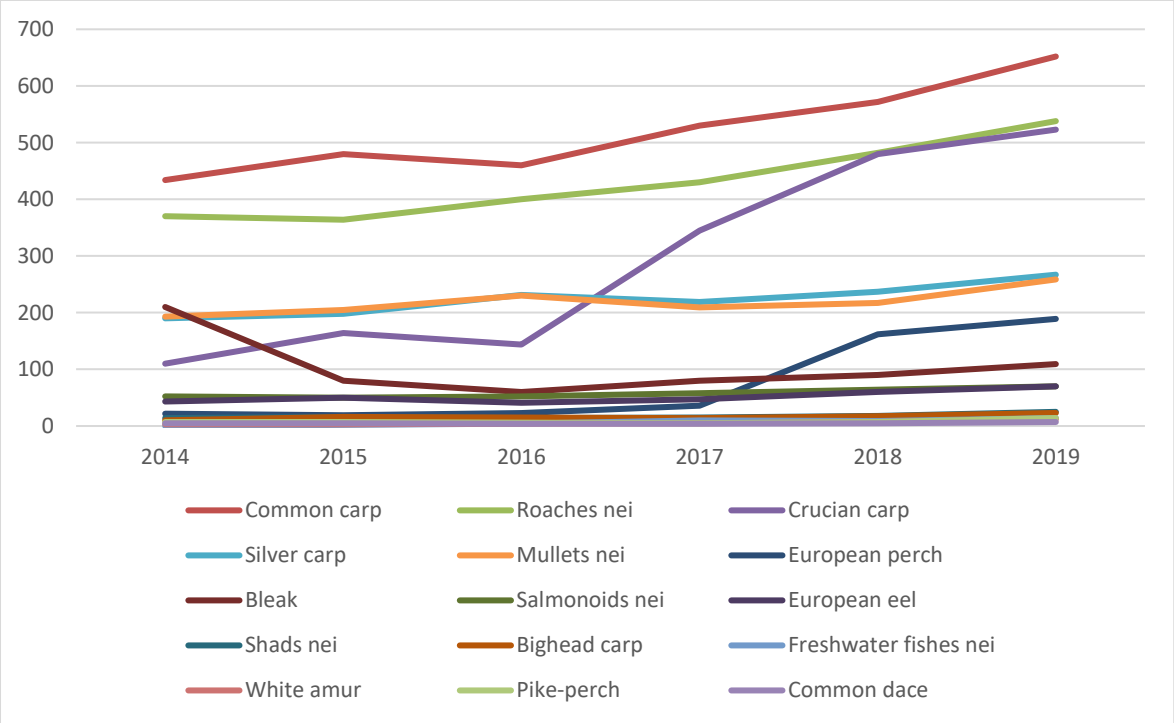
Figure 2-6 Total inland fishery capture 2014 – 2019



Source: Ministry of Agriculture and Rural Development

The contribution of the captured species is presented in the following figure related to inland water catches.

Figure 2-7 Catches by species in inland water, 2014 - 2019



Source: Ministry of Agriculture and Rural Development

As shown, three are the most captured species, namely the Common carp, the Roaches nei and since 2017 also the Crucian carp.

The inland fisheries play an important role in the socio-economic context. They represent a source of income and protein for the less advantaged inland areas of Albania and they offer job opportunities, also to women (even if they find more opportunities in the processing sector), in particular in coastal and remote areas with high unemployment and socio-economic needs. To this purpose, it is noted that the official number of people employed

in the inland fishery sector do not correctly reflect the actual importance of the sector. Public opinion and conservative estimations suggest that several thousand illegal and unlicensed subsistence fishers and poachers benefitting from the fisheries sector shall be added. This situation shows that inland fisheries have a distinct status and role within the life of rural communities, to a much greater degree than otherwise stated in available statistical data.

According to the above, the extensive introduction of controlled and licensed aquaculture-based fisheries could improve the production 2–2.5 times more than it is at present, which could provide a distinct well appreciated income source for local individuals, enterprisers and communities.

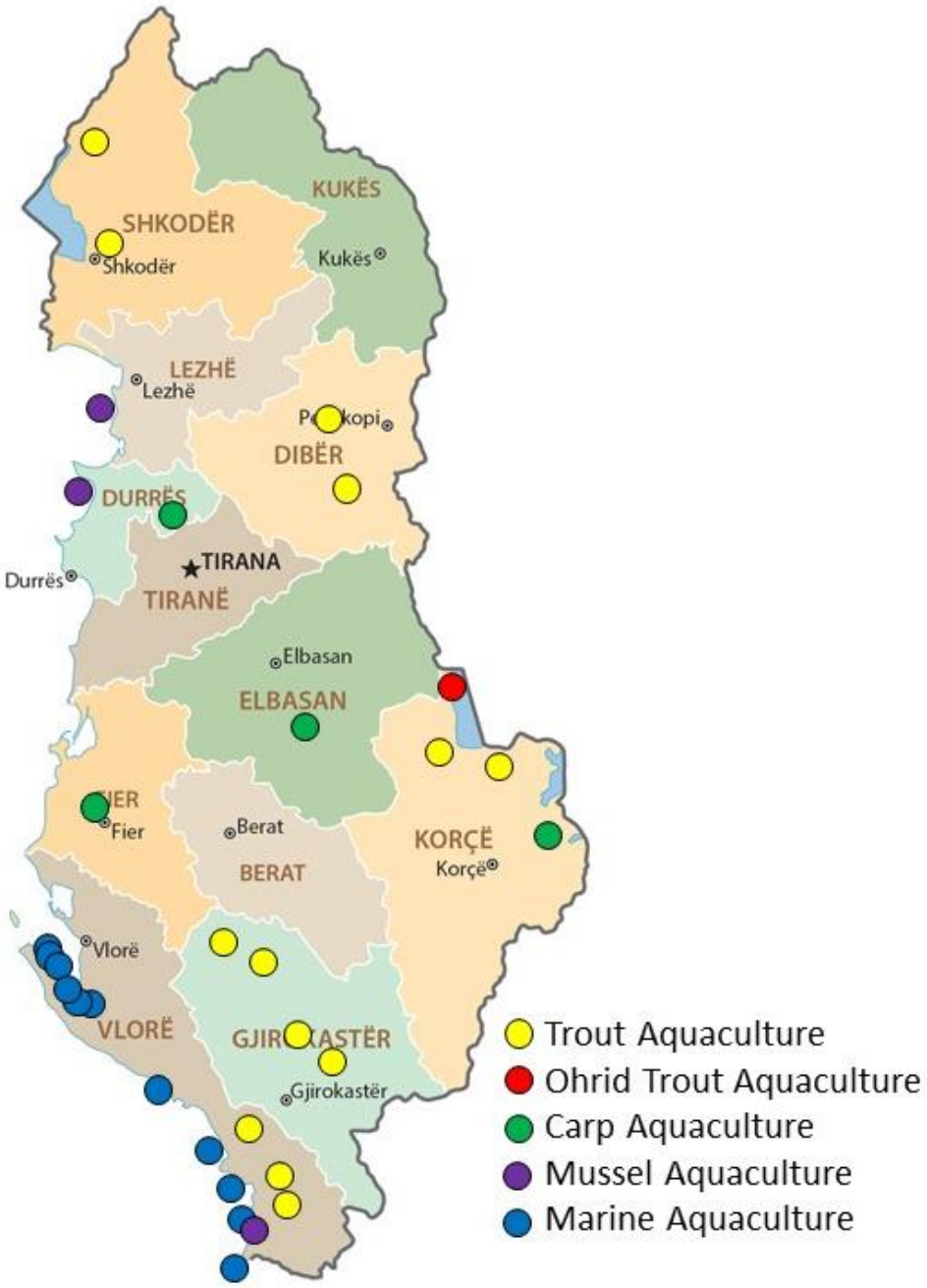
Special attention shall be given to the **protection of the biodiversity and the control of alien invasive species** such as the blue crab (Callinectes sapidus), as better discussed below in Section 2.4. To this purpose, it is here relevant to highlight the fact that the fishery sector seems interested to such a potentially new source of income as demonstrated by the fact that 20 tonnes of blue crabs have been captured in 2019, for the first time.

Eventually, it is worth to mention the existing 670 AWRs, distributed all over the coastal regions. Unfortunately, there are no publications and reliable statistics about the fish produced in AWRs. However, it is assessed that their yearly fish production potential would be well over 1,500 tonnes. A major constraint to their effective exploitation is represented by the management. In fact, AWRs are typically licensed to be used by two different types of users. The existing 98 Water Users Associations (WUAs) are responsible for the sustainable management of irrigation water stored in the AWRs and they receive the related licences from the MARD. Then, the fishing rights of AWRs are tendered and the related licences are issued to the winning bidders, usually different than the WUAs. This double licensing of the same waters creates many tensions leading to the winning leaseholders not implementing the restocking of the attributed AWRs in spite that this is one of the preconditions for obtaining the licence.

Geographical distribution

In the following map of Albania territory all areas are highlighted where fishery activity is carried out in the marine, brackish and freshwater environment.

Figure 2-8 distribution of the aquaculture production units



Marine fishing activity is mainly carried out in the Geographic Sub-Area (NSR) 18 (South Adriatic).

Marine aquaculture (molluscs included) is mainly located in the area of Vlora, Butrinti (Saranda), Saranda, Durrës and Shëngjin (Lezha).

Inland fisheries are mainly based in the three major natural lakes:

- The Shkodra lake, the largest one in the Balkans, is located in the north of Albania.
- The Ohrid lake, located in the southeast of Albania and
- The Prespa lake consisting of two lakes (Great Prespa and Small Prespa) and also located in the southeast of Albania.

Level of product quality

The professional commercial fishing is often part of the vertically integrated business with the production mainly oriented to the export. Accordingly, the quality is ensured by certifications applied to the fishing activity such as for instance the Friend of the Sea or MSC (according to the client requirement) in addition to the basic ISO standards (e.g. ISO 9001), the HACCP (where relevant) and the good hygiene practice, as a mandatory requirement to deal with international buyers and comply with the national minimum requirements. Accordingly, the acquiring and maintaining of quality certifications is among the routine business management practices to access such markets and in particular the EU market.

However, it has been noted that the production quality parameters are a confirmed matter of interest for all BOs very often oriented to increase the quality of their production. Different is the case of the artisanal commercial fishing operators. Being their business mainly oriented to the domestic market, the quality is ensured with the compliance with the national requirements. In such a context the quality greatly benefits from the existing short value chain (see discussion in Section 2.3). The fish is caught at dinner and the following morning is on the market.

The above discussion is also supported by the results of the controls carried out by the fishery and NFA inspectors, each one for their area of competence.

2.1.2 The aquaculture sector

Aquaculture natural resources

The natural resources offering opportunities for aquaculture are the following:

- Coastal area along the whole Albanian territory offering appropriate conditions for the establishment of fish and molluscs culture farms.
- Eight coastal lagoons, as already mentioned, with a total area of about 10,000 ha where the most important are: Velipoja (200 ha); Patok (480 ha); Vaini, Karavasta (3800 ha): Narta (2800 ha) and Butrinti (1600 ha).
- 670 AWRs, distributed all over the coastal regions where more the agriculture practices are developed, can be seen as a type of extensive or even semi-intensive pond aquaculture and the opportunities offered in the framework of the diversification of the income generating activities shall be considered. AWRs are registered with the Ministry of Agriculture and Rural Development (MARD) although the database is apparently incomplete, as physical parameters of some of the AWRs are missing. It is estimated that their total area is 6,758 ha in the spring, which shrinks by about 60 percent to about 2,700[6] ha by the end of the irrigation season. It is noted that most of AWRs have the potential to be used as fishponds.
- 103 smaller natural lakes. Also the small lakes, or at least some of them, can be seen as an opportunity for the development of income diversification activities.
- Eventually, the rich network of rivers allows the development of freshwater activities in some tracts of their course.

Number of Operators

The number of operators is summarised in the below table.

Table 2-5 Number of marine and freshwater licensed aquaculture operators

Environment	Activity	Operators with NIPT
Inland	Aquaculture	3
Inland	Aquaculture & Fishery	144
Sub-total		**147**
Marine	Aquaculture	120
Marine	Aquaculture & Fishery	21
Sub-total		**141**
Total		**288**

[6] This is the figure mentioned in all fisheries and aquaculture related reports as total water surface area of AWRs, which most probably is the safeguard or say the reserve, which cannot be drained from the reservoir.

Source: Ministry of Agriculture and Rural Development

As already discussed in the above Section 2.1.1 the licences allow the operators to practice both aquaculture and fishery.

Concerning the marine finfish aquaculture, its main production system is based on the marine floating cage culture. Most of BOs are located in the southern part of the Albanian coast. The main areas where this activity is conducted are Vlora, Saranda and Himara (Porto Palermo)[7]. In the district of Vlora there are 31 authorized aquaculture facilities, out of which 11 are near the city of Vlora (2 inactive) and 20 near Saranda (14 inactive).

Concerning the marine molluscs aquaculture, five operators exist with their mussel farms including long line plants in Saranda, Durrës and Shëngjin.

Concerning the inland water aquaculture, it includes freshwater and the coastal lagoons (brackish water). The number of operators practicing inland finfish aquaculture is presented in the below table.

Table 2-6 Inland aquaculture operators

Culture system	Age groups	Number of farms	Produced species	Area of ponds (ha)	Area of tanks (m^2)
Carp culture in ponds	**Hatchery**	4	Common carp Chinese major carps	~ 28	0
	Fingerlings			0	0
	Table fish	0			
Total of pond farms		**4**		**28**	**0**
Trout culture in tanks	**Hatchery**	1	Koran	0	2 000
	Hatchery cum table fish	19	Rainbow trout	0	26 300
	Table fish	38		0	27 530
Total of tank farms		**58**			**55 830**

Source: GCP/ALB/014/EC (2013)

In the Butrinti lagoon, the inland molluscs aquaculture is historically practiced with concrete plants. In total 30 licences were issued, but actually only about 20 of them are currently operational.

What discussed above about the contribution of fishery to the socio-economic context, also applies to freshwater culture, as well including the number of people benefitting from such activities. Therefore, as already highlighted, the promotion of controlled and licensed aquaculture-based fisheries could improve the production 2–2.5 times more than it is at present, which could provide a distinct well appreciated income source for local individuals, enterprisers and communities.

Professional organisations

The Union of Albanian Aquaculture Producers is the organisation vesting the interests of the category and it includes BOs from both marine and inland water compartments.

Size of the aquaculture business

During the past decade, Albania's aquaculture production has expanded, because of an upsurge in all types of aquaculture activities.

The following tables, one for Vlora and the other for Saranda, provide the main data for each established marine aquaculture farm.

[7] Bakiu R, Hala, E. and Demiri, A. Albania Marine Aquaculture for Gilthead Seabream and European Seabass Production: Sectorial Analyses and Considerations. Pro Aqua Farm Marine Biol 2019, 2(2): 180020

Table 2-7 Marine aquaculture farms in Vlora

Farm name	Owner name	City	No. of cages	Farm area (ha)	Cultivate Area (ha)	Tot Cage Area m²	Status	Production (tonnes)	Expectation (tonnes)
Vangjeli	Viktor Vangjeli	Vlore	24	5		4 294.86	Active	260	280
Kola B	Bepin Kola	Vlore	8	1	1	1 334.5	Active	70	80
Alb Adriatiko	Hysen Jaze	Vlore	40	10	9	18 978.1	Active	600	2000
Bello Tris	Agron Bello	Vlore	12	5		1 311.97	Active	120	140
Gjikondi		Vlore	6	1		710.77	Active	60	70
En-Si Adriatika	Markelan Pajo	Vlore	16	5		3 512.09	Active	180	200
Xhino SHpk	Andon Todi	Vlore	38	5		7 110.99	Active	580	600
Alb Marina-Or	Sheme Kondi	Vlore	30	50		21 195	Active	1190	2000
Shushica		Vlore					Inactive		
Aligjoni Grup	Alfred Aligjoni	Vlore					Inactive		
Alb Adriartik P.Pal	Muharrem Jaze	Vlore	2			226.08	Active		

Source: Hydra, 2019

Table 2-8 Marine aquaculture farms in Saranda

Farm name	Owner name	City	Nr of cages	Farm area	Cultivate Area	Tot Cage Area m²	Status	Production (tonnes)	Expectation (tonnes)
Qendro Shpk	Qazim Qendro	Sarande	19	8	2	2267.76	Active	90	120
Ftelea	Xhevo Cumani	Sarande	12	1.5	1.5	1356.48	Active	22	25
Alie-b	Andrea Boci	Sarande	12	4		1356.48	Active	58	60
Kronos Konstr.	Vasil Jovani	Sarande	16	8	1.5	1380.48	Active	53	57
Coral Shpk	Elidon Rugija	Sarande	5		2.5	3077.2	Active		
Andromeda SHA	Ponajotis Karagunis	Sarande	3	2.8		886.3	Inactive		
Dhoksa Shpk	Ksenofon Papa	Sarande	7			791.28	Inactive		
Koca Iport eksport	Morena Arapi	Sarande	2	13		226.08	Inactive		
Star Fish	Ylli Hasko	Sarande	2	10		226.08	Inactive		
Fish Planet Shpk	Bledar Habili	Sarande		32			Inactive		
ArkaDevelopment	G.Bakalli I.Daci	Sarande		32			Inactive		
Gramoz Oruci	Gramoz Ruci	Sarande					Inactive		
Marina Fish		Sarande					Inactive		
Aget shpk	Agron ahmetaj	Sarande		30			Inactive		
Mete Gjini	Mete Gjini	Sarande					Inactive		
Geron Sinoymeri	Geron Sinoymeri	Sarande					Inactive		
Qani Isaj	Qani Isaj	Sarande					Inactive		
Shpetim Muho	Shpetim Muho	Sarande					Inactive		
Bati-Sa		Sarande					Inactive		
Mihal Kokdhima	Mihal Kokdhima	P.Palermo	2		Not licensed		Active	Not licensed	

Source: Hydra, 2019

Few additional information is provided for some among the major producers established in the Vlora bay.

(a) ALMARINA-OR ltd is a joint Italian-Albanian company, using circular floating cages with a diameter of 30 ml. The production varies between 1000 and 1300 tonnes.
(b) ALB-ADRIATICO ltd is an Albanian company. It uses a diversified range of cages: 5 rectangular ones with edge 9 ml, 35 circular cages out of which 10 with diameter 40 ml, 12 with diameter 19 ml and 13 with diameter 16 ml. The production ranges between 600 and 800 tonnes.
(c) XHINO ltd bases the production on 14 rectangular cages with edge 9 ml and 24 circular ones out of which 10 have a diameter of 16 ml and 14 a diameter of 19 ml. This farm produces 580 tonnes and have a potential capacity of 600 tonnes.
(d) VANGJELI 2002 has installed 24 cages out of which 6 are rectangular with edge of 6 ml and 18 are circular out of which 6 cages have a diameter of 12 ml and 12 cages have a diameter of 19 ml. This farm produces 260 tonnes and have a potential capacity of 280 tonnes.
(e) EN-SI ADRIATIKA has installed 16 circular cages out of which 6 have a diameter of 12 ml and 10 have a diameter of 19 ml. This farm produces 180 tonnes and have a potential capacity of 200 tons.

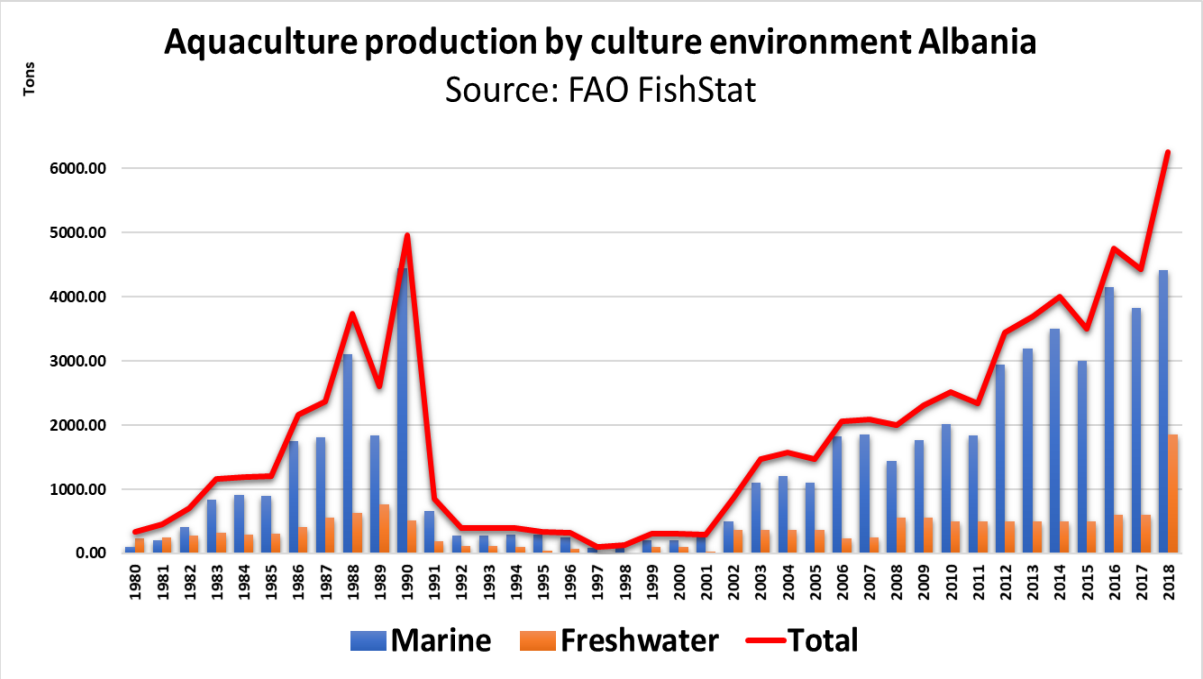
As far as the farms located in the coastal area of Saranda are concerned, the 6 active ones are equipped with 5 to 20 floating circular cages with diameter ranging between 19 and 30 ml.

Concerning the marine molluscs aquaculture, the main production traits of the existing five operators are briefly presented here below.

- The plant in Shëngjin covers 86 ha but only 46 ha are used by the longline facilities. The production in 2019 is about 300 tonnes (Hydra 2019)
- Two plants are located in Harta Bay (Saranda district) covering a total surface of 4 and 2 ha, respectively. Both companies have completed the investments and they are ready to start the production.
- One additional plant is still near Saranda with a licence for Mediterranean mussel sea-based longline culture, with a total surface of 8 hectares. Also in this case the company completed the investments and it is ready to start the production.
- Eventually, the last plant is located in Durrës.

The aquaculture activity is carried out in all type of water environments such as concrete tanks, artificial and natural lakes, as well as in coastal lagoons and in marine cages. The following figure presents the dynamic of the aquaculture sector over the long term (1980 to 2018).

Figure 2-9 Aquaculture production in Albania (1980-2018)



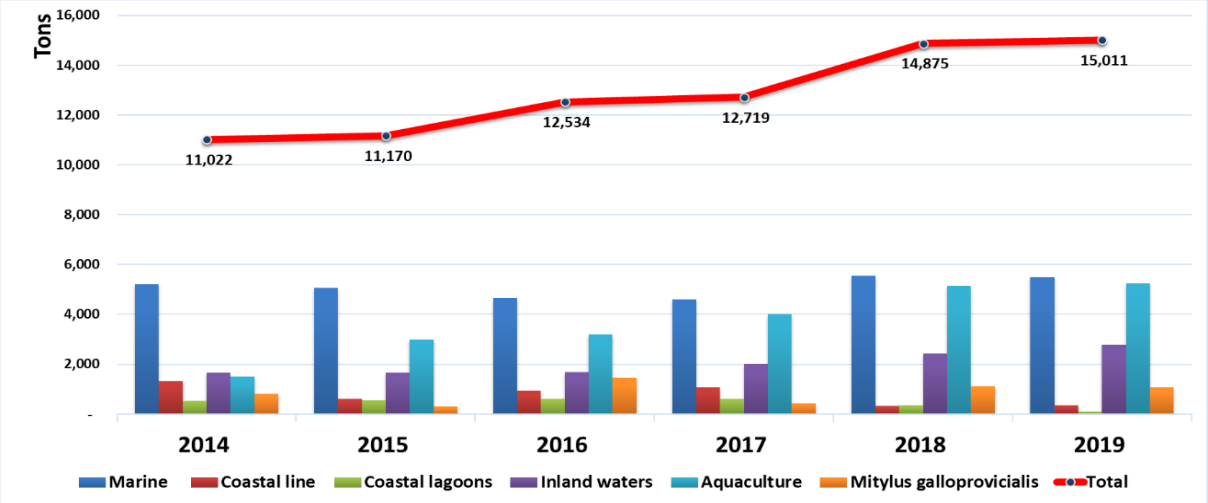
Source: FAO FishStat.

Impressive is the collapse of the sector in the period following the end of the totalitarian regime and the dramatic growth started at the beginning of the 2000s and still continuing.

The chart relevant to the above discussed fishery sector is again proposed here below because allowing to highlight the constant increasing performance of the aquaculture sector and the today almost equivalent value of the marine capture (and even overcoming it, if associated to the mollusc culture).

Aquaculture can effectively contribute to satisfy the market growing demand. In fact, aquaculture is the only food production sector with an annual growth of 7-8% per year. Responsible for such a result is in particular marine aquaculture that is better performing than the freshwater aquaculture.

Figure 2-10 Fish caught in Albania (2014-2019)



Source: Ministry of Agriculture and Rural Development

The stagnant or expected possible shrinking of the fishing activity will create new opportunities to further develop the aquaculture sector. Here below the production related to the main cultured species is presented.

Table 2-9 Aquaculture production in Albania 2013-2019 (tonnes)

Year	2013	2014	2015	2016	2017	2018	2019
S.bass	700	700	800	800	1000	1000	1000
S.bream	1500	1600	1600	1800	2300	2300	2600
Trout	500	500	600	600	700	1850	1729
Mussel	1000	1200	495	1450	430	1108	1075
Total	3700	4000	3495	4650	4430	6258	6404
Total Value ALL ('000)	831,064	798,481	515,453	1,680,402	2,021,500	2,752,850	2,817,074

Source: Hydra (2019)

The production, with a yearly slight increase, provides about 6,300 tonnes of fish and molluscs. The sea cages culture shows a production of 3,300 tonnes. The freshwater production of trout was increased to 1,900 tonnes last year due to a new cage farm in an artificial hydropower (H/P) lake. The total mussel production is about 1,100 tonnes[8].

Inland aquaculture BOs use intensive, semi-intensive, and extensive cultivation techniques to grow primarily trout, mussels, and carp. As far as the mollusc production is concerned, it is prevented from expressing its potential due to the existing ban on export and showing a plafond production with periodical negative fluctuations.

Concerning the freshwater aquaculture, its evolution during the last 15-20 years has been the consequence of the market demand. In general, cultured trout has had an increasing trend in recent years but then a shrinking took place, in particular the last year and the same is expected for the next future. The interest for the production of carp family fish has been decreasing and it is nowadays oriented to big size fishes (≥ 3.5 kg). On the opposite, the demand for marine aquaculture products has been growing whilst the trout production follows a fluctuating trend. According to the operators, the cyprinid culture sector can produce a large quantity of fish to satisfy the processing sector demand.

The four existing carp hatcheries would have an annual fingerlings production not sufficient to cover the assessed needs of about 8.4–9.2 million carp fingerlings per year to restock inland waters. Actually, rather than an insufficient production capacity of the hatcheries, the problem is with the sporadic nature, if not absence, of the restocking programmes. Accordingly, the possible need to upgrade the existing carp hatcheries has not yet come to the fore and the gap between the needs and the production capacity has dropped drastically, especially in the last 5 years. The aspect is relevant for what related to the sustainability of the diversification activities requiring the periodical restocking of the internal water basins.

A restocking program financially supported by the state budget focuses on the restocking with Ohrid trout *(Salmo letnica)* in the Ohrid lake (about 1.5 million in 2019) and carp fingerlings in Prespa lake (about 300,000 fingerlings).

Concerning the mollusc production, the production is largely fluctuating, annually ranging between 500 and less than 1,500 tonnes, as also shown in the above chart. It is worth to mention that the Butrinti site had in the past an important production capacity (over the 1,500 tonnes/year) progressively lost and today its production is likely lower than the production of the new marine mussel's farms. A series of factors are responsible for such an unsatisfactory performance of Butrinti site but also of the whole sector, better discussed below, in the Section 2.4.

Geographical distribution

The Albania map in the above Section 2.1.1 includes the location of the marine, brackish and freshwater aquaculture establishments.

Marine aquaculture is mainly developed in the southern Albania, in the Ionian Sea where 12 BOs are located between Vlora and Saranda.

[8] Data shall be considered approximate due to the important fluctuations in the production (for Butrinti plants, in particular) and the recording of landed quantities.

The trout aquaculture farms are located mainly in south-east and north of Albania, which is a highland area, hence trout is a good food source for the population and its farming ensures good incomes for the farmers from this area. The aquaculture of carp family fishes is located through central and northern parts of inland waters of Albania, mainly in the rural areas.

Concerning the molluscs culture, it is practised in the marine as well as in the inland environment. In addition to the historical production site in Butrinti lagoon, new mussel farms have been established in Saranda, Shëngjin (Lezha) and Durrës.

Level of product quality

Most of operators give great importance to the quality of their production, so showing awareness about the actual expectations of consumers, in particular from the EU market. In particular, the aquaculture BOs with a production oriented to the export have the activity certified according to the clients' requirements including Global Gap, British Retail Consortium (BRC), Antibiotic free or Aquaculture Stewardship Council (ASC).

To this purpose, some local BOs acquired familiarity with the quality of the production through the tutoring offered by foreign aquaculture companies and the commitment constantly ensured. Indicative to this purpose are some technical aspects that BOs take into account to ensure the high quality of their products. It is the case for instance of the quality of the water in terms of oxygen level and circulation as well as the optimal depth where cages are installed. Concerning density of fish within the cages, great attention is given to such parameter (biomass capacity). Some BOs try to ensure a lower density (e.g. 10 kg/m3 rather than 15 kg/m3) by using cages of larger size (e.g. a diameter of 40m and a depth of 15m). Further, attention is also given to the slaughtering method. Some, for instance use a mixture of ice and water in such a way that the fish die without being disturbed and without being damaged.

According to the opinion expressed by the BOs, great attention is also given to the adoption of the appropriate nutrition plans and to the import of the required fish feed. As also discussed in the Section 2.3 below, BOs have established good relationships with feed producing companies providing also consultancies on the different nutrition plans are obtained. To this purpose, some consumers' observations reported the improved quality of fish due to the absence of skeletal deformities compared with the recent past. Such kind of deformities were quite common in the traded fish at retail level just few years ago and it is known to be due to nutritional factors (in addition to infections, toxins, genetics and environmental factors).

Eventually, the logistic plays as well an important role on the quality of the products. To this purpose, BOs try to organise their product harvesting and dispatching process in time effective way, so that the following morning the fish harvested today is delivered to the foreign client. This is an important aspect providing an added value to the Albanian product compared with the competitors on the international market. Actually, the existing short value chain (see discussion in Section 2.3) does not require the long chain of refrigeration points, as it occurs in other countries. However, it is noted that, despite this, the product does not benefit of any prize at the retail compared with the imported fish.

2.2 MAIN PRODUCTS AND PRODUCT TYPES /CHARACTERISTICS

2.2.1 Marine fishery

The products from the marine fishery are presented in the following table associated to their economic importance based on the respective captured quantities for the year 2019 (those species for which no captures were recorded in 2019 are omitted).

Table 2-10 Products from marine fishery

Species	2019 (tonnes)	Species	2019 (tonnes)
European anchovy	**1227**	Mullets nei	**40**
Deep-water rose shrimp	**962**	Monkfishes nei	**32**
European hake	**731**	Atlantic bonito	**29**
European pilchard	**677**	Turbot	**23**
Surmullets nei	**373**	Megrim	**21**

Norway lobster	**213**	Common sole	**20**
Common octopus	**185**	European sprat	**20**
Common squids nei	**170**	Blue Crab	**20**
Jack and horse mackerels nei	**163**	Gurnards	**19**
Atlantic bluefin tuna	**156**	Marine fishes nei	**16**
Blue and red shrimp	**130**	Common dentex	**16**
Mantis Shrimp	**123**	European flounder	**10**
Bogue	**100**	Leerfish	**9**
Scomber mackerels nei	**97**	John dory	**9**
Common cuttlefish	**60**	Eledone spp.	**7**
European seabass	**60**	European conger	**5**
Gilthead seabream	**59**	Greater amberjack	**5**
Pandoras nei	**52**	Silversides	**4**
Aristaeomorpha foliacea	**48**	Striped venus	**4**
Caramote prawn	**43**	Groupers nei	**1**

Source: FAO – Fishstat J.

2.2.2 Inland fishery

The main products of the inland fishery are listed in the following table[9]. The exhaustive list is presented in Annex 6.

Table 2-11 Main products of the inland fishery

Order	Family	Species	Status	FB name	Name
Salmoniformes	Salmonidae	*Acantholingua ohridana*	native		Belushka
Anguilliformes	Anguillidae	*Anguilla anguilla*	native	European eel	Ngjala
Cypriniformes	Cyprinidae	*Aristichthys nobilis*	introduced	Bighead carp	Ballgjeri laraman
Cypriniformes	Cyprinidae	*Carassius auratus auratus*	introduced	Goldfish	Peshk i kuq
Cypriniformes	Cyprinidae	*Carassius carassius*	native	Crucian carp	Karasi
Mugiliformes	Mugilidae	*Chelon labrosus*	native	Thicklip grey mullet	Qefulli i dimrit
Cypriniformes	Cyprinidae	*Cyprinus carpio carpio*	introduced[10]	Common carp	Krapi
Cypriniformes	Cyprinidae	*Gobio gobio gobio*	native	Gudgeon	Mustaku i lumit
Perciformes	Gobiidae	*Gobius paganellus*	native	Rock goby	Burdullak
Mugiliformes	Mugilidae	*Liza ramado*	native	Thinlip mullet	Qefulli i vjeshtes
Mugiliformes	Mugilidae	*Mugil cephalus*	native	Flathead mullet	Qefulli i veres
Salmoniformes	Salmonidae	*Oncorhynchus mykiss*	introduced	Rainbow trout	Trofte ylberi
Cypriniformes	Cyprinidae	*Pachychilon pictum*	native		Skorti i zi
Perciformes	Percidae	*Perca fluviatilis*	native	European perch	Sharmak
Cypriniformes	Cyprinidae	*Rutilus rubilio*	native		Skort i bardhe
Perciformes	Blenniidae	*Salaria fluviatilis*	native	Freshwater blenny	
Salmoniformes	Salmonidae	*Salmo lumi*	native		Koran lumi
Salmoniformes	Salmonidae	*Salmo marmoratus*	native		Trofte njile

Source: FishStat – FAO (2020).

Concerning the main captured fish species in the major Albanian lakes, the following is noted.

- Shkodra lake: carp (*Cyprinus carpio*), bleak (*Alburnus Arburena*), roach (*Rutilus rutilus*), twaite shad (*Alosa fallax*) and smaller amounts of mullet (*Mugil spp, Liza spp*) and eel (*Anguilla anguilla*).

- Ohrid lake: bleak (*Alburnus spp*), the famous endemic trout or koran (*Salmo letnica*), belvica (*Salmothymus ohridanus*), carp (*Cyprinus carpio*) and eel (*Anguilla anguilla*).

- Prespa lake: bleak (*Alburnus spp*) and carp (*Cyprinus carpio*).

It is worth to mention that the koran culture is acknowledged to be a not for profit business due to the long time (between 3 and 4 years) necessary to one koran to reach the commercial size of 300 g. Accordingly, one Albanian and two North Macedonia fingerlings farms are financially supported by the respective state budgets through the corresponding ministries of agriculture in the framework of biodiversity protection initiatives. In such a context, fishermen used to sell the eggs to the hatcheries but the system is apparently changing with the selling of the adult breeder that hatcheries then release in the lake. Juvenile korans 5-6 months old are released in the lake, as restoking programme. Further, Pogradec area has been declared as a protected area and included in the "100 villages" programme with, as consequence the prohibition of whatever aquaculture activities in the Ohrid lake.

2.2.3 Marine aquaculture

The main products of marine aquaculture are gilthead seabream (*Sparus aurata)* and European seabass (*Dicentrarchus labrax*). Some farms are specialized in the fattening of gilthead sea bream and some others have

[9] https://fish.mongabay.com/data/Albania.htm
[10] In Albania common carp can be found in indigenous strain and introduced strains

combined production of sea bream and European sea bass. The production is tailored to satisfy the European market demand for fresh fish ranging from 300 g fish to 400, 600, 800 g and up to 1 kg per fish.

Further, some BOs are trying the differentiate their presence on the market by introducing the culture of new species such as the Meagre (*Argyrosomus regius*) to be then proposed on the market.

Concerning the fish size, the producers try to organise the production in such a way to be able to respond to changing demand from the market. It is for instance the case of the recent increasing of the number of cages some operators have been implementing to satisfy the market demand for big fish (the duration of the production cycle increases and therefore more space – cages – is necessary to accommodate the fingerlings of the new cycle). Actually, the production takes into account the different demand related to both the size and the type of the fish in three main zones. The northern part of Albania prefers fish over 400 grams and mainly seabream, sea bass and grey mullet (M*ugil cephalus*). The southern part prefers fish of 200-300 grams bodyweight, while the part of the capital prefers fish 300-400 grams.

Efforts are accorded to well understand the market requirements and to align the production and packaging procedures accordingly.

In the following table, the main species and corresponding quantities are presented.

Table 2-12 Products from marine aquaculture

Year	2013	2014	2015	2016	2017	2018	2019
Sea bass	700	700	800	800	1000	1000	1000
Sea bream	1500	1600	1600	1800	2300	2300	2600
Total	**2200**	**2300**	**2400**	**2600**	**3300**	**3300**	**3600**

Source: Hydra 2019.

The production is expected to grow in the next future following the approval of the AZA zones.

2.2.4 Inland aquaculture

The main cultured species are presented in the following table.

Table 2-13 Main freshwater culture species

Common name	Species	Species origin	Main destination
Rainbow trout	*Oncorhynchus mykiss*	Introduced	Domestic
Common carp	*Cyprinus carpio*	Indigenous/introduced[11]	Domestic
Silver carp	*Hypophthalmichthys molitrix*	Introduced	Domestic
Bighead carp	*Hypophthalmichthys nobilis*	Introduced	Domestic
Grass carp	*Ctenopharyngodon idellus*	Introduced	Domestic
Ohrid trout	*Salmo letnica*	Indigenous	Domestic[12]

Source: Authors' personal data.

The rainbow trout (*Oncorhynchus mykiss*) is cultured in raceways and more recently in lake-based cages in the artificial lake of the hydro-electric power plants; a new type of activity that proved to be successful and productive[13].

Cyprinid species are cultured in ponds and they are sold on the market according to the prevailing demand now looking for bigger subjects with individual weight between 3 and 3.5 kg.

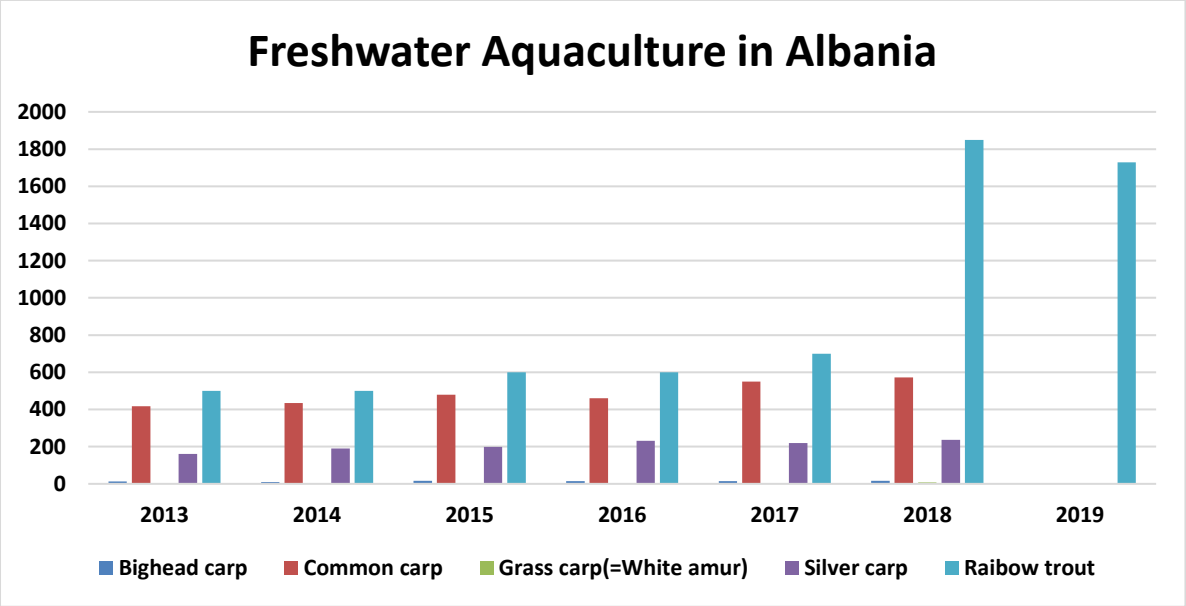
[11] According to variety

[12] http://www.fao.org/fishery/countrysector/naso_albania/en

[13] Hydra NGO, 2019.Aquaculture monitoring programme in Albania. Tirana. Albania

In the following table the production quantities for trout are presented.

Table 2-14 Products from inland aquaculture



Source: Hydra 2019.

With the exception of the trout, the other species registered limited increasing in the production. The trout is actually the most appreciated product, but its tremendous increasing in 2018 is due to the entry into production of Kiliç plant in Vau i Dejes area.

2.2.5 Molluscs aquaculture

The activity focuses the production of mussels (*Mytilus galloprovincialis*). From the organoleptic point of view, the Albanian production offers diversified products according to the environment where mussels are cultured. In fact, whilst in the historical plants of Butrinti lagoon the mussels grow in brackish water, in the other three mussel farms locations of Saranda, Durrës and Shëngjin the molluscs grow in the open sea water.

The farm type is extensive with longlines. The following table presents the production over the period from 2013 to 2018. Before the 90s the annual production was even higher than today. The production is addressed exclusively to the internal market due to the sanitary ban imposed by the EU.

The below table presents the mussel production during the period from 2013 to 2019.

Table 2-15 Mussel production (tonnes)

Year	2013	2014	2015	2016	2017	2018	2019
Mussel	1000	1200	495	1450	430	1108	1075

Source: Hydra 2019

From the available data it arises that about 70 concrete facilities are established for the cultivation of Mediterranean mussel in the Butrinti lagoon, which are used by 19 private subjects. Most of them are old mussel cultivators, who have been practicing this activity for more than 20 years. It is noted that most of them have not only tried to improve the available facilities, they also are trying to increase the production, despite the trade restrictions. The 19 subjects have from 1 to 10 concrete facilities in use as follow:

Table 2-16 mussel farms tenants in Butrinti lagoon

Subject Name	Owner Name	No. of Farms	Farms in use	Expectation (tonnes)
Vojsava Hysi	Vojsava Hysi	4	1	10

Hysein Mane		4	4	95
Aleksander Misto		10	6	160
Behije Cipi		1	1	7
Gezim Hajdini		1	1	20
Adem Uruci		1	1	20
Qendro Shpk	Qazim Qendro	2	2	10
Ferid Kushova		1	1	10
Gjika shpk	Fredi Gjika	10	10	110
Fatmir Cako		2	2	20
Artur Koci		1	1	5
Aleksander gjika		6	6	115
Perien dervishi		1	1	25
Artan Poda		1	1	22
Fleton Kumburi		1	1	6
Sokol Golaj		1	1	30
Adriatik bufi		1	1	40
Viktor Sa dikaj		1	1	20
Luan Uruci		1	1	20

Source: Hydra (2020)

In addition, the following table reports about some rented farms with still valid contract, but not in production.

Table 2-17 Selected rented farms

Subject Name	Owner Name	No. of Farms	Farms in use	Rent out
Kreshnik Mucollari		1	0	
Koral	Elidon Ruga	1	0	Yes
Alfa		3	0	
Nazif Buzo		1	0	
Arian Rexhepi		4	0	
Artan Idrizllari		1	0	
Harillaq Vjerri		2	0	
Magllara				
Artur Sula				

Source: Hydra (2020)

It is considered that MARD should analyse this issue and take the appropriate measures. The goal is that these farms, which are leased by the state, should be operational in order to ensure the continuous production; it is pointless to keep these farms unused.

The above-mentioned different environments of the mussel farms provide a further commercial differentiation. In fact, a more regular production throughout the year is now possible because the Butrinti production covers the period April-May to June-July whilst Durrës and Shëngjin productions are more tardive covering the period June to November.

2.3 ACCESS TO MARKETS, INPUTS AND SERVICES

The market trend of fisheries products indicates that about 25-30% of the production is traded in the local market, something less in the region where less attractive prices are offered than in the European countries and the remaining is oriented to the export to EU market. The local market is preferentially provided mainly with the products from artisanal fishing which sell their fish to restaurants taking examples of countries like Italy or Greece to supply tourists mainly with the freshest products.

2.3.1 Domestic market

The domestic market for fishery products is progressively growing supported by the increasing interest of consumers to better integrate their diet with fish. In fact, Albanian consumers have traditionally preferred meat and poultry products, whereas fish was consumed to a limited extent mostly in the coastal regions of the country.

The access to the domestic market of the producers mainly recognises the following marketing channels,

- Specialised fish shops, where high quality frozen or even live fish are sold.
- Restaurants. This channel is in particular preferred by the specialised restaurants on the seaside and at large lakes looking for a direct supply from the fishers. Further, if vertical integration exists, the restaurant offers its own fish production.
- Marine and freshwater fish are sold on the street and roadside on push carts, from car boots or on provisional stands.
- Wholesalers are part of the value chain but such channel is much less used due to the more advantageous economic conditions wholesalers find with foreign suppliers making import operations. They are actually the main operators importing fresh fish to complement the local production of fishery and aquaculture.
- Fish markets, similar to the wholesalers, play a limited role on the domestic value chain, at least for the time being. Actually, a first one has been recently completed in Shëngjin with the public funds, another one is under construction in Vlora and other two are planned. Suppliers of these markets are expected to be the fishermen and the main buyers will be the local retail fish shops and restaurants. Great expectations are with MARD in relation to the contribution such markets will provide to the circulation of the information, the development of the relationships between producers and traders, etc.
- The informal trade is still an existing practice to access the market but the BOs are in this case exposed to major risks in the relationship with the buyers (e.g. delayed payments / suffering credits).

In few words, the domestic trade of fishery products follows all possibilities to attract the client. Typical is the case of the trout production that, in addition to the selling to wholesalers, is sold live or frozen at the farm gate to passers-by, occasional drop-in customers, in restaurants attached to the farms and also to partner fish shops and restaurants.

The available data do not allow to indicate the quantities of the captured marine fishing (professional and artisanal) and of the marine aquaculture production put on the domestic market. Nevertheless, it can only be accepted with good level of approximation that most of the captured marine fishing and the least of the marine aquaculture production are sold on the domestic market.

Farmed trout is mainly sold on the domestic market with modest quantities exported with the exception of the above-mentioned Turkish company Kiliç exporting its whole production. Despite the development of the aquaculture sector in the last several years has followed the domestic consumer demand showing a constant growing trend, Albania imports marine aquaculture products, mainly sea bass and seabream, to fully cover the domestic demand.

Tirana is the main marketplace and it absorbs about 70% of the marketed fish. During the summer, restaurants on the seaside also express an important demand. The most traded species from aquaculture are sea bream, sea bass and trout (and imported salmon).

Concerning the market infrastructures, the government programme to build a series of wholesale fish market has been launched. The construction of the first one in Shëngjin was completed and the facility is expected to become operational. Then, the wholesale fish market in Vlore is under construction and the procedure to build additional two ones are in the pipeline.

2.3.2 International market

Concerning the export, the main concerned sector is the marine aquaculture. A total of 10 marine aquaculture farms are authorised to export their products to EU market[14]. On the opposite, the export of marine captures is marginal and the production from freshwater fishery and aquaculture is almost exclusively oriented to the domestic wholesale market (one only trout farm exports the whole production to East Europe countries).

Overall, the aquaculture export has increased and some major marine aquaculture operators are almost totally oriented to the export market, in particular the EU market, due to the limited size of the domestic one and to the more interesting prices offered in the EU countries. Usually, the client is represented by an international platform further providing to the distribution of the products. The preparation for shipment of the product is carried out at the aquaculture farm through a simple manipulation of fresh fish only involving the sorting, icing and boxing (the same applies also to products destined to the domestic market) and then proceeding to the shipping usually making use of the services provided by professional transporters.

Only some major aquaculture operators associate also the processing capacity and the distribution of the product to their own fish shops and restaurants in the framework of a vertical integration of the business.

The reference market is a medium-high quality market oriented to the Mediterranean countries (i.e. Italy and Spain) where the products are appreciated. Other markets (e.g. Morocco, Peru) are difficult to be penetrated due to the price competition and the quality of the products declared to be inferior to the ones produced in Albania.

In general, BOs prefer to sell the production to a limited number of buyers selected according to their experience on this type of activity. Contacts with customers are mainly established through the fairs and to a less extent through websites.

BOs have in general a good perception of the market and are constantly looking for opportunities in new markets. For some of them, for instance, the South America markets seem to offer good opportunities. Seldom market intelligence is required to specialised companies; most of the times the activity is carried out by the company management or by staff internal to the company.

2.3.3 Relationship producer-buyer

Different modalities regulate the relationship between the producer and the buyer. In the international market, whenever the producer exports his products, a formal contract is agreed with the buyer where all supply conditions are stated (e.g. quantities and their split delivery and schedule, price, penalties for breaches, etc.).

In particular, when dealing with foreign clients, the negotiation of the supply offers the opportunity to visit the BOs farms and to get a first-hand opinion of the local working conditions and quality of the production.

The common opinion among the BOs, based on their experience and production capacity of their enterprise, is to have long lasting commercial relations with a limited but consolidated number of international buyers. This approach leads to very smooth relations between producer and buyer and even to special arrangements such as for instance early payments, regardless of the fact that the goods are not yet fully prepared or waiting to be prepared.

In the domestic market the use of the above-mentioned contracts is the usual modality when the producer deals with big processing companies. Otherwise, informal trade based on agreements, mutual trust and payments at terms is still an existing practice to access the market. However, in this case the BOs are exposed to delayed payments sometime turning into suffering credits. It is also evident the impact such situation can have on the fiscal contribution of the sector to the public budget and the financial sustainability and investment capacity of BOs.

Some specific aspects impact the supply in the domestic market. According to some producers, different quality of aquaculture products is not acknowledged at trading level where the price is unified. To this purpose, some aquaculture operators claiming a higher product quality have introduced a product label to differentiate it from the competitors but this is not appreciated by the traders where the practice is to mix products with different origin, quality and price in the attempt to maximise the profit.

[14] https://webgate.ec.europa.eu/sanco/traces/output/AL/FFP_AL_en.pdf

A particular aspect is represented by the relationship of the producers with all other actors of the chain when the producer owns quality certifications (e.g. Global GAP). In such a case, the certification protocol usually obliges them to establish business relationship with companies having a similar status.

The definition of the price with foreign clients is based on the international price of the concerned product (e.g. stock exchange, international auctions) whilst in the domestic market, considering the limited circulation of market information, the price is determined according to the local trend and the negotiation capacity of the parties. The price of fishery products is also influenced by the seasonality of the captures. In the case of the freshwater aquaculture, the sector is influenced by the production strategies of one major foreign player with high production capacity in the plants located in the Vau i Dejës area.

In the case of the mussels, the product price is determined based on market competition. To this purpose, it is noted that dumping practices are also used with a negative impact on the whole compartment. Such deleterious practice easily finds space in particular when there is lack of coordination among producers and sharing of a common development strategy.

The payment at terms (e.g. at 30/60 days) can be a problem for the producer, in particular for the small ones, due to the consequent limited liquidity to pay the supply of the fish feed that it is generally required to be prepaid (at least until the producer has been able to create a company positive record).

2.3.4 Specific aspects

In an international market highly competitive with aggressive competitors also benefitting from specific support programmes implemented by the respective governments, Albanian BOs feel to be in a disadvantaged position. The fishery sector policy shall take into account the matter. This is the opinion often expressed by the BOs when focusing on their presence on the international market.

2.3.5 Access to services

Concerning the official controls, BOs are submitted to the controls carried out by the fishery inspectors from the MARD-Directorate of Fisheries and Aquaculture Services and by the National Food Authority (NFA) inspectors.

The reorganisation of the veterinary service led to the improvement of fishery sector of MARD as well. The number of fishery inspectors, expected to have an education background (bachelor) in Aquaculture, Animal Production or Veterinary, has been increased to 29 units but at present only 21 are enrolled (8 positions are vacant). They implement controls on board and at dock to verify the compliance with the legislation regulating the fisheries activity.

The strengthening of the human resources has been allowing the improvement of the fisheries monitoring. Observers are in charge for monitoring and provide information on catches, the biological status of stocks and the management of marine resources as foreseen in the amended Fisheries Law. Further, the statistics for vessels over 12 metres are collected from logbooks submitted to inspectors and the approval of a regulation on collection, management and use of data in the fisheries sector contributes to the scope. Nevertheless, it is noted that the fisheries service is not yet in line with the fishery sector strategy. Progress has been recorded also for what related to the organisation of the markets and the sale of fishery and aquaculture products following the approval of two regulations.

The NFA inspectors are instead responsible for all hygiene and food safety related controls. Most of interviewed BOs stated to receive one inspection per month and to have never been sanctioned. Only in one case it has been declared that inspections are periodic (2-3 times a year). This is to some extent a surprising condition however compliant with the provisions of the EU Regulation on Official Controls[15] where the risk assessment can be carried out on the food sector rather than on each FBO. Hence, the frequency of inspection becomes the same for all FBOs operating in the same food sector.

The veterinary assistance to the aquaculture farms is provided by private practitioners. However, it is noted that some of the BOs consider insufficient the availability of veterinary service to protect the fish health and to provide

[15] Regulation (EU) 2017/625 of the European Parliament and of the Council of 15 March 2017 on official controls and other official activities performed to ensure the application of food and feed law, rules on animal health and welfare, plant health and plant protection products…[omissis]…

specialised consultancy. Accordingly, it is preferred to have the service delivered by foreign veterinary professionals upon request for consultancy.

As far as the service related to the certifications is concerned, BOs reported that the foreign companies providing the certification services also associate the related training and monitoring services.

Securing land property rights and water concession implies giving marine and freshwater aquaculture companies the certainty that the sites they will occupy for aquaculture operations will not be taken away before they realize the benefits of their investment. Tenure of an aquaculture site should be secured to promote long term investments and it requires the definition of water and land sites available for aquaculture solely (that in turn requires the interinstitutional coordination and decision making). However, the long-lasting issue about land property is improving, and this could contribute to increase the capacity of BOs (the smaller ones in particular) to access to credit and finance.

As far as the access to financial services is concerned, most of BOs maintain business relations with the bank sector to finance their activities. Nevertheless, the bank system is considered not very supportive and the financing conditions applied not very convenient. This aspect directly impacts the competitiveness.

2.3.6 Access to inputs

The procurement of different material necessary to fishery sector and all aquaculture farms such as the cages, ropes, nets, floats etc. is achieved with the import from EU countries. To ensure the renewal of consumable material (nets in particular) in the marine aquaculture plants is a costly periodical maintenance operation to the achievement of which the BOs in general opt for high quality material and seek for financial support from the bank system.

The fishing vessels maintenance opportunities in Albania have improved compared with the past, so decreasing the need to take the vessel to shipyards in foreign countries. This is a critical aspect not only for the effectiveness of fishing activities and the protection of the environment but it is also relevant to the occupational safety.

Main production inputs in the aquaculture sector concern the supply of feed fish and fingerlings. They will be briefly discussed here below.

No fish feed production plants have been established in Albania, so far and the most common supply markets are Italy and Germany where certified and good quality suppliers are (this is a relevant aspect for most of BOs that being part of the Global GAP certification are obliged to get the inputs from certified Global GAP centres). Accordingly, all aquaculture production operators (marine and freshwater) are obliged to import from abroad the fish feed with the consequent impact on the production costs. The fish feed supply is usually seasonal in order to adjust the diet formulation to the climatic conditions (e.g. winter feed is richer in vitamins so that the fish is more resistant to the cold season and improve the fat deposit). Industrial feed for trout is imported through the hatcheries own channels from Greece, Italy and France. To this purpose, it is worth to mention that at least one animal by-products processing plant in Albania produces animal origin mill that could possibly be used in the preparation of fish feed (and at present it is exported just for such a purpose). In addition, small Cyprinids from natural lakes, not sold for human consumption are also used to feed trout. It is worth mentioning that using raw fresh or frozen fish to feed other fish is prohibited within the EU.

All interviewed BOs expressed satisfaction for the quality and correctness of the service received. Some of the operators also reported to have received support from feed supply companies during the pandemic period, in addition to the regular advisory service on technical matters based on personal contacts.

Concerning the fingerlings for marine aquaculture, no hatcheries exist in Albania and the most common supply markets are Italy and France. BOs pay attention to fingerlings origin because preferring the ones with Atlantic origin. In fact, such fingerlings coming from oceanic areas are produced at a minimum temperature of 6°C while the minimum temperature in the Adriatic Sea and Ionian Sea is about 12°C. Therefore, they are fed even in winter and show a better growth rate.

In the case of freshwater aquaculture fingerlings are often produced internally to the fish farm with a quota periodically imported from abroad. A special condition exists in the case of the reproduction of the koran. As mentioned, 3 fingerlings farms are for the time being responsible for their production to restock the Ohrid lake and they are subsidized by the Albanian and North Macedonia state budget.

Among the inputs' critical aspects, the following is noted:

- The access to veterinary medicinal products. Producers are often forced to find these medicines in other countries such as Italy or Greece and this is a constraint impacting the aquaculture sector.
- The suspension since 2017 of the issue of business activity licenses associated with the delayed approval of the AZA areas is considered a major constraint to the development of the aquaculture sector.
- The absence of the marine fish hatcheries in Albania. This bring the series of the problems related to aquaculture productions cost and consequently bad position in the domestic and foreign market of their product.

2.4 KEY FEATURES AND CHALLENGES OF THE SUPPLY CHAIN SEGMENTS: FISHERY AND AQUACULTURE

As discussed in the previous sections, two main key features characterise the fishery and aquaculture sectors, namely the short supply chain and the vertical integration developed in some cases by the BOs.

The fishery sector primary production, represented by the fisheries and the aquaculture, does not have relevant connections with the fish processing sector. Actually, this aspect is not only specific of the Albanian reality but it is also common in the world where such relationships are difficult to establish. The processor sector is disconnected from aquaculture or fisheries due to the different channels of supply used by the processing industry but also due to the very large existing gap in economic and capital terms separating them from the other fishery sectors. One exception to this condition is represented by those entrepreneurial realities where processing companies also have fishing licenses and their own fishing boat or fleet.

Concerning the major challenges impacting both sectors (but also the fish processing sector), the difficulty to find manpower, and even more the professional one, is mentioned by most of BOs. Fishing vessels crew, for instance, include an important number of foreign people, with a prevalence of North African workers. Two elements are considered to contribute to the problem. The first one is the important trend of people leaving Albania to migrate in other countries (often with all the family). Being Albania a country with a small population of less than 3 million people, a migration flow can easily impact the availability of work force. The second one concerns the strategic position of Albania, close to the EU market, and the lower cost of the labour force compared with the EU zone. Accordingly, many of European industries, in particular producing for third parties, after having delocalised in more distant countries such as the Far East have been now moving back again and establishing in Albania with the consequence of increasing the offer of job opportunities and competing with the local enterprises. Eventually, a third reason is the informal (and illegal) work sector.

Eventually, as a further challenge impacting the sector, it is worth to mention that, according to most of interviewed BOs, some complex bureaucracy procedures (e.g. VAT refunding, custom clearances on import) and the access to and conditions of bank loans are the main issues conditioning the local business and consequently impacting the sector performance.

Here below specific aspects are presented for the fishery and aquaculture sectors, separately, and for the related compartments.

2.4.1 The fishery sector

The sector benefits of some key features providing a competitive advantage:

- The vertical integration developed by some of the major players allows the development of scale economies with the ultimate result of accessing the market from at least a competitive position (if not a predominant position).

In the fishery sector different elements impact the potential growing of the fisheries:

- Depreciation of fishing vessels. If depreciation is a normal process to which all goods are exposed, the matter becomes problematic when the good, such as the fishing vessel in our case, is not used or use a limited number of days during its life period (as above discussed). Considering the importance of the investment in the business plan of the company to replace a fishing vessel or submit it to extraordinary maintenance, it is intuitive the financial impact such operation can produce on the company.
- Artisanal fishing does not benefit of the support for inputs from domestic policies (e.g. fiscal facilitations

on fuel).

- The rules regulating the fishing activity aimed to neutralise the impact of the overexploitation of marine species undermine the sustainability of the fishery activity, in particular when implemented by small BOs practising the artisanal fishing.

2.4.2 The aquaculture sector

A challenge common to the marine finfish and molluscs aquaculture is represented by the pending approval of the Allocated Zone for Aquaculture (AZA). Actually, following the adoption of Law 103/2016 On Aquaculture, areas destined to aquaculture development shall be approved. To this purpose, it is noted that the lack of their definition has hindered the further development of this sector whilst their approval is assessed to promote the establishment of new plants and to fully exploit the production capacity of the existing ones (according to some assessments, it could mean to multiply by four the present production).

Despite the performance recorded, the existing potentiality and the consequent opportunities the aquaculture sector still offers, the licensing of new activities has been stagnating until 2017 with only two licenses issued (one in Vlora and another one in Vau i Dejës) and since then no new activity permits were issued. The apparent lack of interest of new investors could depend on the constraints and challenges here discussed.

A further challenging element common to the sector is to contain the production costs within the limit to be competitive on the market. To this purpose, negative factors are the following:

- The lack of or the insufficient infrastructures and capacities in the ports such as repair ladders and shipyards, makes the maintenance of the aquaculture support boats difficult and ultimately impacting the production costs16.
- The availability of veterinary service to protect the fish health is insufficient. Some BOs make recourse to the services of veterinary professionals coming from foreign countries upon request for consultancy.
- Lack of seed production and fish feed in the country. The import of the supplies ensures the due quality and safety but it contributes to increase the production costs and to expose the producers to certain additional risks. To this purpose, the example is offered of one company from the marine aquaculture compartment in partnership with a foreign one where the latter supplies internally produced fish feed and fingerlings. The cost of the fish feed would also be an important factor contributing to the impoverishment of product sales that led to the shrinking of the trout production.
- Insufficient support of the national policies to the domestic production compared with the programmes implemented by other countries on behalf of the competitors of the Albanian BOs who then feel themselves in a disadvantaged position in the international market.

Among the key features of the marine finfish aquaculture plants, the following is noted:

- The high technological level of the major farms. The daily activity is supported by production management systems based on software allowing the monitoring of the animal health, the density and the total live body weight within each cage, the implementation of the nutrition plan, the elaboration of gathered data for further analysis, the projections of expected biomass at a given time per cage, costs and profit, etc.
- Some of the BOs have strong connections with foreign operators (Italian in particular). This aspect is of particular importance for the support received in the technological aspects of the production and the supply of inputs and services, but also to have better opportunities to access the foreign markets.

Among the challenges the compartment faces, the following is highlighted:

- The lack of locally produced fish feed and fingerlings, as already discussed above.

Concerning the inland finfish aquaculture plants, some of the compartment key features are:

[16] The issue is also of concern for the fishery operators often obliged to take their fishing vessels to neighbouring countries for maintenance operations.

- The richness of the freshwater resources nationwide allows to further develop the compartment (however, market issues are to be considered).

Among the challenges the compartment faces, the following is noted:

- The market for freshwater aquaculture products is not recording a great performance due to the fluctuating market demand. It is considered that opportunities would exist for the development of the recreational fishing associated to the aquaculture. Actually, there are interesting opportunities in recreational fishing and fishing tourism. If developed, these opportunities could generate more income than the artisanal fisheries at present. Sports fishing, for example, is a huge global industry. Slovenia's[17] fisheries tourism is built around marble trout. In Iceland, sport fishing yields more than US$90 million annually[18].
- Inland waters and their fish fauna are often exposed to urban, industrial and agricultural pollution.
- The consequences of generating hydropower include daily and seasonal fluctuations and sometimes radical reductions in the water level in artificial lakes[19];
- Unplanned, unpredictable and careless use of water of AWRs results in excessive drainage before fish have matured and been harvested.

In the mollusc aquaculture sector, the major considered key features are the following:

- The availability of mussel farms located in both inland waters (brackish lagoon) and the open sea allowing the offer of different products and the extended presence on the market due to the different product harvesting periods.
- In the case of at least one of the two open sea plants, as indicated by the analysis carried out by the BO, the water can be classed "A", so allowing to propose such mussel for direct human consumption (without need of depuration). This aspect, if correctly interpreted, vests an importance well beyond the interests and the business of the single farm. Actually, it shall be considered as the cornerstone of a strategy to relaunch the production of Butrinti site, if such will would exist.

The main challenges the sector faces are presented here below:

- The still existing EU import ban imposed following an epidemic of cholera in the years 1995-1996.
- The unfavourable market conditions impacting all mussel farms.
- Lack of or insufficient maintenance of the Vivari channel (ensuring the exchange of water with the open sea) impacting all mussel farms located in the Butrinti lagoon.
- Specific factors depending on the lacustrine environment also in this case impacting all mussel farms located in the Butrinti lagoon.
- The deleterious competition among the Butrinti producers even leading to dumping practices with an impact on the whole sector.
- The limited or no use of the depuration plant in Butrinti due to the incapacity to make the depuration treatment economically sustainable.
- The transport modalities for the harvested mussels in need of improvement, as acknowledged by the BOs.

2.4.3 Socio-economic aspects

Despite the space for further improvement, the competitiveness of aquaculture primary producers is proved by the above discussed data on production in general showing good growing trends. However, the characteristics of the aquaculture products trade already discussed decouple the aquaculture primary production from the processing sector, so not being conducive of any possible significant impact on the latter. The short supply chain generally characterising the whole fishery sector facilitates the primary producers in protecting their interests, allowing them to have a more effective role in the definition of the price than in the case of longer supply chains.

As far as cooperation between BOs, the following is noted.

[17] www.alpflyfishing.com and www.fishingbookers.com.
[18] Economic Research Institute, University of Iceland.
[19] It is also here reminded the threat such generating hydropower plants represent to the biodiversity, as it is the case of the European eel in the Vjosa river.

- Cooperation between aquaculture producers is limited. Actually, it usually takes place between operators having the same level of compliance to the quality and safety standards. In addition, cooperation can be provided by the major players on behalf of the small operators (e.g. supply of fish feed and fingerlings), not considered as their competitors.
- Good cooperation is established between inland fishers and aquaculture producers as it is the case of the stocking of natural and artificial lakes with cyprinid species. In fact, some of these cyprinid family species do not reproduce in the natural environment (e.g. Silver carp, Grass carp and Bighead carp). The finding is of particular relevance in view of further promoting the exploitation of inland water resources.
- Thanks to the legislation clearly defining the limits from the shore over which the fishing vessels can operate, no conflicts between marine fishers and aquaculture operators (being the cages placed within such limits) have been recorded, so far. However, they are concerned about the fish decreasing in the bay of Vlora at least partially due to the pollution caused by the cultivation practices in the area.
- Fishing and aquaculture operators benefit of a certain degree of cooperation with the fish wholesale BOs. Actually, the latter maintain a regular flow of communication with the suppliers to advise them about the type of products the market is expected to demand (e.g. the harvesting of a given fish size). Cooperation is also established among fish wholesalers in order to support each other in satisfying the clients demand, so maximising the products retailing.

Concerning the human capital, the fishery primary production sector mainly offers work opportunities to men (in particular for the activities at sea). Women find employment opportunities in specific enterprise sectors such as the warehouses where the product is prepared for shipment (e.g. sorting, packaging, etc.) and the administration. However, in limited measures women are also employed on active fishing (in particular on-board of the family fishing vessel) and on the fish farms. Further, women are indirectly employed when engaged in ancillary services such as fishing net repair and maintenance and inland aquaculture.

2.4.4 Existing issues related to waste management and environmental impact

Aquaculture waste

The intensive farming of marine and freshwater finfish involves the supply of high-quality artificial feeds and medication with consequent impacts on the environment, mainly because of the release of organic and inorganic nutrients and the release of chemicals used for medication. These impacts tend to be the most severe in areas with poor water exchange.

Further, marine fish farm waste affects not only the area surrounding and directly affected by the effluent but can also alter a wider coastal zone at different ecosystem levels, thus reducing the biomass, density and diversity of the benthos, plankton and nekton, and modifying natural food webs. Under extreme conditions the consequences are such to impact the fish farm itself.

To this purpose, some preventive measures are foreseen such as the preparation of the Environmental Impact Assessment as part of the procedure for the issue of an aquaculture license. Also some farming management procedures adopted by the BOs to improve the quality of their products contributes to mitigate the impact of the waste. It is the case of the decreased density of the biomass within the cages (also beneficial to the animal welfare) and the adoption of criteria for the selection of the marine site where to park the cages aimed to prefer places with good sea current and appropriate water depth (however compliant with the legal bathymetric limits).

As far as the waste from freshwater aquaculture is concerned, no plans exist for the treatment of the farm effluents.

Biodiversity protection

Actually, the fishery sector is facing new challenges the impact of which goes beyond the sector context. It is for instance the case of the relatively recent appearance of the blue crab (Callinectes sapidus). The crab, native to the waters of the western Atlantic Ocean and the Gulf of Mexico, is considered an alien (because voluntarily or involuntarily transported by men) and invasive species (because able to generate an impact, even serious, on the local environment including the endemic animal populations). Initially detected in the lagoons where it heavily impacted the local eco-system, it is now found also in the open sea. Its presence is a challenge for the biodiversity by eating fish eggs and young fish with direct consequences on the capture rate of fishers already facing the serious decreasing of natural resources in the Adriatic Sea. On the other hand, their presence in open sea

represents a possible hazard to the functioning of the fishing nets easily cut by their powerful claws. Eventually, its impact contributes to challenge the income of fishers, the artisanal ones in particular, the biodiversity and the capacity of the fishery sector to supply raw material to the domestic fish processing sector.

Encouraging is the finding that 20 tonnes of blue crabs have been captured in 2019, for the first time. Such an initial interest of the fishery sector could pave the way to the success of promotion measures aimed to develop a niche market.

CHAPTER 3 FISH PROCESSING INDUSTRY

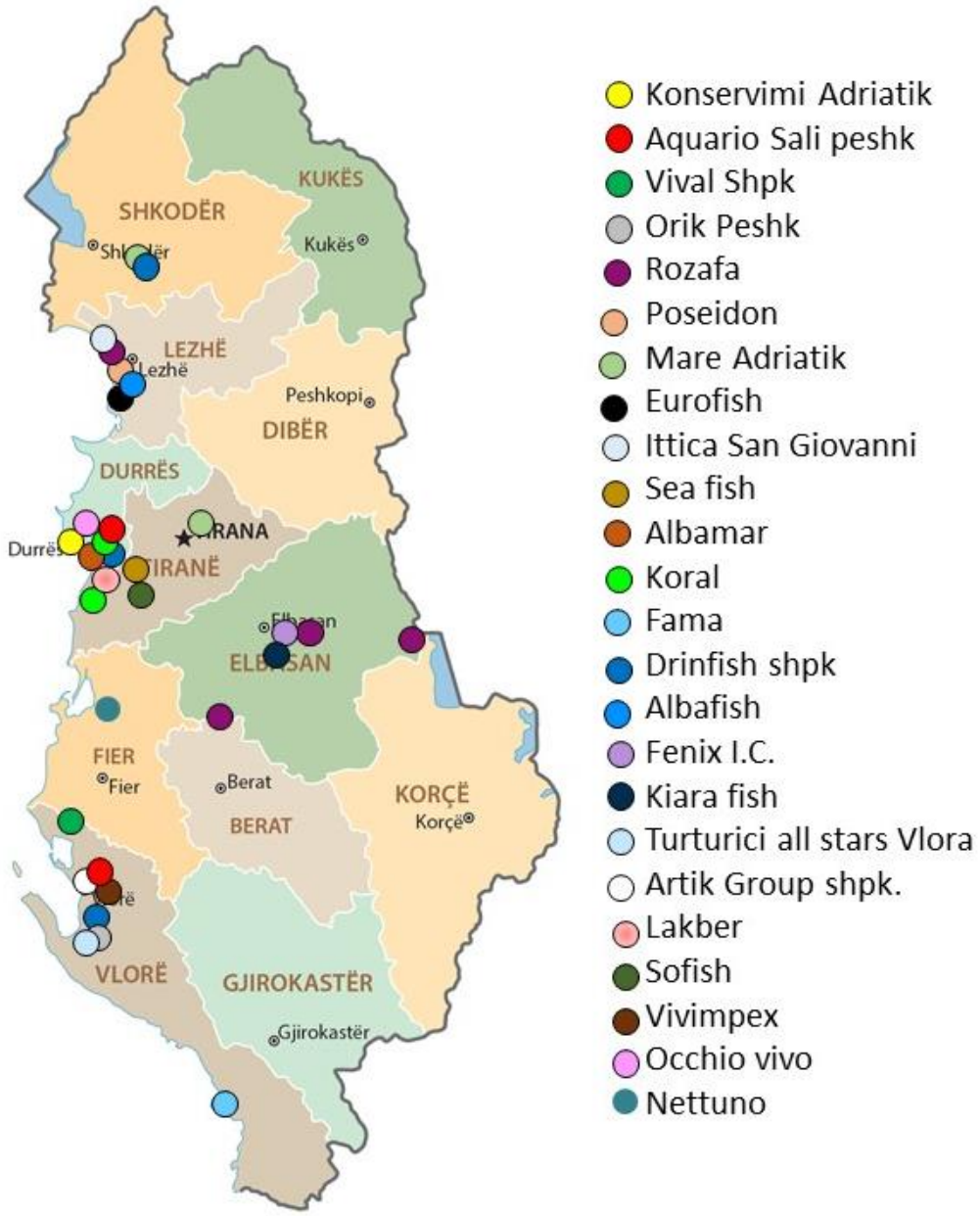
3.1 STRUCTURE OF THE INDUSTRY

3.1.1. Number and distribution of the establishments

Over the years several tens of fish processing plants of numerous species of processed fish products were established. There are 34 processing companies distributed in the areas of Shkodra, Shëngjin, Durrës, Elbasan and Tirana with the main hubs represented by Elbasan, Lezhe, Durrës and Sarande.

The distribution of the processing plants, as visualised in the below map, is mainly concentrated in the areas near the main fishing ports. In addition to the proximity to the ports, several other factors drive the entrepreneurial decision about the emplacement of the processing plants as it is the case of the logistics facilities (the road network in particular), the potential availability of manpower and the regularity of distribution of the public utilities.

Figure 3-1 Map with the location of the fishery processing plants



Source: Elaboration by the Authors

3.1.2. Size and capacity of establishments

The following table presents the size structure of the fish processing sector associated to some other key parameters.

Table 3-1. Size and categorisation of the main fish processing plants

Category	Company	Opening date (year)	Production (t/year)	Capacity (t/year)	Capacity saturation (%)	No. of employees
Big	Rozafa	1992	3,730	15,550	24	1,300
	Euro Fish	1997	1350	2,000	68	700
	Koral Fish	1994	700	1,500	47	400
	Poseidon	1996	900	1,000	90	400

	Mare Adriatik	1995	740	1,000	74	370
	Nettuno	2014	480	960	50	350
Medium	Konservimi Adriatik	1988	320	640	50	250
	Acquario Sali Peshk	1994	90	500	18	100
Total			**8,310**	**23,150**	**36%**	**3,870**

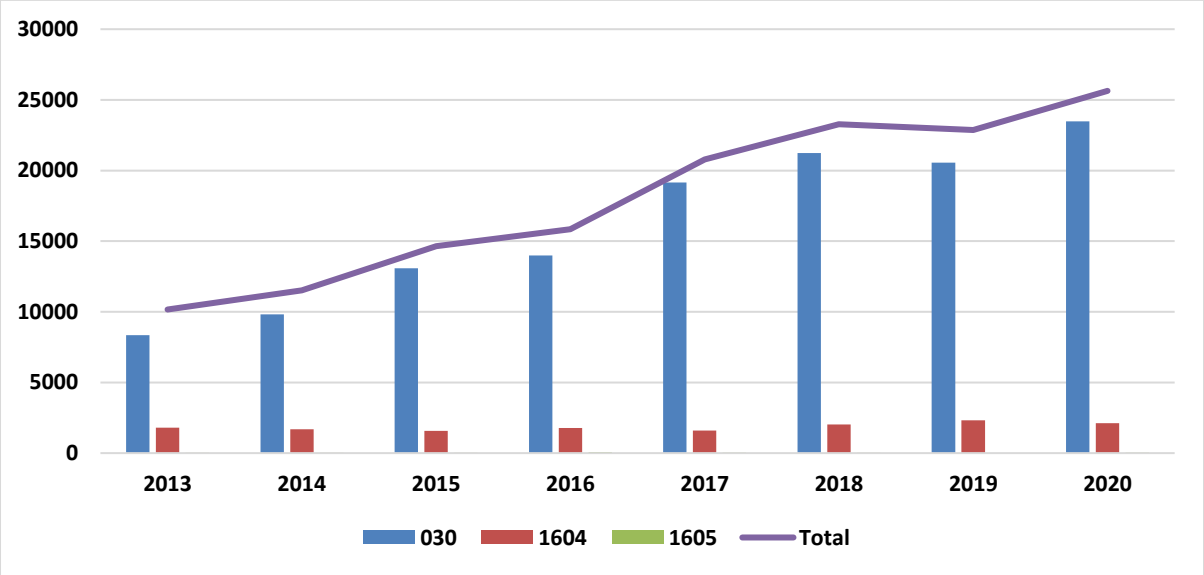
Source: Ministry of Agriculture and Rural Development

Regarding the processing plant capacity, two aspects are here highlighted:

- 4,500 tonnes of processing capacity are formed by companies processing anchovies. However, having an annual quota of 1,600 tonnes of duty-free export to the EU, this processing sector is penalized in terms of production capacity as well as employment. As an example, in 2018 the quota was fulfilled in October and since then the processing companies were closed, waiting for the 2019 quota opening. In the while Albania will become an EU member (and the quota problem will become irrelevant), finding new alternative markets would facilitate solving the problem.
- The percentage of utilisation of the processing plants seems very low also when considering that the market did not pass through a period of crisis.

The supply channels are in most part of the cases the import or raw or semi-processed material. The processors usually split the production between the processing for third parties providing the raw material and the processing of the own raw material. A minor contribution to satisfy the needs of the processing sector is provided by the national production where some supply contracts with local producers (mainly fishers) are agreed. The main constraint to establish a domestic supply chain able to satisfy the demand of the processing sector is the fishing quotas for the pelagic fishes. In few cases related to the major BOs, the adopted vertical integration of the business makes possible the contribution (in variable measure) of the owned primary production (mainly from the activity of differently specialised fishing vessels) to the supply of the raw material. In the following tables the import of the material for processing (according to the relevant customs codes[20]) is presented in terms of weight and value.

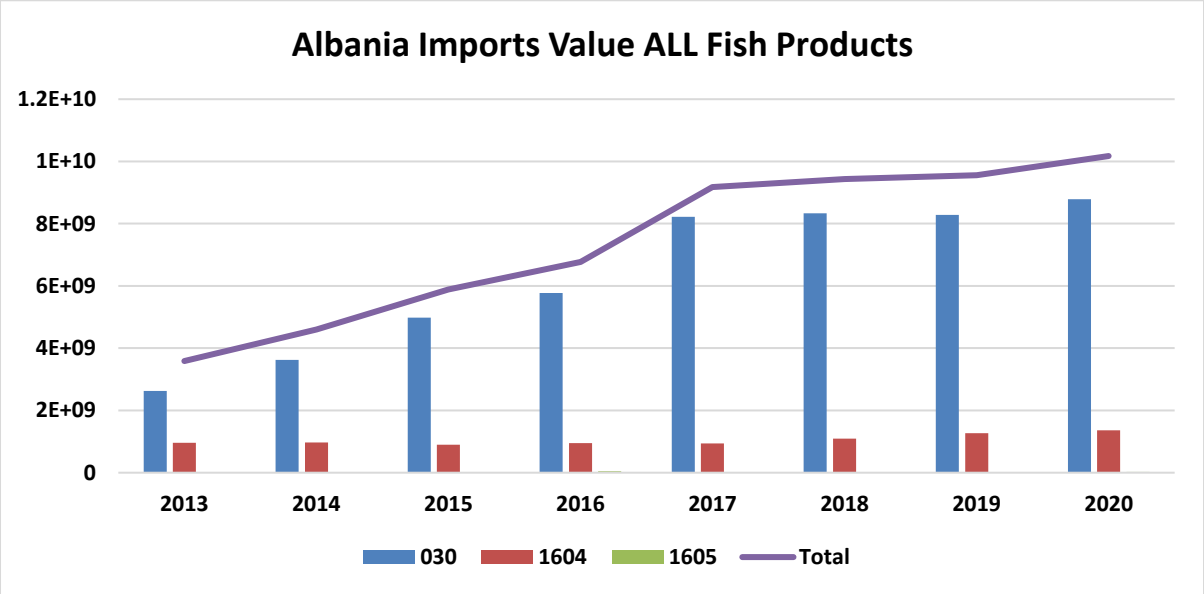
Figure 3-2 Imports Net Weight Fish Products



Source: Ministry of Agriculture and Rural Development

[20] **030**: Live fish, frozen or cold fish, fish fillets etc.; **1604**: Prepared, canned fish; caviar and its substitutes; **1605**: Crustaceans, molluscs, other aquatic invertebrates, prepared or preserved

Figure 3-3 Imports Value ALL Fish Products



Source: Ministry of Agriculture and Rural Development

The information provided by the interviewed BOs indicate that in most of cases the capacity to increase the production exists, as also expected according to the above data on capacity saturation. However, a major constraint able to prevent the processing increasing would be, and actually in some cases relevant to the preserves compartment already exists, the shortage of manpower to be additionally employed.

3.1.4. Infrastructure and logistics

Progress has been achieved in the establishment of the necessary facilities to ensure hygienic and safe storing and processing supported by the required cold chain. The strong position achieved on the local market is indirectly proved by the key role the establishments located in close proximity to the ports and integrating fish processing/fresh fish distribution play. In fact, they are in the position to dictate the price to fishermen and in negotiations for sales under contract. This is evidenced by the good margins between first-hand sale and wholesale prices (reaching the 50%).

However, considering the strong orientation to the export, the appropriateness of the infrastructures has been achieved also thanks to the precondition of complying with the requirements of the international market and in particular the EU one, in addition to the national food safety requirements.

Concerning the processing lines, two main contexts are considered, the preparation of fish preserves and the other processing modalities. In the case of the fish preserves the raw material is hand processed under strict hygiene conditions and then the automatic packaging and labelling line based on the chain system is fed. The relevant equipment is therefore the packaging under vacuum and labelling line, the deep freezers (if the received raw material is anchovies in frozen blocks) and the cold rooms to store material. In general, all equipment follows the due maintenance and renewal programme.

Considering the other processing modalities, they include the preparation of the fish (e.g. gutting, scale, fillet, etc.) and, in the case of the ready-to-cook products, the actual processing including several hand-based steps resulting in the final product. In general, the final products, in particular for the export market (i.e. EU market), are frozen and preserved preparations.

Also seafood including molluscs and crustaceans are prepared as sea salads (fresh in brine or frozen) or other preparations ready to eat or to cook but in this case they are mainly addressed to the domestic and regional market. The processing lines include advanced equipment where the intervention of the man is limited to the monitoring of functioning of the equipment. In view of the extension of the market opportunities, several BOs have mentioned

the need to extend the processing capacity to new products and to further improve the hygienic conditions of the process.

As far as the logistics is concerned, the processing operators mainly profit of the services of professional transporters to deliver their production to the clients both domestically and abroad. Some BOs have their own refrigerated trucks but usually the fleet is not sufficient to fully cover the transport needs and it is complemented by the service of professional transporters.

3.1.5. Representativeness of the category

The organisations of fish processing BOs include the Confederation of Fisheries and Aquaculture Producers and the Durrës Fisheries Investors Association. Both organisations try to vest the interests of the respective members by exerting lobby activity in different sectors as for instance the drafting of legislation. The Durrës Fisheries Investors Association is more geographically supported by the producers of the Albanian central costs.

3.2 MAIN PRODUCTS AND PRODUCT TYPES /CHARACTERISTICS AND QUALITY

The main processed product is the canned anchovies and some companies are focused on this product only. Currently, the industry operates with two product categories; semi-finished product, which serves as a raw material for European producers and a final product, which are canned anchovies. Imported raw material arrives either in the form of frozen blocks or as semi-processed product already salted in barrels. Additional products include salted fish fillets, salted anchovies, frozen cuttlefishes, prepared shrimps, frozen shrimps and prawns and canned tunas. According to the respondents, the expansion of the sardine canning industry could represent an interesting business for the processing companies. However, a major constraint is represented by a fishing quota for Albania very low (100 t / year). Due to such a limit, many pelagic fishing vessels in most cases, when fishing for sardines, release it back to sea or try to put it on the domestic market that, being able to absorb limited quantities only, leads to the ultimate consequence of increasing the waste.

The following table presents the existing establishments by product type (accordingly, one company can be mentioned in more than one category).

Table 3-2 Fish processing establishments by processing category

Processing type	Company	Establishment location	Raw material		Part of vertical integration (Y/N)
			Type	Source (local or imported)	
Preserves	Euro Fish	Lezha	Anchovies, mackerel, tuna, sardines	Imported	N
	Mare Adriatik	Shkoder	Anchovies	Imported	N
	Poseidon	Lezha	Sardines	Imported	
	Rozafa	Shëngjin, Elbasan, Perrenjas, Gramsh	Anchovies	Imported/Local	Y
			North sea prawn (Pandalus borealis, Rose shrimp Parapenaeus longirostris, Tuna, Mackerel	Imported/Local	Y
	Konservimi Adriatik	Durrës	Anchovies, Sardines, Mackerel, Tuna	Imported/Local	N
	Drinfish shpk	Vaui dejes /Shkoder	Anchovies, Sardines, Mackerel, Tuna	Imported/Local	N
	Alba Fish	Lezhe	Anchovies, Sardines, Mackerel, Tuna	Imported/Local	N
	Fenix I.C.	Elbasan	Anchovies, Sardines, Mackerel	Imported	N
	"Nettuno SHPK Import-Eksport	Lushnje	Anchovies, Sardines, Mackerel	Imported	N

	Converse Ittiche"				
	KIARA-FISH	Elbasan	Anchovies, Sardines, Mackerel	Imported	N
	Nettuno	Elbasan	Anchovies, Sardines, Mackerel	Imported	N
	Drinfish shpk	Vaui dejes /Shkoder	Anchovies, Sardines, Mackerel	Imported	Y
Chilling	Acquario Sali Peshk	Shkozet (Durrës) Vlore	Marine fish, shrimp, mollucsc etc	Local/Imported	Y
	Vival	Novosele/Vlore	Marine fish, shrimp, mollucsc etc Frogs	Local/Imported	Y
	Orik Peshk	Skele/Vlore	Marine fish, shrimp, mollucsc etc.	Local/Imported	Y
	Turturici All Stars Vlora	Vlore	Marine fish, shrimp, mollucsc etc Frogs	Local/Imported	Y
	Artic Group Sh.p.k.	Durrës	Marine fish, shrimp, mollucsc etc.	Local/Imported	Y
	LAKBR	Durrës	Marine fish, shrimp, mollucsc etc Frogs	Local/Imported	Y
	SOFISH	Tirana	Marine fish, shrimp, mollucsc etc.	Local/Imported	Y
	VIVIMPEX	Vlore	Marine fish, shrimp, mollucsc etc Frogs	Local/Imported	Y
	OCCHIO VIVO	Durrës	Marine fish, shrimp, mollucsc etc.	Local/Imported	Y
	ITTICA - San Giovanni	Lezhe	Marine fish, shrimp, mollucsc etc	Imported/Local	Y
	SeaFish	Kashar/Tirane	Marine fish, shrimp, mollucsc etc	Imported/Local	Y
	Albamar	Durrës	Marine fish, shrimp, mollucsc etc	Imported/Local	Y
	Fama	Sarande	Marine fish, shrimp, mollucsc etc	Imported/Local	Y
Freezing	Koral Fish	Durrës	Squid, shrimps, anchovies, cod, red mullet, etc.	Imported/Local	Y

Source: Ministry of Agriculture and Rural Development; elaborated by the Authors

Despite the positive market trend of the last period, it is considered that a better differentiation of the production associated to a better answer to the consumer demand for new products (to this regard, strong it is the influence on the consumers from neighbour countries such as Italy) would improve the sector trend.

Considering the importance of the foreign market, fish processing operators keep the quality of their productions among the critical parameters to be strictly monitored. And the quality pathway actually starts with the certification of the marine areas from which the raw material origins.

The obliged commercial strategy for most of BOs is the compliance with the European quality standards. Accordingly, the acquiring and maintaining of quality certifications is among the routine business management practices to access such markets and in particular the EU market. Among the certifications stating the compliance with private safety and quality standards, Safe Quality Food (SQF), British Retail Consortium (BRC) and International Food Standard (IFS) are mentioned even if the latter is the more frequently sought by the Albanian BOs.

Indicative of the effort of some BOs to maintain the required production quality is the ancillary services developed internally to the company. For instance, due to the limited professional resources and services readily available in Albania, specialised personnel is employed on permanent basis within workshops internal to the company expected to ensure the maintenance of equipment as well as to develop technical solutions (even innovative)

tailored to the company needs. Similarly, technologically advanced work monitoring solutions are implemented to ensure that hygienic conditions are constantly assured, in particular where extensive hand processing is foreseen.

To some extent, quality and safety go hand in hand. Accordingly, the compliance with the national requirements is also achieved by the BOs in order to maintain the certification allowing the export to the EU market. To this purpose, significant is the fact that most of them declare to receive one visit per month from the NFA inspectors, so demonstrating a strict control exerted by the CA. Further, all but one[21] never received a penalty for assessed infringements. This is also confirmed by the results of the inspections and related analysis carried out by NFA and ISUV showing a low prevalence of non-compliances with the limits (see Chapter 6.1.2).

3.3 ACCESS TO MARKETS, INPUTS AND SERVICES

3.3.1 Access to market

There is not a unique business model in the fish processing sector. Actually, most of the BOs developed both a B2B and a B2C models. However, whilst the B2B finds application mainly in the export of the products, the B2C is almost exclusively implemented in the domestic market by those BOs who have diversified their activities, so leading to a vertical integration where the owning of retail fish shops is included. In at least one case the products are distributed to foreign markets, at regional level, through the BO own platform up to the level of retail shops in an example of very extended integrated business.

Within the B2B model the buyers are usually international platforms that then distribute the products to the final clients (when sufficiently big such as for instance sea cruise companies) or to the retail sector.

As far as the supply modalities are concerned, in the context of the international market they are all specified in contracts describing the obligations and rights of the supplier and buyer. For what instead concerns with the domestic market (in general not relevant in terms of volume/value) the relationship between supplier and buyer is partially regulated by supply contracts but also the informal trade based on agreements and payments at terms is still an existing practice, similarly to what already discussed for the aquaculture products.

3.3.2 Domestic market

As already discussed in relation to the domestic market of aquaculture products, also in the case of the fishery products the domestic market is progressively growing due to the increasing interest of consumers to better integrate their diet with fish products. However, the domestic market, due to the more interesting prices offered in EU countries and its limited size is provided with a minimal part of the processed products difficult to quantify. Experts' opinions indicate such quantities less than 5% of the production.

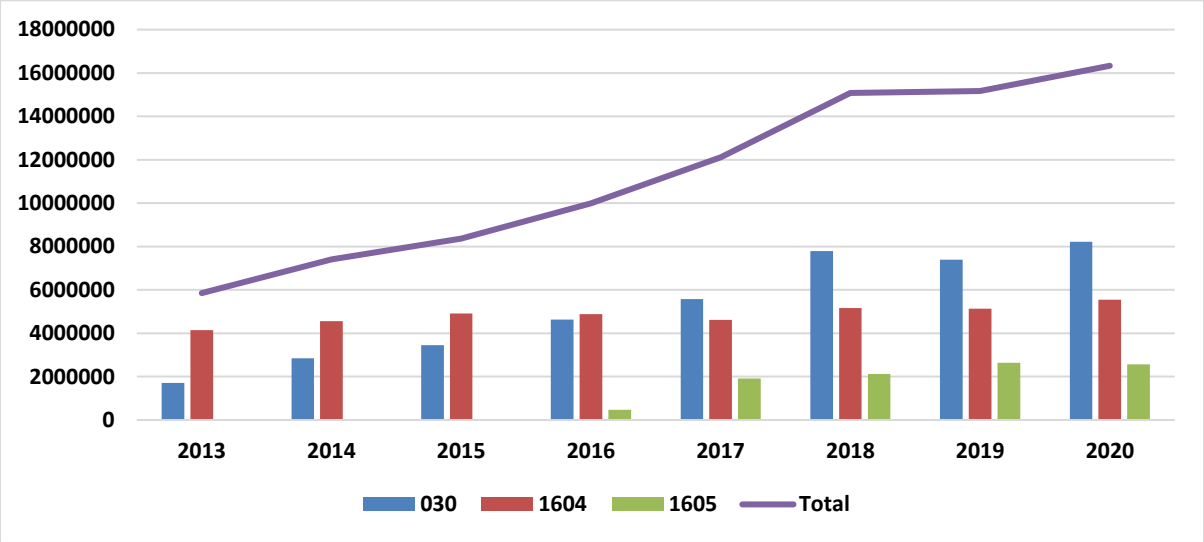
3.3.3 International market

The international market represents the main trade channel of the fish processing sector. It shows a growing trend even reaching the 20% year-on-year justified by a growing interest for the domestic production, demonstrated by the increasing of the labour force and supported by the devaluation of the Euro. According to the Ministry of Agriculture, exports to the fishing industry in 2017 were 83 million euros, an increase of 20% compared to a year earlier. There are 24 processing facilities authorised to export to the EU zone[22].

Over 70% of export is represented by prepared and preserved anchovies. Additional products include salted fish fillets, frozen cuttlefishes, prepared shrimps, frozen shrimps and prawns and canned tunas. In the following tables the export of processed products (according to the relevant customs codes[23]) is presented in terms of weight and value.

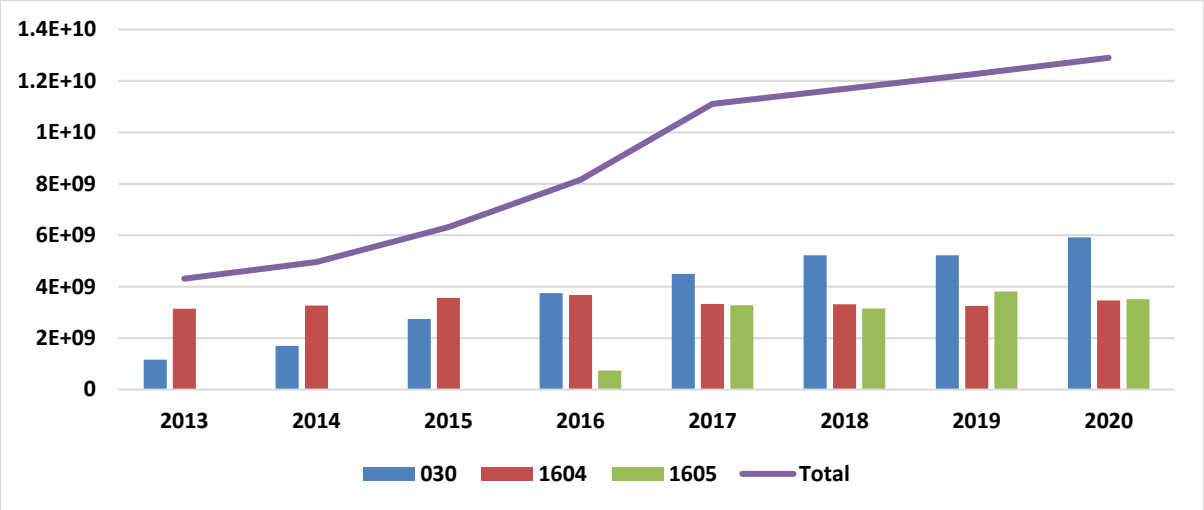
[21] The one indicated to have received one fine some years ago.
[22] https://webgate.ec.europa.eu/sanco/traces/output/AL/FFP_AL_en.pdf
[23] **030**: Live fish, frozen or cold fish, fish fillets etc.; **1604**: Prepared, canned fish; caviar and its substitutes; **1605**: Crustaceans, molluscs, other aquatic invertebrates, prepared or preserved

Figure 3-4 Exports Net Weight Fish Products (kg)



Source: Ministry of Agriculture and Rural Development

Figure 3-5 Exports Value ALL Fish Products



Source: Ministry of Agriculture and Rural Development

However, the access to the market is limited by the EU agreed quotas. According to the interviewed operators, this element is heavily impacting their business and production capacity as well as the catching capacity is impacted, so penalising the whole fishery sector. Actually, for the fifth year in a row the expiration of the quotas occurs largely before the end of the year (between the months of September or October) obliging the processing plants to stop or decreasing and storing the production waiting for the new quota period. This situation creates relevant difficulties when considering that the Albanian processing capacity goes up to 4000-4500 tonnes per year[24] and includes more than 2800 employees, and that the sector, so far, has invested about 39 million euros. It is common opinion that the (unlikely) lifting or the increasing of export quotas for processed anchovies and sardines would support economic growth and employment. However, a further opportunity to compensate the EU quotas system could be represented by the Brexit with the increasing of export to the UK.

The ALL – Euro exchange rate trend of the last years marked by the depreciation of the euro has been impacting the business causing monthly losses to the companies compensated partially by the augmentation of the selling price of the products (generally limited to a 3%) and the rest by decreasing the profit. Wages are one of the main

[24] Out of which 1600 tonnes are exported within the EU quota as a finished product labelled "Made in Albania" and the rest is brought by the Albanian companies as a semi-finished product to avoid the over-quota taxes.

costs in ALL for the processing industry due to the extensive use of manpower. With the ALL strengthening the spending on wages has increased proportionally. Eventually, the situation also impacted the capacity of investment.

3.3.4 Access to services

NFA plans and implement official controls based on risk assessment, as required by the relevant legislation and published by the annual EU reports on Albania. The results of the controls, as provided by NFA, and the information provided by the respondents (and discussed above) let conclude that they provide an effective service. According to the opinion expressed by some BOs, the checklists used by the NFA inspectors during the visits are excessively generalist, not sufficiently considering the existing differences between sectors and products (e.g. fresh fish has requirements different than salted fish).

In the framework of the quality certifications, periodical controls without prior notice are carried out by the inspectors of the certifying authorities aimed to ensure the compliance with the requirements to which international clients make reference to.

As already discussed above in relation to the aquaculture, the securing of land property rights applies to the processing sector as well and it would lead to a facilitation in the access to credit.

The availability of equipment maintenance services is not well developed in terms of coverage of the territory (due to the limited number of potential clients) and capacity. As mentioned above, some BOs preferred to overcome the problem by organising a maintenance workshop internal to the company. The aspect it is also consequence of the general preference to directly import from abroad all necessary equipment, machineries, etc.

As far as the access to financial services is concerned, most of BOs maintain business relations with the bank sector to finance their activities. Nevertheless, the bank system is considered not very supportive and the financing conditions applied not very convenient. This aspect directly impacts the competitiveness.

As already mentioned, all services related to the issue of licenses is suspended since 2017.

3.3.5 Access to inputs

As already discussed, the supply of raw material for the fish processing sector is mostly ensured from EU countries (e.g. Croatia, Italy, Greece) in the form of fresh or under brine fish and a minor quota is composed by fresh fish caught domestically.

In the fish processing sector the packaging is a crucial element of the process due to its role in ensuring the product safety but also the due visibility of the producing company. The procurement of the packaging material is split between the domestic and the international market. Actually, cardboard factories have been established and such packaging material is therefore procured locally. On the opposite, packaging requiring glass and plastic need to be imported.

The access to the public utilities is ensured nationwide. However, frequent interruption in their supply, in particular for the electricity, obliges the BOs to have always energy generators in stand-by and this leads to an additional production cost.

3.4 KEY FEATURES AND CHALLENGES OF THE SUPPLY CHAIN SEGMENT

High interest rates will make access to capital finance difficult for entrepreneurs and in particular for the small businesses. High interest rates combined with low levels of disposable income and private savings will result in Albanian businesses not having the financial resources to address productivity and competitiveness challenges.

3.4.1 Characteristics of the supply chain segment

The range of products offered by the fish processing sector is quite extended considering the relatively small Albanian reality. However, compared with the size of the reference export market, great space exists for further developing such offer.

The development of vertically integrated businesses as well as the BOs strategic choice of importing often the totality of the raw material to be processed demonstrate, among others, the difficulty or the lack of interest to interact with the primary production sector. A better integration of the two sectors would likely improve the competitiveness. However, it is a matter of fact that the fishing capacity unlikely can have the potential to satisfy the needs of the processing sector. This is due to the concurrent effect of the critical status of fishing population, the consequent protection measures aimed to reduce the fishing effort and the limited capacity of the fishing fleet. Nevertheless, some options could reveal sustainable in particular taking into account the processing of freshwater products, as better discussed in the following chapters.

Annual quotas for the export of canned fish is the main challenge of the fish processing industry in the country. Quotas for anchovies prepared or stored on site are 1600 tonnes and above such quota the products are taxed at the rate of 25% of the value. The issue is particularly relevant when considering that the fish processing sector, with 2,500 tonnes of anchovy products annually exported, is one of the main contributors to the total Albanian export of agri-food products (about 6000 tonnes, as per official data) and it has a significant share in the employment.

3.4.2 Organisation of processing

As mentioned above, the vertical integration within the same company of the different steps of the supply chain is quite common between the major players of the fishery sector. The integration is achieved at different levels involving all or part of the supply chain elements such as the primary production, with fishing vessel and/or aquaculture farms, the processing with one or more plant/s, the wholesaling, the trade with platforms at international level, the retail with one or more shops in the domestic market and/or abroad. The table below offers an overview of the business integration achieved by the main actors.

Table 3-3 Examples of vertical integration businesses in the fishery sector

Company	Fishing vessel/s	Aquaculture farm	Processing plant/s	Wholesaling	Platforms	Retail shops	
						Domestic	Abroad
Rozafa	✓		✓	✓	✓	✓	✓
Koral	✓	✓	✓	✓		✓	

Source: Elaboration by the Authors.

3.4.3 Technological readiness

As highlighted in the MARD-FDP, the food processing industry needs to modernise technologies. By achieving it, BOs will improve their capacity to compete successfully in an increasingly open market and to improve food safety management systems. In such a context, the attention is also brought on the need to establish safe collection, transport and storage of raw materials, so that waste is reduced and food safety is better ensured.

3.4.4 Role of leading processing companies and interaction with small producers

The major processing companies maintain good relationships with other Albanian smaller companies. Actually, as stated by the BOs, this would be a sort of moral duty. However, it is acknowledged that such cooperation did not produce fruits. On the opposite, no cooperation exists with foreign companies with which they compete for the market.

Considering that most of the supply is imported, interactions with the small producers is very limited.

3.4.5 Socio-economic aspects

Even in the processing sector BOs find difficulties to find manpower and this directly impact the capacity to increase the production volume. The sector of anchovy processing mainly employs female workers and respondents indicate that they are facing more difficulties in finding female workers than men, as a good part of them are also employed in tailoring. As already mentioned above, among the reasons responsible for this the migration of Albanians, the establishing of European industries able to absorb the limited available manpower and the informal (and illegal) work sector are among the major ones.

The fish processing sector is an important sector in relation to the capacity of generating work opportunities also in disadvantaged rural areas (e.g. Elbasan county). The entire fish processing industry employs over 4000 individuals. Only considering the above mentioned major eight operators, a total of more than 2,800 persons found employment. Further, the sector represents a major work opportunity for women. In fact, about 90% of the employees in the fish processing sector are female.

3.4.6 Existing issues related to waste management and environmental impact

The matter is of particular relevance considering that in Albania most of processing plants do not implement measures for the correct treatment or management of liquid and solid waste, as better discussed in the below Chapter 6.4.

In principle, fishery wastewater contains high organic compounds, namely Biochemical Oxygen Demand (BOD), Chemical Oxygen Demand (COD), nitrogen, oil and fat, and salt [2]. Based on this, liquid waste fish processing industry has the potential to pose a threat to human health and pollute the environment, because it is easily degraded by microorganisms.

The canning process (the main process carried out) generates also huge amounts of solid food wastes, whose suitable management can contribute to benefits for both the environment and the economy, closing the loop of the product life cycle. In fact, the processing of fish head, skin and spine to produce fishmeal and fish oil leads to their valorisation offering a more economically convenient alternative than incineration or landfill.

Fish industry waste management is among the topics in need of possible improvement. In fact, even if the risk for the public health is kept at low level, as the category 3 for fish by-products indicates, their concentration in the soil or in the public sewage system, as it can arrive at the outputs of a processing plant, would lead to environmental pollution due to the alteration of the bio-chemical composition of the final destination environment (the soil or the rivers/sea).

Solid fish wastes can be used in the production of fish meal and oil whilst the management of wastewater is basically oriented to the rational use of water by better fish handling and processing, the so called "clean production", and the treatment of wastewater to recover the dispersed substances, in particular protein and fat. The two approaches are complementary in that "clean production" reduces the volume of effluents and makes them more concentrated, thus improving the overall economics of the recovery process (that could offset the costs involved, totally or in part). However, waste treatment is an energy demanding process the impact of which is controlled by using energy generated by the combustion of fuels on site (e.g. part of the oil produced).

Promotion of the management of the processing waste shall be launched establishing new business links between the aquaculture and the fishery processing sector aimed to the establishment of fish feed lines.

CHAPTER 4 GOVERNMENT POLICY FOR THE SECTOR

4.1 STRATEGIC DOCUMENTS

The implementation of the National Fisheries Strategy (NFS) for the fisheries and aquaculture sector of Albania 2015 – 2020 can be considered almost achieved (see 7). However, among the actions for which completion is pending, the identification and approval of the areas destined to aquaculture development (as foreseen in the Law 103/2016 On Aquaculture) and the development of a fully functioning Fishery Information Management System are included.

The Albanian policy for sustainable fisheries and aquaculture development focuses on activities to support, among others, the development of the aquaculture industry, the diversification of economic activities and the promotion of new markets for the aquaculture industry.

Within such framework, the Fisheries Development Programme 2019-2023 (FDP) of MARD recognises a series of measures among which the relevant ones are mentioned here below.

- Investment Support for Processing of Fish and Aquaculture Products. The specific objectives of this measure are of particular relevance for the present study for what in particular relates to the IPARD-Measure 3:
  - ❖ To improve the overall performance of fish processing companies.
  - ❖ To be consistent with EU Standards as regards food safety, environmental protection and occupational safety.
  - ❖ To encourage investments in physical assets in the fish processing sector. In such a context a series of aims are defined also including some primary production needs (not eligible under the IPARD Measure 3) and others specifically addressing the fish processing sector or possibly encompassed under the IPARD Measure 7 (Diversification). It is the case of:
    - Modernisation of production, storage and transportation technologies and practices.
    - Improve treatment and handling of waste and utilisation of by-products (an important aspect largely overlooked so far in the whole fisheries sector).
    - Reduce postharvest losses through investments in postharvest handling equipment, including cooling capacities, sorting, packaging and manufacturing lines.
- Investment Support for Aquaculture. The ToR of the present sector studies make reference to the support to aquaculture in the framework of the IPARD-Measure 7 (diversification). Accordingly, it is assumed that the present sector study, for what related to the information and discussion on aquaculture, contributes and complement the study on the diversification activities.
- Diversification of Economic Activities. The measure is addressed to support investments for farm diversification in the coastal areas aimed to encourage creation, diversification and development of activities in different sectors including aquaculture. It is expected that the support defined by the IPARD-Measure 7 on Diversification will complement the achievements of the specific objective of this measure.
- Promotion of New Markets. The measure recognises the specific objectives of encouraging the product developments and the targeting of new markets. Specific reference is made to the requirements to enable the export of live molluscs. To this purpose, as discussed in other sections above, the lifting of the ban on the export of live molluscs would create the ideal conditions for the development of the molluscs processing sub-sector. To this regard it is evident the synergy between this measure and the present study sector in the context of the IPARD-Measure 3.
- Technical Assistance. The technical assistance, which is not part of the scope of the present sector study, is necessary to support the improvement of the sector.

From the above it arises the large matching of the policy vision with the BOs expectations, as expressed during the interviews. Further, the above discussion allows to conclude that the alignment to the EU Common Fisheries

Policy (CFP)[25] is an ongoing process, as proved by the consistency of some achievements with the objectives and priorities of the CFP here below reminded:

1. Ensure that fishing and aquaculture activities are environmentally sustainable in the long-term and are managed in a way that is consistent with the objectives of achieving economic, social and employment benefits, and of contributing to the availability of food supplies.
2. Apply the precautionary approach to fisheries' management and aim at ensuring that exploitation of living marine biological resources restores and maintains populations of harvested species above levels, which can produce the maximum sustainable yield.
3. Implement the ecosystem-based approach to fisheries management so as to ensure that negative impacts of fishing activities on the marine ecosystem are minimised and shall endeavour to ensure that aquaculture and fisheries activities avoid the degradation of the marine environment.
4. Contribute to the collection of scientific data.

Eventually, it is worth to mention that CFP also contributes to the EU Green Deal.

However, a major constraint to the progress toward the full alignment with the CFP is represented by the insufficient control of the Illegal Unreported and Unregulated fishery (IUU). Despite the organisation progress in the administrative and technical areas, the lack of sufficient logistics resources is still in the pipeline for solution.

4.2 SPECIFIC POLICY ISSUES

A series of critical aspects to be taken into account as part of the national policy on fishery are listed here below.

- Companies focused on processing have often their own closed cycle. Thus, they have their own plants as well as their own fishing vessels. Despite this, they fail to meet the processing needs with local products and are forced to import.
- Some of these processing companies are focused on importing raw or semi-processed products because it reveals cheaper than supplying the plant with locally produced raw material.
- Support to the sector exists, but more would be necessary to be done by decision-making bodies to make domestic producers more competitive against imported semi-fresh or fresh products. Actually, the production scale and the business environment in the origin country of the imported products allow a competitive price compared with the same product locally produced (e.g. the gilthead seabream from Turkey is sold in the wholesale market actually at 2.5 - 3 euro/kg, while domestic producers enter in the market for the same product at 3.5-4 euro/kg). In many cases this is due, among others, by specific concurrent factors such as the import of fish food and fingerlings pushing high the local production costs and the subsidy programmes supporting the production in the exporting country, so making sustainable very competitive prices. As expressed during the interviews, BOs not benefitting of similar subsidy programmes, compete from a disadvantaged position. However, it is as well true that artificial barriers would provide an insufficient protection to the domestic products.
- It is noted that apparently all major operators had not benefitted from EU/national financial support schemes, even during their starting up phase.
- Lack of support and lack of assistance in the internationalisation are main issues recorded in the freshwater aquaculture. The matter is also of concern for the mollusc aquaculture for what related to the lifting of the ban on the export of mussels. Then, further support shall address the establishment of processing capacity including waste depuration facilities (where required) and the mussels processing equipment (e.g. mussels opening and glazing tunnel or processing as preserve).
- In the fish processing sector, it is considered that the existing EU quota (1,600 tons/year of fish and fish products) depresses the sector and prevents its development. The possibility to renegotiate the annual quota of fish and fishery products exported to the EU market (actually fixed at 1,600 tons/year) shall be verified. If the quota could be increased, it would lead to a very large improvement of the sector. The fleet of blue fish

[25] EU Regulation No 1380/2013 of the European Parliament and of the Council of 11.12.2013 on the Common Fisheries Policy

from the 4 currently fishing boats could increase to 10-20 boats in order to supply the processing sector with the required raw material.

- The need for a support to the sector similar to what Croatia or other EU Member States did (e.g. Italy, Germany) is recalled by some BOs. The fishing capture capacity shall be strengthened in order to supply the fishery sector with domestic products rather than to depend from the import.
- A major circulation of the information about fish market (quantities traded and prices) and the organisation of a fish auction system (and the new market in Shëngjin would be the first element of such system) would contribute to develop an efficient fish market.
- Development of infrastructures has an important delay compared with the development of fisheries. The situation of the ports and related services requires attention to improve the effectiveness of the fishery sector and to decrease some of its production costs. Also the road network, under the Ministry of Infrastructure and Transport competence, needs in some cases to be improved (in particular for instance in the areas of Saranda and Vlora). Some infrastructural improvements have been achieved such as the establishment of two fish markets where one in the port of Shëngjin is already completed (but not operating yet) and another one is in the construction phase in the fishing port of Vlora. Further, additional fish markets are planned to be constructed in Saranda and other ports.
- Strengthening of the extension capacity of MARD. Other than in the agriculture sector where a directorate specifically relates to the advisory service, the aquaculture and fisheries sector does not have any service related to advisory and consulting. The delivering of training and advice in technical and financial matters are considered pressing needs in particular for freshwater aquaculture operators apparently having less opportunities of cultural exchanges compared with the colleagues from the marine aquaculture. In general terms aquaculture and fishery greatly differ. While an important percentage of fishermen are still not familiar with the requirements for conserving the products, aquaculture operators have a much more advanced knowledge and skill due to the need to comply with all requirements and standards to access the EU market, in addition to the ones related to the domestic market.
- Vocational high schools in the field of fishing are not established. However, the limited popularity of the fishing profession needs to be taken into account when planning an intervention in this field.
- To support the development of the local market, closely related to tourism, through the strengthening of the artisanal fishery, at present lagging behind the professional one in terms of development (i.e. insufficient means but also professionalism) and the development of "fishing tourism". To some extent the matter is already approached in the Specific Development Objective 10 “Establishment of sustainable recreational fishery on Albania’s coasts, rivers and lakes” of the Fishery Strategy for Albania[26]. The latter requiring close collaboration between MARD and the Ministry of Tourism and Environment. (A new version of this strategy is under preparation.

From a general point of view, the discussions held with BOs let arise the doubt that a more effective communication about the needs to revert the overexploitation condition of some fish species and to better protect the marine environment is necessary.

In the context of the natural resources’ conservation, it is worth to mentions that Albania being a contracting party to the GFCM some of its recommendations are implemented, such as:

- Measures to limit fishing effort on small pelagic stocks.
- Adoption of multi-annual management plans for the conservation and sustainable exploitation of the European eel. However, it is here emphasised the need to associate to the Eel Management Plan the National Plan for Coastal Lagoon Management (not drafted and approved yet), Actually, the coastal lagoons represent the environment where highest is the pressure on the eel species.
- Recommendation on the International Maritime Organisation (IMO) number assigned to metallic-hull fishing vessels over 24 metres.

[26] Particip and Poseidon, 2015. Albania Fisheries Strategy. Prepared for the Delegation of the EU to Albania, April, 2015.

Further, a recommendation on multi-annual management plan for sustainable demersal fisheries in the Adriatic is expected to be soon adopted.

4.3 RELEVANT FISCAL AND TRADE POLICIES

Support to the fishery sector is provided through some fiscal measures adopted recently. It is for instance the case of the equipment for aquaculture and fishing where VAT was removed since about 6 months for imported material (fish feed, juvenile fish, etc.) and equipment (the fishing vessels included). Surprisingly, the facilitation does not apply to the import of nets for aquaculture cages due to a problem linked with the nomenclature system attributing to the aquaculture nets the same code of the nets used in the building sector. However, it is noted that VAT will be balanced at export time. Eventually, the lifting of excise duty on fuel for fishing vessels has been recently adopted with the exception of the aquaculture sector.

Special fiscal conditions exist also when dealing with the import of semi-processed products and the later export of the finished products.

4.4 MARD SUPPORT PROGRAMMES

4.4.1 The IPARD/IPA programme

One of the major programmes Albania is benefitting from is the EU- IPARD programme. Nevertheless, the fishery and aquaculture sector did not greatly benefit from it. One only project was supported under the IPARD II programme in the framework of the Measure 7 (Diversification) to support the improvement of the cold chain.

Some considerations have been addressed by the BOs about the IPARD programme eligibility criteria. In particular, the threshold criterion applied to the company turnover is considered a constraint to fully develop the potential of the sector due to the exclusion of the best performing BOs of the fishery and aquaculture chain in terms of richness produced (with the export) and job opportunities created. The example of the Croatia programme where the financing was addressed to the whole actors in the sector has been mentioned as a success story to deal with both the present and the above issue.

Further, an improved transparency on the procedures leading to the award of the grants has been claimed as a priority by some of the respondents.

An additional support to the fishery sector is provided through the IPA 2016 project “Support to the fishery Sector”. The project is ongoing and, with a duration of four years, will be completed by June 2022. Among the achievements produced so far, the following are reported:

- Gap analyses of the existing legislation.
- The development plan for Vlora Fishing Port.
- Preliminary report on AZA.
- Analyses and assessment of the fishing fleet.
- Preparations of the technical specifications for the two fishing patrol vessels.

4.4.2 The national support

Beyond the IPARD programme, some support was provided through the programme for the fishery sector funded with the state budget. In particular, the measures included in the subsidy scheme for the period 2014 to 2019 were on behalf of the finfish aquaculture, mollusc aquaculture and fish processing and they are presented in the following table.

Table 4-1 National support to the fisheries sector (2014 – 2019)

Measure	Euro / Unit	**2014**	**2015**	**2016**	**2017**	**2018**	**2019**
Investment support for the collection and storage of aquaculture and fish products	max per farm	107,212	143,237	145,615	149,105	151,515	

Certification and agricultural production/products protection for fishery processing plants	max per 1 subject					2,462	
Lines for threading, drying, fumigation of fishery products from lakes	max per 1 subject					22,727	
Support for the production of mussels	kg	0.1	0.1	0.1	0.1		
Support for anchovies and sardine delivered in processing centres.	kg					0.2	0.2
Support of aquaculture sector (fingerlings value)	max per farm		4,297	2,184	1,491		
Support of aquaculture sector (fish feed)	max per farm		3,581	1,456	746		
Support for vessel monitoring systems for MTU (Signal Transmitting Units) equipment	per unit					644	
Installation of floating jetties	max per unit					151,515	

Source: ARDA

For what related to the mollusc culture, the support aimed to contribute to the cost of the depuration for the harvested mussels (in Butrinti) based on some criteria, as indicated in the following table.

Table 4-2 Criteria for subsidies eligibility in the mollusc culture

Support for mussels' production	Specific requirement	2014	2015	2016	2017	2018	2019
Mussels delivered in collection/processing centres	Min. quantity per year (kg)	200	200	200	200		
	Max. quantity per year (kg)	1000	1000	1000	1000		

Source: Respective Decrees Council ministers (DCM) for support measures.

Note: Grey box means that it is not offered at all as a scheme in the specific year

The processing sector benefitted of a subsidy equivalent to the 50% of the cost for obtaining the Friends of the Sea certificate. Initially such opportunity was not particularly appreciated by the BOs and only in a further time some of them became aware of the importance of these certificates, in particular for some of the foreign markets, and applied. This allows to highlight the importance of the communication when launching new programmes intended to support specific target groups.

As far as the BOs respondents are concerned, opinion has been expressed that state support should be extended to facilitate the access to credit for the aquaculture and fishery sector.

4.5 OTHER AGRICULTURE DIRECT AND INDIRECT SUPPORT MEASURES AND FACILITIES

In addition to what has been discussed above, no other direct or indirect financial support schemes are established for the fisheries and aquaculture sectors. Nevertheless, additional support shall be provided by overcoming a series of shortcomings such as a certain weakness in policymaking and implementation requiring the building of human and institutional capacity in order to implement policy reforms, the poor port infrastructures, the lack of organised wholesale markets with hygiene and quality standards, the excessive price of fuel for fishing vessels. The support shall also be oriented to promote the improvement of capacities in the routine and extraordinary maintenance of vessels as well as their replacement and renovation / improvement, the implementation of good hygiene practices aimed to comply with the hygiene standards, especially in the area of bivalve molluscs, and the investment for fishing farms and processing non-leading companies.

According to the above, priority investments should go hand in hand to both the fisheries sector and the institutional strengthening.

4.5.1 Assessment of the legislative environment

The relevant primary legislation includes the Law No 64/2012 "On fisheries", as amended[27], and the Law 103/2016 "On aquaculture".

The scope of the law "On fisheries" is the management of fishing as an economic activity and it fixes some high-level objectives such as the responsible exploitation of biological resources, the sustainable development of the fishery sector (with the consequent improvement of social and economic conditions for producers), the proper operation and management of fishing ports and centres and the determining of the appropriate measures and regulations to achieve the compliance with the European policy in this regard.

As the law informs, the text is a partial transposition of several EU pieces of legislation on fisheries among which the following are included: the EU Regulation 1224/2009 establishing a Community control system for ensuring compliance with the rules of the common fisheries policy; EU Regulation 1967/2006 concerning management measures for the sustainable exploitation of fishery resources in the Mediterranean Sea; EU Regulation 1198/2006 on the European Fisheries Fund; EU Regulation 1005/2008 establishing a Community system to prevent, deter and eliminate illegal, unreported and unregulated fishing; EU Regulation 104/2000 on the common organisation of the markets in fishery and aquaculture products.

A series of six secondary and tertiary legislation texts represents the law implementing legislation. One of the texts is the transposition of EU Regulation 2017/1004 and the Commission Implementing Decision 2016/1251 dealing with the framework for the collection, management and the use of data in the fisheries sector.

The law 103/2016 "On aquaculture" aims at contributing to the promotion and development of the aquaculture industry through supporting the competition and trade in the sector while respecting a balanced and sustainable environmental development. The Law establishes the institutional and legal framework for the production and cultivation of water organisms and aquaculture in the Republic of Albania. The law is partially approximated with Regulation EU 1380/2013 on the common Fisheries Policy. The law enforcement is exercised according to the provisions of the above discussed law 64/102 on fishery.

4.5.2 The regulatory framework for waste and effluents

The EU legislation identifies the waste from fishing, aquaculture and fish processing in the Commission Decision 2000/532/EC[28] and the destine of the related by-products in the Commission Regulation (EU) 142/2011[29] of 25 February 2011 implementing Regulation (EC) No 1069/2009 of the European Parliament and of the Council laying down health rules as regards animal by-products and derived products not intended for human consumption and implementing Council Directive 97/78/EC as regards certain samples and items exempt from veterinary checks at the border under that Directive. The national legislation is not aligned yet with the provisions included in the above-mentioned texts.

However, if from a sanitary point of view waste from fishery industry is mainly classified as category 3 by-product, the impact on the environment can be relevant, as already highlighted in the Section 3.4.6 above.

The adoption of the AZA would provide an important support to the aquaculture sector, as discussed above. Nevertheless, critical aspects for the approval concern the impact of the AZA on the environment and the tourism due to the pollution generated by the aquaculture practices. Actually, the proposal has tried to avoid tourist areas while the impact on the environment will need to be managed through specific measures. However, regarding the tourism, the objections focus on the capacity of the marine aquaculture to penalise the tourism due the risk of water and visual pollution.

[27] Amended by Law No 129/2012, Law No 29/2013, Law No 80/2017, and Law No 4/2019.

[28] Commission Decision 2000/532/EC of 3 May 2000 replacing Decision 94/3/EC establishing a list of wastes pursuant to Article 1(a) of Council Directive 75/442/EEC on waste and Council Decision 94/904/EC establishing a list of hazardous waste pursuant to Article 1(4) of Council Directive 91/689/EEC on hazardous waste

[29] Commission Regulation (EU) 142/2011 of 25 February 2011 implementing Regulation (EC) No 1069/2009 of the European Parliament and of the Council laying down health rules as regards animal by-products and derived products not intended for human consumption …[omissis]….

CHAPTER 5 MARKET AND TRADE

In approaching the market and trade it is worth to remind the specific characteristic of the Albanian fishery sector where a marked independence exists between the primary production and the processing sectors. The primary production actually not representing the main supply source of the processing sector and the latter addressing its demand to the import of raw or semi-processed material.

5.1 INTERNATIONAL TRADE FLOWS AND EVOLUTION OVER TIME

Albania annually exports about 2,000 tonnes of aquaculture fresh fish (sea bass and seabream in particular) whilst is not allowed to export live bivalves to the EU market, as already discussed.

To this purpose, it is worth to remind that the EU market is among the major ones in the world for fish and seafood. Its apparent consumption in 2018 amounted to 12.48 million tonnes and the demand is mostly met through imports, as they cover around 60% of the total supply. Hence the great opportunity for the Albanian BOs offering, in comparison, small quantities. Salmon, cod, tuna, Alaska pollock, fishmeal and shrimps are the most imported products.

In the fish processing sector, the main exported product is the canned anchovies. Anchovies are also exported in salted fillets form or as whole salted anchovies. This export trade alone accounts for US$ 40 million. However, there is a quota fixed for duty free imports of processed anchovies.

The following table provides the figures relevant to the export of processed fish products.

Table 5-1 Values of exported fish processed products (USD '000)

	2010	2011	2012	2013	2014	2015	2016
Canned anchovies	24432	26891	24085	29037	29788	27535	28176
Salted fish fillets	503	1634	...	...	1107	5609	7500
Salted anchovies	557	610	1370	2397	4591	5400	6423
Frozen cuttlefishes	...	4541	-	5724	6130	5026	5826
Prepared shrimps	...	...	23	16	-	-	5658
Frozen shrimps and prawns	...	...	786	48	-	1200	2724
Canned tunas	14	168	-	638	1013	765	1075

Source: FAO FISHSTAT J

In the following table the total export volume and value of fish products is presented.

Table 5-2 Export of Fish to EU (code 03) (live, fish meat, fish fillets, other meat)

Year	Exports		
	'000	Tonnes	€/ kg
2010	4,396	1,166	3.8
2014	5,205	1,654	3.1
2015	4,000	1,216	3.3
2016	7,726	2,304	3.4
2017	11,031	3,002	3.7
2018	16,143	4,639	3.5
2019	14,356	3,714	3.9

Source: EUROSTAT (2020)

Source: Elaboration by the authors on data from EUROSTAT (2020)

Fish exports from Albania increased from 2010 to 2018. In particular, during the period 2015 to 2018, the export grew 4 times with a total export in 2018 over the 16 million euro of value. Among the destination markets, Italy accounts for about two thirds of total exports in volume. In 2017, Sweden showed up as one of the most important market of Albanian fish. Spain is also important as market of fish exports from Albania.

Table 5-3 Albanian exports of fisheries products, by country of destination (tonnes)

	2012	2013	2014	2015	2016	2017
Italy	3651	5279	5600	6430	6659	7632
Sweden	0	0	0	0	272	1343
Spain	233	246	486	742	889	820
Bosnia and Herzegovina	10	0	120	118	505	436
Estonia	0	0	0	5	178	366
Poland	0	0	0	0	0	344
Romania	0	0	0	0	586	263
Kosovo	40	52	122	156	189	198
Serbia	10	15	36	37	32	174
Others	789	261	1043	878	674	527
World	**4733**	**5853**	**7407**	**8366**	**9984**	**12103**

Source: Trade Data Monitor, December 2018

Italy has been traditionally the main export market for processed products due to its geographical proximity and food habits. Recently, also Spain became an additional export destination. However, the recent economic crisis and consequent recession in these countries heavily hit their purchasing power (less Spain). This is obliging the processing sector to look to new alternative markets. A very good alternative is the Scandinavian market and that of Northern Europe including France, Germany, Hollande and Denmark.

However, two main aspects need to be taken into account to penetrate such markets. The first one concerns the different expressed demand due to different food traditions or existing privileged commercial relations with other countries (e.g. France cannot be a destination market for anchovy or shrimp due to the strong commercial relations with some North Africa countries).

The second one is the stringent requirement that production processes shall be environment-friendly and the products shall be certified for instance "Friends of the Sea" or MSC. Such certifications require that all the value chain of the product from primary production must be certified. Accordingly, the compliance of Albanian fishery products with the MSC standard is difficult to be achieved due to the overexploitation of the species, with the exception of the rose shrimp (Parapenaeus longirostris). In addition, the African markets could also reveal an interesting opportunity for canned fish at cheaper prices.

As far as the logistics is concerned, the respondents indicated that the almost totality of product transport up to the delivery to the customers is carried out by rented truck. Companies usually own one or two trucks and however a number not sufficient to cover the logistics needs (the biggest companies send 30-40 trucks per month). As reported, unlikely problems arose with the transporters also because the goods are semi-conservative and so there is no need for special transport conditions (e.g. cold chain requirements for frozen products).

Eventually, the impact of COVID-19 has been investigated with the respondents. It has been acknowledged that the situation in neighbouring countries affected the sales of the industry mainly during the quarantine period. In particular, it has been indicated a shrinking of the business between 70% and 90% for companies having their main clients the supermarkets or the restaurants, respectively.

However, it is common opinion that the demand for these products will again increase, both from supermarkets and restaurants. The likely evolution of the COVID-19 pandemic due to the availability of vaccines, effective therapies and the lifting of restrictions will lead to the increasing of restaurant attendance, people will again be optimistic with an increased propensity to spend on more expansive food products, such as fish.

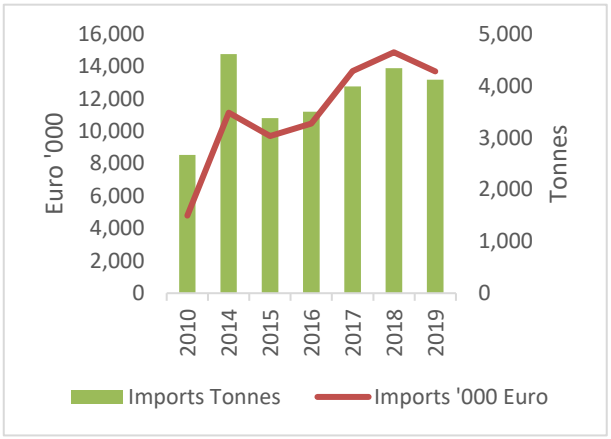
The **import flow** is mainly destined to satisfy the demand of the domestic market with fresh fish and the processing sector with fresh, preserved (e.g. under brine), frozen or semi-processed fish. In the following table and figure the flow over the period 2010 to 2019 is presented.

Table 5-4 Import of Fish from EU (code 03) (live, fish meat, fish fillets, other meat)

Year	Imports		
	'000 €	Tonnes	€/kg
2010	4,790	2,668	1.8
2014	11,137	4,613	2.4
2015	9,701	3,375	2.9
2016	10,481	3,502	3
2017	13,716	3,988	3.4
2018	14,872	4,338	3.4
2019	13,695	4,121	3.3

EUROSTAT (2020)

Source:



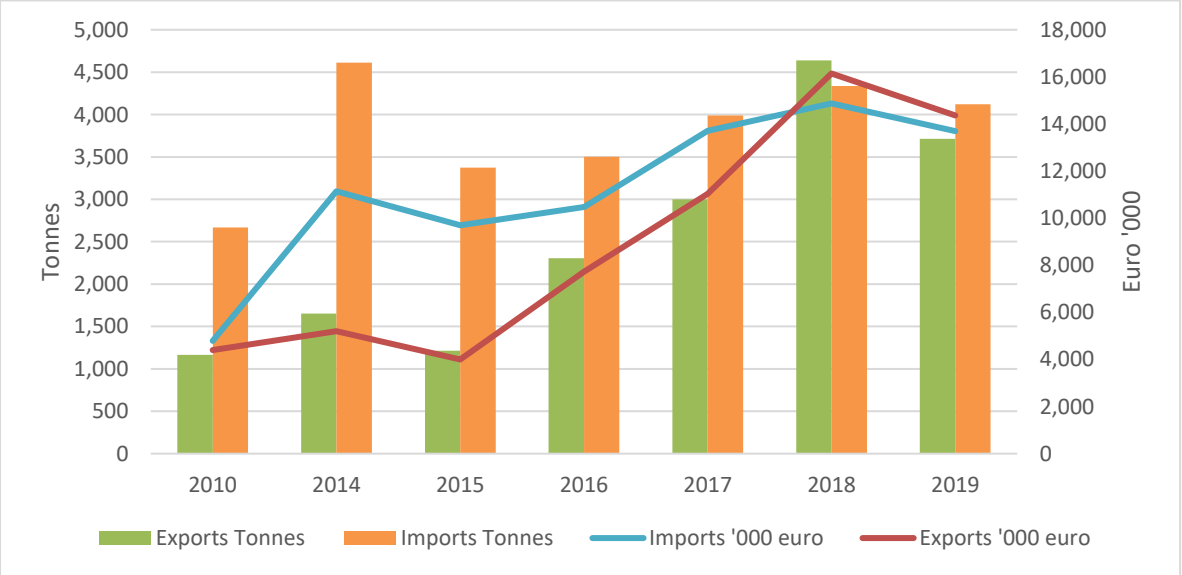
Source: Elaboration by the authors on data from EUROSTAT (2020)

As it is possible to appreciate from the above chart, the import did not record important movements as the export did.

Eventually, in addition to the edible fishery products described above, Albania imports also about 20,000 tonnes of fishmeal.

Comparing the two international flows in terms of volume and value of the exported and imported commodities we have the following figure.

Figure 5-1 International Trade of Fish (03) (live, fish meat, fish fillets, other meat)



Source: Elaboration by the authors on data from EUROSTAT (2020)

From the above chart it is worth to highlight that in terms of value the balance turned positive since 2018 (export overcoming the import). This is due to the corresponding progressive reduction of the imported volumes since 2016. With the exception of 2018, the graphic shows that Albania imports more than what it exports and the value balance can be positive thanks to the difference between the cost of the raw or semi-processed material imported and the price of the finished product exported.

Considering the importance of the aquaculture sector for the future implementation of the IPARD Measure 7-Diversifciation, the below figure presents the situation specifically related to the international flows of fresh and chilled fish.

Figure 5-2 International Trade of fish fresh/chilled (0302)

Source: Elaboration by the authors on data from EUROSTAT (2020)

The chart clearly reflects the decoupling between the export and import. While the export dramatically increased since 2015, the import fluctuates in a range about the 2,000 tonnes per year without being apparently influenced by the export trend.

5.2 DOMESTIC MARKET

The supply of the domestic market is achieved with fresh and processed products locally produced or imported. Main imported products are sea bass and seabream followed by frozen squid, frozen shrimp, canned anchovies/sardines and canned tuna. As discussed above, the import of salted anchovies as semi-processed product is mostly addressed to the processing industry where the product is canned and re-exported.

The assessment of the market price and its evolution over the years for the main fish species from capture or aquaculture reveal particularly difficult due to the lack of a market price monitoring system. However, based on personal observations and opinions from the respondents it is believed that before 2017 the annual price growth was limited whilst in the recent years it increased. Among the reasons, it is mentioned the increasing of fiscal pressure and also the disappearing in the major cities of the informal selling on the road that was contributing to limit the price growth.

The table below presents the prices/kg to the producer of the cultured species and the minimum marketable size.

Table 5-5 Market information for aquaculture species

Species	Price ALL/Kg	Market Size
Molluscs culture		
Mediterranean mussel	50	5-8 cm
Marine aquaculture		
Sea bream	600-700	350g
Sea bass	700-800	300g

Freshwater aquaculture		
Rainbow trout	350-400	350g
Common carp	200-250	1,5-2kg
Silver carp	250-300	1,5kg
Grass carp	250-300	1,5kg
Black Amur bream	300	650g
Bighead carp	250-300	1,5kg

Source: Hydra, 2019

In general, the prices for freshwater fish species (carps) are about 50% lower than the price for marine fish species.

The export from Asian countries exerts a dominant influence even on the market of a small country like Albania, especially on products such as crustaceans. Local producers are exposed to foreign competitors making a very aggressive price policy. The shrinking of the fishing activity creates opportunities to further develop aquaculture.

5.3 PROFILE OF MAIN ACTORS IN THE DISTRIBUTION CHAIN

5.3.1 Wholesalers

The role of the wholesales in the fishery value chain is quite different from many of the other food value chains. Wholesalers are linked to the primary production in an only limited way. Most of their business is based upstream on the imported products and downstream in distributing them to the retail level including restaurants, fish shops, markets and supermarkets.

The four fish markets to be made operational with MARD support will also play the role of wholesale. They will be managed by FMOs and will be supplied by the marine fishery operators (fishermen) and will distribute the products to the local retail fish shops and local restaurants. However, preliminary indications about the real impact on the sector will be available once the one already built in Shëngjin will be fully operational.

5.3.2 Ho. Re. Ca.

The Hotel/Restaurant/Café sector is particularly relevant in Albania and most of such realities include in their offer the fishery products. Some of them, in particular in the coastal regions, are specialised on fish menus.

In particular hotels and restaurants can be owned by the same BO active in the fishery sector either marine fishery or aquaculture and processing. The supply is diversified including all actors upstream in the distribution chain (i.e. primary producers – artisanal fishery in particular, wholesalers, fish shops).

5.3.3 Retailing

The retail for the fish includes the following channels:

- The specialised fish shops are distributed in the main cities (about 100 in Tirana) and the coastal regions. In the coastal regions their number varies according to season (significantly increasing during the summer period). Their presence in the internal regions is mostly linked to the trade of freshwater products.
- The neighbourhood markets play an important role in the distribution of food and they are located in all the cities. The conditions of hygiene and food safety (including the cold chain requirements) for the selling of animal origin products (including fish) have been greatly improved during the last years and the compliance with them is the precondition for the issue of the license.
- The supermarkets represent a retail reality which had a tremendous development in the recent years. Nevertheless, few of them host a fresh fish stall inside. Almost all of them offer instead frozen processed fish products. The reason for such a different marketing condition compared with the European countries apparently depends on the lack of matching between the policy the major supermarket chains apply to

the contracting of the fresh or processed food suppliers and the established vertical integration of the major Albanian sector players.

- The informal trading including the roadside, the fish farm door, the landing time. Actually, the informal trading is decreasing, in particular the one at landing time. It is mainly practiced in the freshwater fisheries sector and it involves the fishers themselves. Despite the lack of data, the phenomenon is not expected to deal with an important quantity of product. Rather, the major problem is linked with being the preferred channel of illegal and unlicensed fishers and poachers.

5.4 INFRASTRUCTURES AND LOGISTICS

The infrastructures supporting the fishery market take into account the following.

- Wholesale markets located to the main fishery port. As discussed, at present only the one in Shëngjin is completed but not operational yet whilst another one is under construction in the fishing port of Vlora and additional ones are planned to be constructed in Saranda and other ports. These markets will be managed by FMOs and they will be equipped with cold storage facilities to store the production at landing and the residual not sold product and also with other facilities to ensure the quality of fish.

- Cold storage facilities equip all infrastructures along the fish value chain from primary production to retail. To this purpose, important investments have been carried out, as discussed.

- Transport is a critical step in the fishery food chain due to the cold chain requirements. Whilst no major problems exist with the transport of commodities destined to the export, different is the situation with the domestic market. In fact, in particular the small BOs having for instance their business focused on the freshwater aquaculture in a relatively remote area and having their market in the neighbourhood could making use of not compliant solutions to satisfy the logistics needs. Data about the registered refrigerated trucks (transport of refrigerated or frozen products) and refrigerated vans are not available. However, in particular in the case of the vans, the critical point is the respect of the maintenance programme of the refrigerating equipment and the capacity of the authority to assess the temperature during the transport at road controls (i.e. road police / fiscal police).

5.5 KEY FEATURES AND CHALLENGES

Among the key features, it is mentioned the decoupling of the main segments of the supply chain such as primary production and processing (where the vertical integration is not involved), can ensure a major flexibility and resilience of the individual segments to external market events impacting their business model.

In addition, the vertical integration developed by the major BOs is also a business model ensuring a high level of flexibility. This is particular true when the company operates in the domestic as well as the foreign market and it is present in the Ho.Re.Ca. as well as the retail segments.

In the aquaculture sector a key feature is the quality reached by its products. However, it is apparently not exploited in sufficient way in a market where the consumer is traditionally more inclined to believe in the quality of foreign products rather than domestic ones. A major use of the labelling could for instance help on the matter.

Among the challenges the sector is expected to face, the competition on the internal and external market from the foreign producers is likely the main one. Success measures to win the competition shall be the better development and organisation of the access to the inputs and services (in particular for what related to the access to the credit) in order to rationalise and decrease the production cost. Considering the existing low cost of the work as an initial and important advantage, the capacity to be competitive should be easily achieved with appropriate business strategies and governmental policies.

A further challenge is represented by the capacity of adapting the marketed products to the changing consumers' habits (an example has been provided with the culture of the carp) and at the same time to try influencing or promoting the changes.

CHAPTER 6 LEVEL OF ATTAINMENT OF RELEVANT EU STANDARDS

Ownership and access to fishery resources is set in the Law No.7908 on Fisheries and Aquaculture (1995). The law provides for a series of definitions compliant with the EU legislation provisions such as "fishing means every activity conducted to catch or collect aquatic species, except those resulting from aquaculture activities," and "professional fishing means the fishing economic purposes.". Further, the Regulation No. 1 (2005) for application of the legislation on the fisheries and aquaculture states that "inland waters include coastal lagoons, natural lakes, hydroelectric reservoirs agricultural reservoirs, rivers and other waters in the Albanian Republic that are not marine waters", which also fully complies with EU definitions.

6.1 HYGIENE, FOOD SAFETY, ANIMAL WELFARE, ENVIRONMENTAL PROTECTION (SPECIFIC REGULATORY FRAMEWORK, LEVEL OF COMPLIANCE)

6.1.1. Specific national regulatory framework and approximation to EU Acquis

As presented in the Context Analysis, the primary legislation for the food safety includes the Law No 9863/2008 "On Food" applies also to the fishery sector. It is partially approximated to the Regulation (EC) 178/2002[30] and Regulation (EC) 882/2004[31].

The secondary legislation, just like under EU Law, includes the "Hygiene Package" composed by five ministerial instructions (Udhëzim) partially or totally transposing the requirements of the corresponding EU Regulations[32].

Concerning the animal health and welfare, the Law No 10465/2011 "On the Veterinary Service" applies to the fishery sector. More in detail, the Law is partially aligned with the Council Directive 2006/88/EC of 24 October 2006 on animal health requirements for aquaculture animals and products thereof, and on the prevention and control of certain diseases in aquatic animals and with the Council Directive 98/58/EC on the protection of animals kept for farming purposes and Council Regulation (EC) 1/2005 on the protection of animals during transport.

Concerning the international standards for the welfare of aquatic animals, the OIE has developed international standards for the welfare of farmed fish in the Aquatic Code and advocates the use of "handling methods appropriate to the biological characteristics of the fish and a suitable environment to fulfil their needs".

Several international independent and governmental organisations have issued recommendations or guidance on fish farmed health and welfare standards. The EU, in addition to the above mentioned Directive 98/58/EC and Regulation (EC) 1/2005, adopted the Council Regulation (EC) No 1099/2009 the protection of animals at the time of killing. The Council of Europe adopted a recommendation on the welfare of farmed fish in 2005. The World Organisation for Animal Health (OIE) has published standards related to fish transport and slaughter. The European food safety authority (EFSA) panel on Animal Health and Welfare addressed the focus on the welfare during transport, production, stunning and slaughter. The Aquaculture Stewardship Council (ASC), GLOBALGAP aquaculture standard, Best Aquaculture Practices (BAP), RSPCA Assured (Freedom Food) are all certification programs to improve the environmental, social and economic performance of the aquaculture supply chain and most of them incorporate fish welfare into their certification schemes as one of a broader suite of sustainability issues.

However, while the relevant legislation is in general considered aligned to the EU requirements, much remains to be done regarding its implementation. In such a context, the insufficient number of inspectorate staff plays a crucial role. It should be noted that the inspectorate is a very important institution, especially in fishery, because the contrast to the phenomenon of the IUU relies on its effectiveness.

[30] **Regulation (EC) 178/2002** of the European Parliament and of the Council of 28 January 2002 laying down the general principles and requirements of food law, establishing the European Food Safety Authority and laying down procedures in matters of food safety.

[31] **Regulation (EC) 882/2004** of the European Parliament and of the Council of 29 April 2004 on official controls performed to ensure the verification of compliance with feed and food law, animal health and animal welfare rules (repealed by **Regulation (EU) 2017/625** of the European Parliament and of the Council of 15 March 2017 on official controls and other official activities performed to ensure the application of food and feed law, rules on animal health and welfare, plant health and plant protection products)

[32] **EU Regulation No 852/2004** on the hygiene of foodstuffs; **EU Regulation No 853/2004** laying down specific hygiene rules for food of animal origin; **EU Regulation No 854/2004** laying down specific rules for the organisation of official controls on products of animal origin intended for human consumption

6.1.2 Level of compliance

Out of the 34 establishments authorised to export to EU, 24 (71%) are the existing processing plants and 10 are aquaculture farms. This in principle indicates the capacity to provide the due guaranties related to hygiene and safety of their products.

Fishery and NFA Inspectors carry out inspections on a non-discriminatory basis, at sea, in ports, during transport, during the processing and in the markets where fish and its by-products are sold. Also, the annual inspection plan is drafted based on the risk assessment. In general, the official services approach is based on the cooperation with all BOs in the sectors of aquaculture and fisheries in order to facilitate the implementation of the law and the creation of optimal conditions for the exercise of their activity.

The Institute of Food Safety and Veterinary (ISUV) contributes to the protection of public health by conducting laboratory tests for microbiological control and quality of food, detection of chemical waste and contaminants in animal and plant products, control of veterinary drugs and plant protection products. Particularly relevant for the present purposes are its Microbiological Product Control Sector with the depending Fish Products and Molluscs Monitoring Sector and the Waste and Toxicology Sector. The Institute implements 6 national monitoring plans for molluscs and fish products and their implementation is based on official methods (with the exception of histamine) addressing the requirements of the EU Regulations 2074/2005, 2073/2005, 835/2011 and 836/2011.

The prevalence of samples from fishery products and molluscs[33] with test results exceeding the limits during 2019 was 0.3% (5 positives over 1512 samples) and during 2020 0.2% (2 positives over 1231 samples). This finding seems consistent with the information provided by the respondents about the controls they are submitted to and the related results discussed in the above Chapter 3.2. It is also relevant to note that no samples from bivalve molluscs were found non-compliant with the limits.

As far as the National Food Authority (NFA) is concerned, it carried out a total of 312 inspections during 2019 but the results were not made available to the consultant, so far. The official controls are carried out according to the risk based annual plan. To this purpose, it is noted that the risk based classification of FBOs (high, medium and low risk) is based on the risk of the food group, rather than the risk of the individual FBOs. This would explain the high frequency of official controls (monthly) to which most of the FBOs are submitted. However, during an EU mission focusing on the processing establishments the findings were encouraging for what related to the investments in the processing sector considered to be very good as well as the technologies and the implementation of the traceability chain. Nevertheless, one of the Albanian processors authorised to sell in the EU was banned to further access the EU market due to the high levels of histamine detected in the products. To this regard, one of the shortcomings identified during the mission was the insufficient control carried out by the National Food Authority.

BOs are submitted to additional controls carried out by the Ministry of Health for hygiene related matters (with a much lower frequency than NFA) and the Ministry of Environment and the Work Inspectorate.

6.2 USE OF INPUTS AND VETERINARY MEDICINAL PRODUCTS

6.2.1 Specific regulatory framework and approximation to Acquis

Feed and feed additives, place on the market and use of veterinary medicinal products

The production, import and authorisation for placing on the market and use as well as packaging and control of Veterinary Medicinal Products (VMPs) is regulated by the Law No 10465/2011 “On the Veterinary Service”. Concerning the use of VMPs, it is noted that the related provisions are an important precondition to further develop the monitoring of the use of antimicrobials. The authorisation of the VMPs is granted by the State Commission of Veterinary Medicine Products (Article 88), while the Veterinary Service controls the trading of the products (Article 103).

The Law identifies the National Monitoring Plan for residues and the maximum residues limits of VMPs in raw materials and foodstuffs of animal origin and it provides that it shall be approved and issued by secondary legislation of the Minister of Agriculture (Article 81). In its Article 82 the Law states the prohibition to place on the

[33] Samples collected in the framework of national monitoring programmes, NFA official controls and unofficial controls (self-control).

market foodstuffs and feeding stuffs containing prohibited VMPs or which contain VMPs exceeding the maximum residue limits.

Eventually, the Law implementation is made possible by a series of secondary texts issued as Ministerial Orders[34] and dealing, among others, with the trade, possession, distribution and supply of VMPs, monitoring and penalties, and information exchange, the substances having a hormonal or thyreostatic action and beta-agonists, and the procedures for the establishment of residue levels of pharmacologically active substances in foodstuffs of animal origin. No mention of the EU regulation it transposes.

6.3 OCCUPATIONAL SAFETY

There is an increasing pressure on Albanian exporters from foreign clients to apply standards regarding occupational safety and health. Among the certifications many BOs from primary production as well as from the processing sector acquired, the SQF includes the welfare of employees, the ASC includes requirements based on the core principles of the International Labour Organisation (ILO), etc. Sometimes, auditing from certification bodies includes inspection on occupational safety and health.

However, beyond the value of the certifications, it is a matter of fact that BOs increased their efforts to create a safer and healthier environment for the workers as objectively demonstrated by the nowadays working conditions compared to a decade ago, in particular in the larger entrepreneurial facilities.

6.4 ENVIRONMENTAL ASPECTS

The environmental impacts of marine aquaculture within the European Union (EU) are regulated and managed by a variety of European Commission (EC) Directives and International Conventions. There are currently eight EC Directives (Hazardous Substances Directive, Quality of Shellfish Growing Waters Directive, Shellfish Directive, Environmental Impact Assessment Directive, Strategic Environmental Assessment Directive, Species and Habitats Directive, Wild Birds Directive and Water Framework Directive), which relate directly to the management of the environmental impacts of aquaculture, plus Directives affecting the marketing of medicinal veterinary products, and Resolutions, Decisions and Communications pertaining to Integrated Coastal Zone Management. There are also more than 50 other EC Directives, Decisions and Regulations, which have an indirect effect on the monitoring and regulation of marine aquaculture.

As far as the situation in Albania is concerned, the National Waste Management Strategy for 2020-2035 is oriented toward EU standards by aiming at incorporating circular economy principles in the national waste management system. Several laws and directives have already converted to that strategic orientation into a legal framework for waste management which is partially aligned.

Nevertheless, the reality offers a differentiate picture. The finding indicates that in two of the processing plants the waste are treated in “active clay”, a technology used also for the urban wastewater disposal (based on aerobic fermentation). In one other case solid waste are sent abroad for animal feeding. Exists also the case of plants having a wastewater management system but using it not regularly, if not rarely and for the remaining time disposing the wastewater in the environment and the solid waste in the landfill. For the rest, no further information of waste treatment was available. It is noted that the location of the processing plants near rivers and ports facilitate the disposal of the waste directly in these basins, irrespective of the legal requirements whilst other plants channel all waste to the landfill.

In one only case the capacity of processing the solid and liquid waste has been developed, so opening new business opportunities. The derived products are fish flour intended for human consumption and liquid additives for the food industry.

[34] Ministerial Order No 370/2014; Ministerial Order No 357/2011; Ministerial Order No 363/2013.

CHAPTER 7 PAST TRENDS AND FUTURE DEVELOPMENTS IN TERMS OF INVESTMENTS

7.1 INVESTMENT CLIMATE

Before approaching the specific investments carried out in the concerned sectors, some general aspects are here highlighted.

- All interviewed business operators from primary production and fish processing sectors have consolidated assets and investments are planned for their maintenance and renewal. The meetings held allowed to highlight, among others, the BOs' aptitude to invest, as proved by the number of needs at short and medium term expressed, so confirming their entrepreneurial vision. In some cases, investments are addressed to ensure the access to public utilities such as the power line.
- Beyond the initial investment, regular investments are carried out to ensure the required maintenance (e.g. deepening of ponds, refurbishment of the fish tanks, renewal of cages nets, etc.) and the purchase of inputs (e.g. fish feed and fingerlings).
- Interviewed BOs consider the bank system not very well prepared or interested to operate with the aquaculture sector and they consider the support from the bank system not convenient. Accordingly, some BOs developed their business making recourse to personal funds and loans from friends whilst some others have been making use of the capital from the banks but they are trying to progressively make their business independent from the bank system. To achieve it, hopes are put on the support they could receive from the implementation of governmental policies. In other cases, where the Albanian company is associated with a foreign one, the investment capital is ensured by the foreign company, so avoiding turning to the bank system for financing.

7.1.1 Past trends

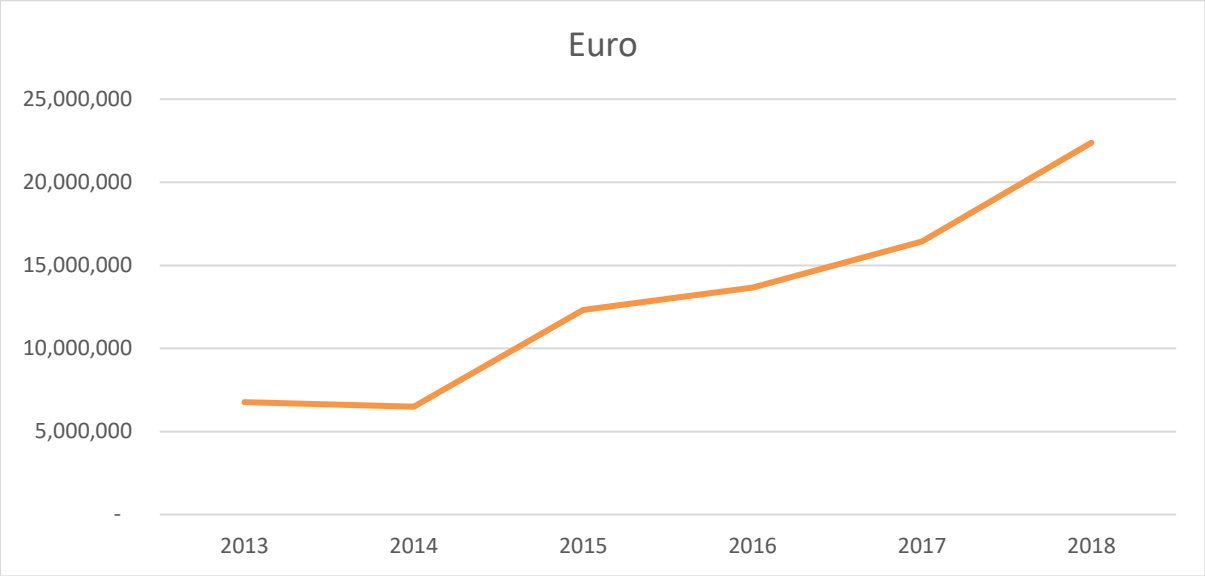
Primary production

The investments carried out in the aquaculture sector in some cases were made by the same BO that also invested in the establishment of the fish processing plant or, in other cases, the investor is a foreign company in partnership with a local one.

It is assessed that about 6.1 million euro[35] have been invested during the period 2014 to 2017 to establish the 32 aquaculture marine farms[36] and that the investment can rise to approximately 22 million euro at 2018 when considering the total aquaculture sector (32 marine aquaculture farms, 14 rainbow trout bigger farms and 4 hatcheries of Cyprinidae family pond culture and 72 facilities of the Mediterranean mussel longline culture). The following figure presents the trend of the investments during the period 2013 to 2018.

[35] Bakiu, R., Hala, E. and Demiri, A. 2019. Albania Marine Aquaculture for Gilthead Seabream and European Seabass Production: Sectorial Analyses and Considerations. Progress in Aqua Farming and Marine Biology. Volume 2, Issue 2.
[36] Hydra 2019.

Table 7-1 Investments in the aquaculture sector (2013-2018)



Source Hydra, 2019

Specific aspects are considered worth to explain the business climate:

- Routine investments such as the cage nets (4-5-year amortization period) in the marine aquaculture are timely carried out.
- Despite the not very positive market situation, also in the freshwater aquaculture investments are carried out to maintain the existing production capacity (e.g. maintenance of water canals to ensure the ideal flow of water).
- One particular aspect of the investment climate is represented by the rehabilitation for industrial purposes undertaken by dome BOs of abandoned military facilities upon agreement with the Ministry of Defence. In addition to buildings appropriate to host processing lines and offices, specific installations deeply dug into rocky mountains offer constant temperature over the year, ideal to arrange warehouses.
- The purchase of refrigerated vehicles to distribute the fish in the domestic market from Velipoja to Saranda. We have made these investments with the support from the bank system.
- Further, investment has been also made for the procurement of a machine to throw feed in large baskets (40m) which are impossible to throw feed manually.
- The climate is positive also in the mollusc aquaculture sector. In fact, investments have been carried out in the two marine mussel farms optimistically relying on the possible lifting of the ban and the consequent opening of the export for mussels. For instance, a modern boat allowing to carry out the full harvesting, cleaning and packing process on board has been procured.

Processing

The processing sector is technologically much more advanced than the primary production sector due to very high level of investments operated and maintained. As discussed, this has been also a consequence of the requirements of the foreign market.

Large investments have been made by a number of BOs for the processing of fishery products, as presented in the following table where the companies are grouped by their size (based on the number of employees) and category of product. Accordingly, one company can be present in more than one category based on its business.

Table 7-2 Investments in the fish processing sector

Category		Company	Investment* (mln EUR)
Size	**Processing**		
Big	Preserves	Euro Fish	8

		Mare Adriatik	6
		Poseidon	4
		Rozafa	15
	Chilling	Nettuno	2
	Freezing	Rozafa	15
		Total	**35**
Medium	Preserves	Acqu.Sali Peshk	4
		Koral Fish	6
		Konservimi Adriatik	4
	Chilling	Koral Fish	6
	Freezing	Koral Fish	6
		Total	**14**

Source: Ministry of Agriculture and Rural Development
*Note: *: The investment for those BOs presents in more than one processing category is intended as total investment.*

In the fish processing sector, similar to what already discussed with regard to the aquaculture BOs, BOs demonstrated their aptitude to invest. In particular, beyond the investments for maintenance and renewal of the existing facilities and equipment, plans are conceived to extend the processing capacity to new products. However, such new decisions also depend from the expected developments of the market and the national policy.

Trade and services

At the wholesale level the main investment chapter concerns the conservation of products and therefore, the installation of refrigerators. Maintenance and equipment renewal demand regular investment plans and BOs expressed the interest to receive support in such financial operations.

In the following table the assessed annual investments in the wholesale sector are presented.

7.1.2 Expected future trends

General considerations on future trends

According to the opinions expressed by the interviewed BOs, investments are expected to continue also in the future, so confirming the positive trend. It is generally acknowledged that the approval of AZA will further boost the propensity to invest.

However, certain aspects to some extent impact this positive investment climate. According to the respondents, the insufficient political commitment to counter the informal/illegal economy has been considered by many interlocutors as a factor directly or indirectly leading to the lack of manpower and this has an impact on the trust of BOs in the public administration.

Further, administrative procedures are considered long and cumbersome, including the ones related to the custom clearances on import (e.g. fish feed), the VAT refunding and the access to and conditions of bank loans. Altogether, such elements impact the local business and consequently the sector performance.

Here below some specific examples of possible future investments based on the indications provided by the respondents are presented.

Primary production

- Investments driven by the market demand as it is the case of the production of fish of bigger size with the consequent need of increasing the number of cages to accommodate the prolonged growing period;

- Investments intended to satisfy the requirements of specific markets. The German market for instance mostly requires fishes degutted and filleted. The preparation of such product requires an important investment including the increasing of the refrigeration capacity and the supply of the equipment for fish degutting and filleting.
- Investments answering the needs of a growing business. It is for instance the case of the equipment for fish sorting and packing. Actually, once the business reaches a certain dimension, the manual sorting becomes unpractical (the available machines can select 3 tonnes of fish / hour).
- Investments addressing the need of an improved data management to effectively support the production. Whilst some companies already adopted similar technologically advanced solutions, others are planning to procure in the next future this kind of management software where all the daily data are made available (e.g. amount of daily feed distributed, daily mortality, sales, temperature monitoring, etc.). According to the experience of one BO, the evidence of the benefits provided by such data management system) is given by an improved job management, the decreasing of the FCR index to 1.7-1.8 from the previous 2.2 and the fish mortality from 20% to the present 11%.
- Investments involving the farm emplacement. One company is for instance planning to move the aquaculture farm farer offshore. Such an expansive operation is dictated by the constant searching for the improvement of the product quality. In fact, farer from the shore there is more oxygen and sea current and the fish lays less fat. In addition, further away from the coast the production is safer (more protected from possible pollution sources).
- Also in the freshwater aquaculture investments are planned to improve for instance the plant effectiveness with the adoption of particular water circulation to improve the self-cleaning of the fish tanks walls, to improve the water supply system, to improve the production (growth of the juveniles) and reproduction technology (e.g. procedures adopted in the hatchery), to extend the breeding season and to identify and test new modalities to market the product. Investments shall also be oriented to the control of infective diseases (in some cases responsible for 50-60% of mortality among fingerlings). However, the market economic situation makes very difficult to transpose the investment plan into practice without an external support.
- In the mollusc culture sector, a positive climate for investments exists despite the difficulties. Future investments could possibly focus on a point of depuration at land (if the need would arise) and establishment of mussels processing lines (e.g. their opening and glazing). However, despite the optimistic approach looking at future positive political commitments and market developments, it is impossible today think about cost and profit calculations in a sector felt as on the verge of survival.

Processing

- The testing of the feasibility of products that can be considered innovative for the Albanian processing sector such as the production of smoked fish. To this purpose, it has to be highlighted that already one attempt was carried out in 2018, as mentioned in Table 28 above (Chapter 4.4.2), but the initiative apparently failed for reasons to be further investigated;
- The implementation of regular plan of investments to maintain and renew the necessary equipment such as refrigeration rooms, the electrical system and procure technologically updated machinery and equipment to ensure the quality and safety of the production.
- The growing scope of the BOs leading for instance to the increasing of the number of processing rooms to accommodate new processing lines and the procurement of equipment to broaden the range of processing procedures.

7.2 IPARD II UPTAKE

One only project was supported under the IPARD II programme in the framework of the measure 7 (Diversification) in Vlore for the amount of 261 thousand euros[37]. It worked mostly for refrigeration rooms and in general the cooling chain, but it did not support the primary production such as fishing or aquaculture operations.

[37] Source: ARDA

CHAPTER 8 VALUE CHAIN ORGANISATION AND ENABLING ENVIRONMENT

8.1 VALUE CHAIN MAP[38]

In the following Figure 8-1 and Figure 8-2, the value chain map of the sector is presented including the additional layers relevant to the supply of inputs and services. The total production is presented for each category.

The marine aquaculture value chain is generally short. The producer delivers to the foreign wholesaler or to the domestic wholesalers, fish shops or restaurants. Main inputs are represented by the supply of fingerlings and fish feed (both imported). Relevant service is represented by the international and domestic transport. The latter can also be carried out with means owned by the producer.

The freshwater aquaculture value chain is slightly different for what related to the inputs and services because the fingerlings can be produced internally to the farm and more often the transport is carried out with means owned by the producer being most of the clients on the local market. In addition, the producer can directly sell on the fish market or to the consumer at the farm door.

In the fish processing sector the value chain is also short. Processors receive the raw material from domestic (in some cases the supplier being part of the same company) or foreigner suppliers and they deliver the production almost totally to foreign platform (wholesale). Very short value chain occurs when supplier and processor are part of the same company (vertical integration) or when the client is also the supplier of the raw material.

[38] As in Albania, the term "value chain" is commonly adopted to describe the structure of a sector and the relations between actors (which, by the way is the same definition used by FAO), in our studies we use the term *value chain* as synonymous of *commodity chain*.

Figure 8-1 Value chain of the fisheries sector

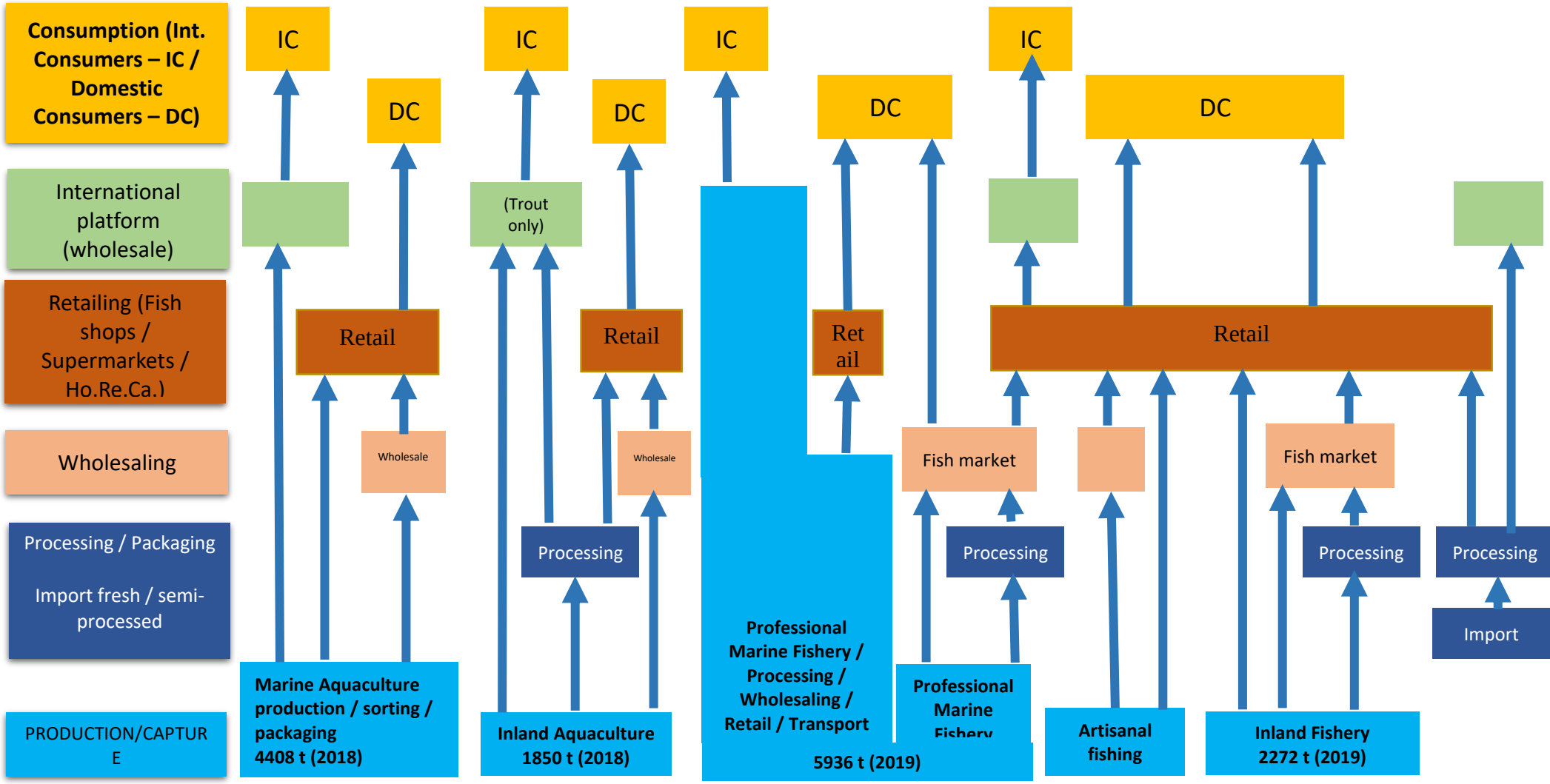
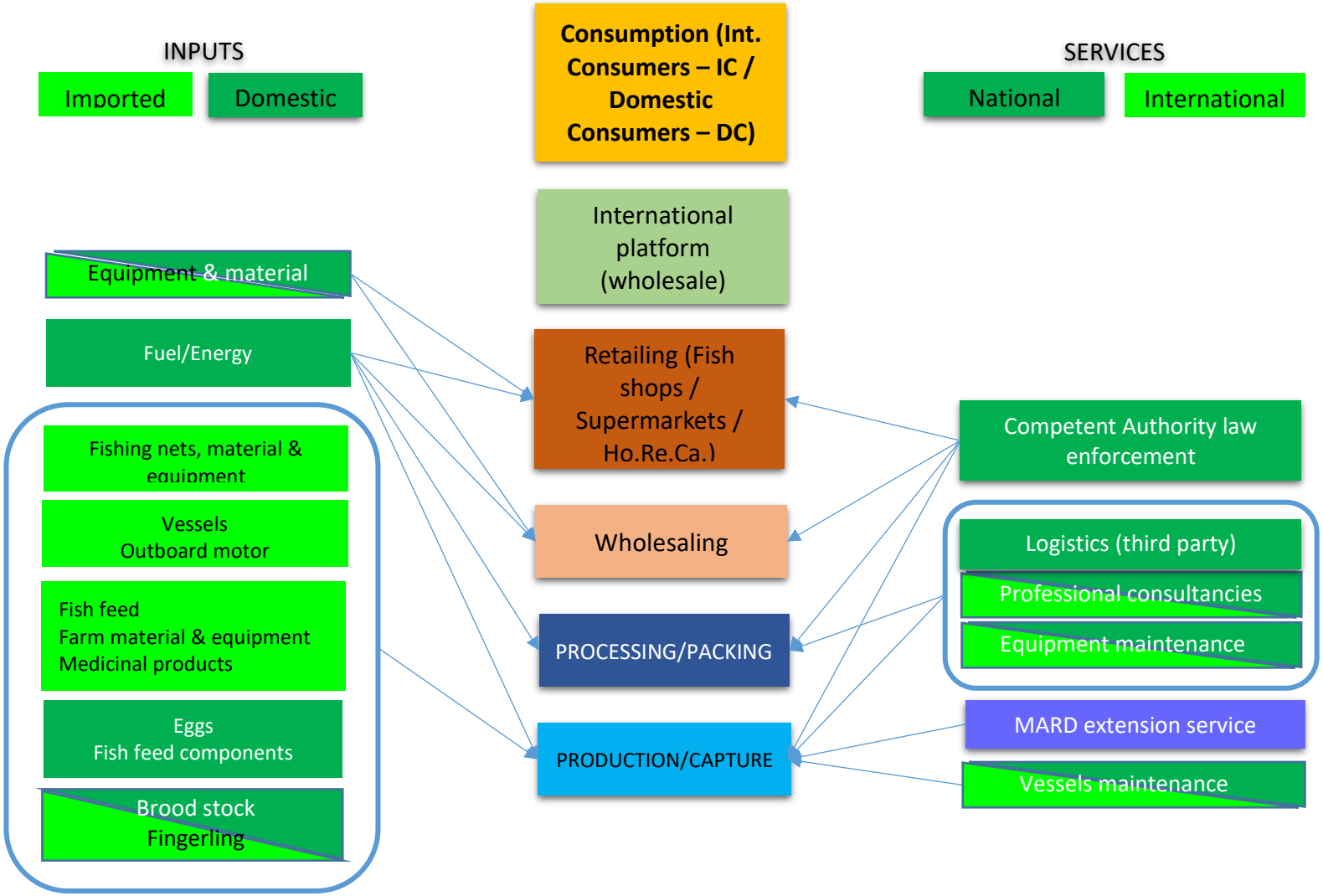


Figure 8-2 Supply of inputs and services to the fisheries value chain



From the above it arises the limited role of the wholesalers in the value chain. They can represent the reference buyer for newly established aquaculture companies and for mollusc farms but in general wholesalers find more profitable businesses abroad. They are actually the main operators importing fresh fish to complement the local production of fishery and aquaculture.

In the case of BOs having developed a vertical integration of their business, it arises that the chain "producer → wholesale → fish shops → restaurant" can even be fully encompassed within the company activities, as it is the case of at least two BOs.

Concerning the impact on the fishery market of the ongoing COVID -19 pandemic, the BOs traditionally targeting the Hotellerie-Restaurant-Café (HoReCa) segment were more affected by the COVID-19 pandemic than any other sector. Loss of export opportunities and cancelling of supply contracts with foreign clients operating, for instance, in the tourism sector (one of the sectors more hit by the pandemic control measures) are reported. Major difficulties have been also faced by the freshwater aquaculture farms where the information collected indicate a business shrinking of 40% compared with the previous year (2019).

8.2 VALUE CHAIN COORDINATION – CONTRACT FARMING

From a certain perspective, the relevant value chains of the fisheries sector are coordinated by the concerned offices of MARD when accomplishing with their institutional obligations of identifying key gaps in existing infrastructure or services and opportunities for high impact investment along all the steps of the value chains (primary producers, distributors, processors, retail shop network, institutions) and oriented to the food system development. In the attempt to make effective such coordination and to involve the business sector in the decision making and implementation process, the Advisory Committee on Fisheries and Aquaculture is established chaired by the minister of MARD.

Private organisations play to some extent a similar role. It is for instance the case of the Confederation of Fisheries and Aquaculture Producers and the Durrës Fisheries Investors Association.

A form of coordination of the value chain is also expressed by the existing examples of contract farming. They find application mainly between local aquaculture producers or processing BOs with international clients. The contracts focus the agreement between the parties for the production and supply of the products under forward agreements with a predetermined price. As it is the case with the processing of the anchovies, the contracts can involve the client in providing a degree of production support through the supply of the raw material or, as it is the case in some aquaculture realities the provision of technical advice based on a broader partnership framework. According to such arrangements the producer is committed to provide a specific commodity in quantities and at quality standards determined by the client and the latter is committed to purchase the commodity at the given price and possibly provide the agreed inputs at the given time.

8.3 COLLECTIVE ACTIONS

Beyond the existing FMOs and the other few associative realities, no other forms of collective actions exist. However, it is noted the limited capacity such organisations have to play the expected role.

CHAPTER 9 TRENDS, SWOT AND POTENTIALS AND NEEDS OF THE SECTOR

9.1 KEY SECTOR TRENDS

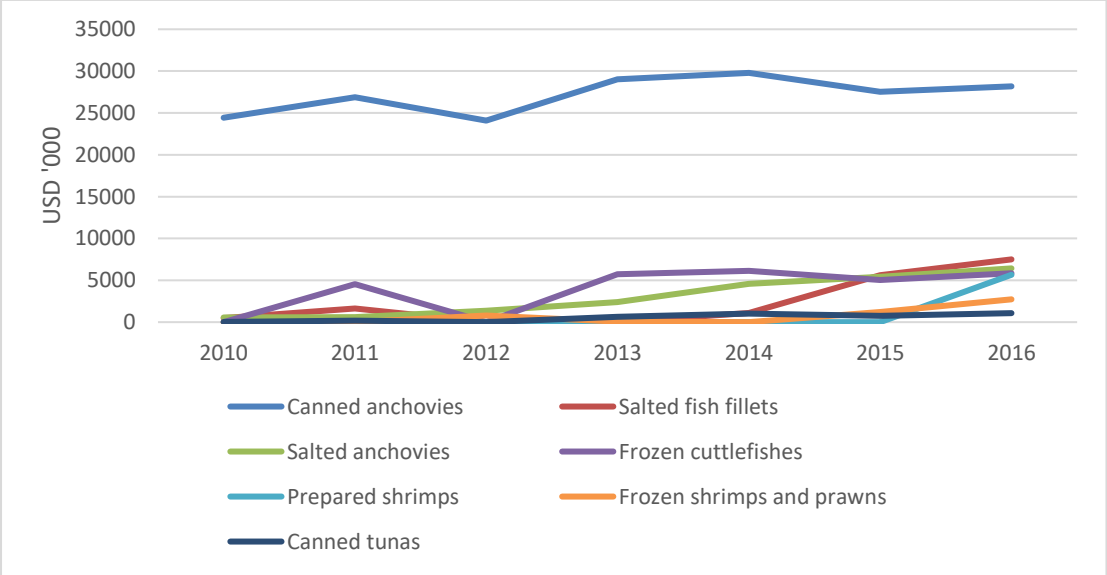
A series of key sector trends are identified and here discussed.

- As already discussed in the Chapter 2.1.1 above, the trend of the marine fishery sector, as shown by the captures recorded during the last 5 years demonstrates the clear effect of the overexploitation of the marine edible species and a shrinking phase is likely expected. Actually, the tendency is to reduce fishing effort because most of the small pelagic and demersal species fished are in a status of overexploitation. In this way it is expected to reach the maximum sustainable yield. Stringent biodiversity and ecosystem protection measures such as the introduction of fishing ban periods are undoubtedly mandatory measures

but, if fully enforced, contribute to make not realistic, at least in the medium if not even in the long term, the development of an ideal contribution of the fishing sector to satisfy the demand of the processing sector.

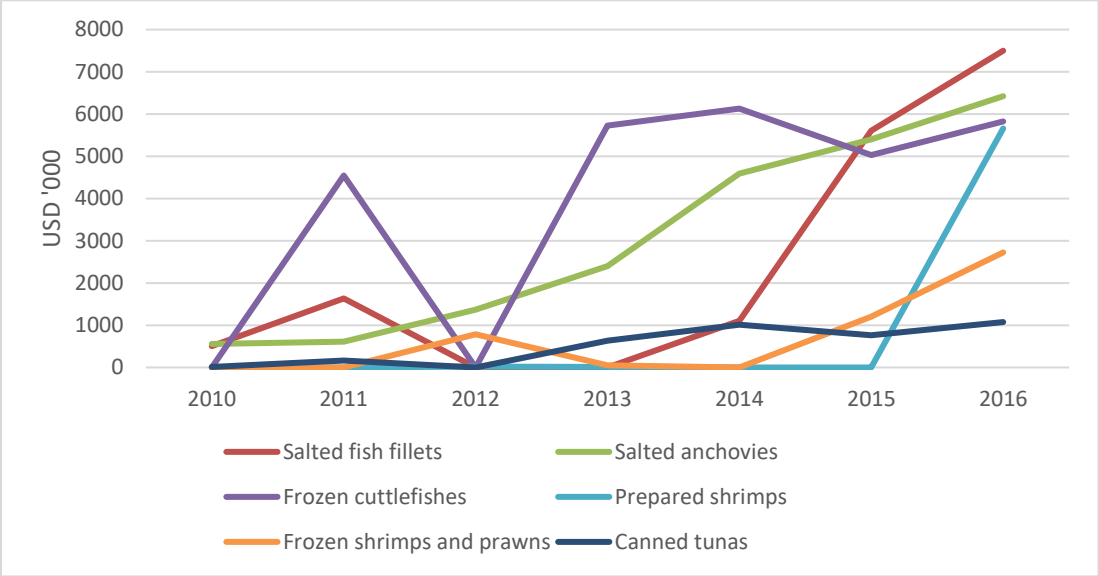
- Unfortunately, the above situation also applies to some realities in the inland fishery, as it is the case with the koran in the lake of Ohrid. As far as the culture of other species is concerned, a slow growing of the demand can be expected, in particular for the trout, at the best.
- On the opposite, the aquaculture production and in particular the marine one is expected to continue its growing trend also supported by the tourism sector. This is also justified by the decline of the marine and inland fishery where the aquaculture sector plays a compensation role to satisfy a growing domestic market demand. Different indicators support the hypothesis:
    - The average per capita seafood consumption in Albania is far from the average in the EU zone.
    - The ratio between the annual citizens' expenditures for seafood and for meat products is far from the one assessed in the EU households (25% of the amount spent for meat is spent for purchasing seafood).
    - The national fishery production does not fully satisfy the market demand leading to the import of marine aquaculture products, as discussed above.
- The below Figure 21 presents the trend of the export of the fish processed products during the period 2010 – 2016. As it can be seen, it is evident the leading role expressed by the export of the canned anchovies. To this purpose, it is highlighted that all concerned respondents agreed that the processing industry sector would further grow by 25-30% if the EU quotas will be negotiated. The industry is not fully utilizing its processing and export capacity. However, as elaborated in the following one (Figure 22), the magnification of the trend of the other products allows to clearly appreciate two important aspects: the growing trend of the export and the diversification of the range of the exported products by including new ones. This is considered an important indicator for what related to the Albanian entrepreneurship capacity and the potential for the further strengthening of the export market.

Figure 9-1 The trend of the export of fish processed products



Source: Elaboration by the authors on data from FAO FISHSTAT J

Figure 9-2 The trend of the export of selected processed fish products



Source: Elaboration by the authors on data from FAO FISHSTAT J

Here below the table summarises the development trends of the fishery primary production and the fish processing sector based on the opinion expressed by the respondents. On average, it is indicated for the aquaculture sector a moderate growing trend (valued 3 on a scale of 5) associated to limited structural change (valued 2 on a scale of 5). The perception of the BOs was lightly more optimistic compared with the one form the experts. As a matter of fact, the stagnant or expected possible shrinking of the fishing activity due in particular to more stringent measures to limit the overexploitation of natural resources and protect the biodiversity and the environment at large will create new opportunities to further develop the aquaculture sector.

Figure 9-3 - ***Fishery sector key development trends***[39]

Sub-sector	**Expansion/contraction** (1-5 strong shrinking-strong expansion)					**Structural change** (1-5 stagnant-changing fast)				
	1	2	3	4	5	1	2	3	4	5
Primary production										
Fishing	■	■				■				
Marine aquaculture	■	■	■			■	■			
Freshwater aquaculture	■	■	■			■				
Fishery processing										
Wholesale	■	■				■	■			
Processing	■	■	■	■		■	■	■		

Source: Authors elaboration based on field interviews and experts' assessment.
Note: Pandemic impact has also been considered.

Considering the consumers' preferences, it is estimated that about 30% of the population in Albania prefers aquaculture products, marine and freshwater, in the order. Fish consumption concentrates on whole fresh fisheries products. However, a limited knowledge about edible species and their culinary characteristics make sea bream and sea bass the most commonly required by the local consumers overlooking other species that could represent

[39] Experts and business operators' opinion

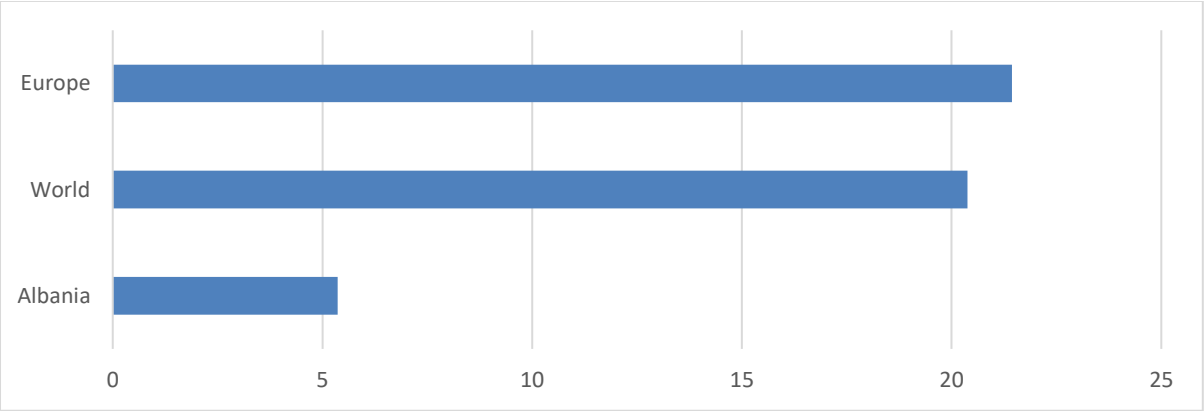
valid alternatives. To this purpose, one BO indicated the need to further progress in the diversification of the offer by strengthening the production of fish fillet. Actually, it is his opinion that offering cleaned, ready-to-cook fish fillets would also facilitate the promotion of alternative fish species in addition to increase the fish consumption.

Mussels are not appreciated like it is in neighbour countries and their consumption is geographically limited. Only recently their consumption was introduced in areas other than the coastal ones. The following table provides some indications on the consumption trends.

From the above, it arises clear the difficulty to change food habits. In the case of the mussels, for instance, the consumption is only slowly increasing. To this purpose, it is worth to mention that until few years ago some restaurants used to keep the mussels in their menu and to offer them as a courtesy starter.

In the period 2006 to 2016 the yearly per capita fish consumption has increased from 3.5 to 5.3 kg/person/year. However, even adding the consumption of fish captured countrywide by illegal fishers, the actual per capita consumption of fish remains far below the average of more than 20 kg per capita in the EU-28, as presented in the below figure.

Figure 9-4 consumption of fish and sea fruits kg/capita/year



Source: FAOSTAT (2020)

According to the above, a market potential for a growing demand exists and some factors are expected to promote or justify it. In particular, the increase of income and changes in life style, the increasing tourism trends in particular during the tourism season[40] and the import of marine aquaculture products, mainly sea bass and sea bream, necessary to cover the domestic demand (the total imports of edible fisheries and aquaculture products amounted to 23,480 tonnes in 2020, a 12.4% increase from 2019). It is worth to remind that the latter occurs despite the strong development of the aquaculture sector in the last several years following the domestic consumer demand, especially for marine finfish products that ultimately has enjoying a growing trend better performing than fishery and freshwater aquaculture.

Considering all this, further space for growing of the sector exists even beyond the already very interesting 7-8% annual growth rate per year (the only sector of food production with a similar trend). Based on the above considerations, this is particularly true for the marine aquaculture.

[40] Restaurants in regions that are famous for their fish, such as Ohrid for Koran, Belluska and common carp and Prespa and Shkoder for common carp, are frequented by tourists where these native species sell very well. Intense presence of such restaurants indicates booming business.

9.2 SWOT ANALYSIS AND POTENTIAL NEEDS OF THE SECTOR

Here below the SWOT analysis related to the fishery sector is presented. The analysis includes one matrix addressing the whole fishery sector and two additional matrixes focusing on the aquaculture and the fish processing sectors, respectively. The proposed selection of sectors is based on the IPARD III planned support to the fish processing sector through the measure 3 and to the aquaculture sector through the measure 7.

Therefore, the matrix for the aquaculture sector is expected to inform the identification of the measures in the framework of the Measure 7 "Diversification" of agriculture farms activities. To this purpose, the analysis is tailored by taking into account the specific requirements relevant to the aquaculture in the inland environment. Eventually, the analysis is also extended to the marine environment to support, through the diversification, the strengthening of the competitiveness of the aquaculture sector BOs. Based on that, the SWOT analysis takes into account the existing fresh water resources such as natural lakes, AWRs, and rivers as well as the marine aquaculture.

Concerning the fish processing sector, the analysis is oriented to strengthen the sector capacity for participation in the EU market and resist the resulting competition pressure.

Table 9-1 SWOT analysis for the whole fishery sector

Strength	Weakness
• The vertical integration of the business allows great entrepreneurial flexibility, economy of scale and improved competitiveness. • Short value chain protecting the interests of producers and consumers. • Reliable international transport services. • The import of raw material ensures more constant commercial conditions and quality.	• Insufficient coordination and representativeness (aquaculture in particular). • Insufficient FMO contribution to counter the IUU fishing. • Most of aquaculture production depends on the import of basic inputs with an impact on the production costs. • Insufficient diversification of the fish processing production.
Opportunity	**Threats**
• Important space for increasing the domestic demand due to the low per capita consumption (supported by actions promoting the change in food habits). • Proximity to the EU market where the demand can easily absorb the Albanian production.	• Excessive exposure to international market fluctuations and conditions. • Insufficient governmental means to enforce the regulatory context and counter the IUU fishing. • Lack of clear legal requirements for the establishment and management of aquaculture activities. • Need for adopting and enforcing safety and quality standards, for which most operators are not ready. • Apparent excessive pressure of hygiene and safety controls.

Among the above weaknesses, the decoupling of the fish processing from the domestic primary production is not mentioned. This because it is not evident that the domestic production, even if sufficient to satisfy at least partially the processing demand, would be economically convenient for the processors compared with the import.

In the following table the SWOT related to the aquaculture sector is presented. In this case, the above traditional four sections (Opportunities, Threats, Strengths and Weaknesses) have been enriched by a further elaboration, which should facilitate strategic analysis, by elaborating SWOT charts in a 9-square matrix where the above mentioned four sections are the frame to four strategic sections (Exploitation, Adjustment, Improvement and Protection) whose results are presented in the strategic consideration chapter included in the summary section. In some case, the elements included within the strategic sections are the outcome from identified elements in the corresponding vertical and horizontal frame sections. In other cases, they are the consequence of one or more elements included in the corresponding vertical or horizontal frame section.

Table 9-2 SWOT analysis for the aquaculture sector

STRENGTHS (+)	WEAKNESSES (–)
Short value chain protecting the interests of producers and consumers.	
Advanced skills of major marine aquaculture business operators.	Insufficient technical and administrative knowledge of fish producers (also including climate changes related threats).
There are important and high quality water resources all over the country for supplying trout and carp farms.	Very limited relationships with the processing sector
AWRs are mostly unutilized[41] and represent 5–10 % of the total inland waters.	There is no real fisheries governance of AWRs and proper yearly restocking of fish is lacking.
Most of these waters could offer ideal, almost pond conditions for rearing large quantities of fish.	AWRs are leased to different bodies for agriculture irrigation and for fishery, so creating conflicting situations.
	Physical state of many of the AWRs is poor
All natural lakes demonstrate to be ideal for different fish species, so making fisheries sustainable and an increased fish production can be ensured.	Intensive aquaculture farming can represent a pollution source (marine in particular).
Reliable international transport services	
	The restocking of the aquaculture farms fully depends from the import of fingerlings.
	The nutrition plans depend on the import of fish feed.
The import of raw material ensures more constant commercial conditions and quality.	The extensive import of inputs worsens the sector contribution to the GHG emission.
	Penalised competitiveness in the international market due to production costs higher than competitors.
FMOs are already organized and they are operating.	FMOs are not fully compliant with the statutory obligations.
Hatcheries are established for freshwater species.	The lack of implementation of restocking plans consistent with the needs makes the sustainability of the hatcheries arguable.
The marine aquaculture records a growing trend.	Limited market opportunities for freshwater products.
High quality products.	Organic farming is not adopted yet.

[41] Annual fish production potential of AWRs is over 1,500 tonnes.

OPPORTUNITIES (+)	(EXPLOITATION)	(IMPROVEMENT)
Favourable government policy for the sector		The commitment to promote new markets shall in particular focus the freshwater aquaculture sector.
Legislation covering inland fisheries complies with EU standards		
The tourism to Albania is following an important growing trend and inland destinations with natural attractions also including natural lakes are gaining the favour of adventure tourism in particular	Recreational and commercial fishing oriented aquaculture can be sustainable. Relatively simple investment to conserve and add value to the produced fish, especially to farmed trout.	
Unemployment and limited income are common constraints in rural areas	The available important water resources all over the country can contribute to create job opportunities and generate additional household income.	
Culture based fisheries could create huge demand for stocking rivers and lakes with trout and carp fingerlings		
		Support for the starting-up of organic aquaculture farms.
The international market rewards the organic production		Organise awareness and skill raising events on the organic production applied to the aquaculture. Technical assistance delivering to accompany BOs in the conversion process of their production from conventional to organic.
The challenging future of captures and the growing fish demand create a favourable opportunity for marine aquaculture	The programme for the further development of aquaculture shall be continued with the adoption of the AZA., as priority step.	Support provided to facilitate new investments in the sector.
THREATS (–)	**(ADJUSTMENT)**	**(PROTECTION)**
Climate changes impacting the environmental conditions critical for the production (e.g. water temperature)		Organisation of training sessions and delivery of advisory services to support the adoption of climate resilient production strategies.
Changing of consumers' food habits		Improvement of relationships with the processing sector to diversify the production outlets.
Market pressure (international and domestic) on BOs of individual value chain steps;		Promote the quality of the production and the specialisation in market niches.

Hatcheries do not have motivated business due to the lack of demand	The development of the inland aquaculture shall justify the launching of a support programme for the rehabilitation of the hatcheries in view of a growing demand for juveniles.	
Increasing competition from foreign producers	Support capacity building in quality and safety standards and production management Develop packages to address large, advanced farmers needs for product quality and safety.	Support investment to promote the local production of basic inputs (fish feed and fingerlings). Support the access to the credit from the bank sector with more convenient conditions. Support the development of marketing schemes, branding, communication.
Still unresolved land property rights hampers investments in increasing aquaculture support infrastructures	Improve mechanisms to define land property rights.	
Fishery Inspectors have no land and water transport and office facilities		
Inspections on natural/artificial lakes and lagoons are not carried out and insufficient cooperation exists between local authorities and police forces to control poaching/illegal fishing		
Lack of training opportunities for fish producers		Promotion of fishery producers knowledge and skills through the joint programming and implementation of actions involving MARD, University and Professional Associations.
Lack of reliable statistics impacting the development of the sector at different levels		
Difficult access to and little convenient conditions of the credit from the bank sector		
Growing attention to the compliance with environmental pollution requirements		Initiatives aimed to raise the awareness on water pollution and related mitigation measures.
Overfishing of large and small native Cyprinids may alter the required balance of fish fauna in natural lakes		Implementation of strategies aimed to develop the FMOs ownership of the natural resources entrusted to them.
Unplanned and careless use of AWRs for irrigation may reduce or even destroy fish production results		Licensing of Water User Associations (WUAs) also for fishery rights could solve the inbuilt conflict caused by bodies of water being used for both irrigation and fishing.
Illegal import of farmed trout impactsx the profitability of trout farming		More effective control on illegal import through a less porous borders and the traceability of products.

Natural or exceptional fluctuations of the fingerlings and fish feed offer in the international market can severely impact the national production capacity	Development of research and investments for the establishment of local fish feed and fingerlings production capacity.

In the following table the SWOT related to the fish processing sector is presented. Similar to what presented above, also in this case the traditional SWOT four sections are enriched by the four strategic sections (Exploitation, Adjustment, Improvement and Protection).

Table 9-3 SWOT analysis for the fish processing sector

	STRENGTHS (+)	**WEAKNESSES (–)**
	The vertical integration of the business, where established, allows great entrepreneurial flexibility, economy of scale and improved competitiveness.	
	The development of platforms allowing the distribution of the production region wide.	An important percentage of processing plants are mono-product.
	All processing plants are certified for export to EU market.	Lack of equipment to satisfy the needs of a diversified production.
	The major processing plants have still an important capacity available to increase the production.	Lack of basic and specialised manpower.
	The acceptance of the entrepreneurial risk is high and BOs are generally well oriented to make new investments and some of them have a clear vision of the business and the context.	Production costs influenced by the insufficient access to/ quality of the maintenance services.
	Quality certification widely spread among the Bos.	Some technologies need to be updated, in particular regarding practices required to meet the standards of EU countries.
		Processing waste are not managed.
OPPORTUNITIES (+)	**(EXPLOITATION)**	**(IMPROVEMENT)**
Favourable government policy for the sector		Diversification of the processing facilitated by the (necessary) adoption by GoA of AZA and the opening of the export of mussels to EU market.
The international markets can absorb major quantities and broad range of products	Dialog between the BOs representative bodies and the GoA to approach and solve the issue related to the work sector.	Support the investment in equipment aimed to update technologies and diversify the processing capacity
The domestic market demand is expected to grow		

The production of fish feed for the aquaculture sector could be developed in the next future		Promotion of the management of the processing waste shall be launched establishing new business links between the aquaculture and the fishery processing sector.
New markets (e.g. North Europe, Scandinavian countries and Africa) can offer new interesting opportunities		Diversification of the production to match the demand of the new potential markets.
Brexit could reveal an opportunity for the export of quantities free of quotas	In compliance with the national policy, GoA shall support the presence of the Albanian fishery BOs in this market.	
THREATS (–)	**(ADJUSTMENT)**	**(PROTECTION)**
The insufficient interest for the existing working conditions leads to an important migration flow (worsted by the observation that the migration rate of whole families has been growing)		Elaboration and implementation of a policy motivating citizens to stay in Albania (including the contrast to the informal and illegal activities). Promotion of the organisation of work unions.
Increased competition for the manpower due to the increased number of foreign companies established in Albania		
EU quotas heavily impact the sector	Dialog between the BOs representative bodies and the GoA to assess the space of negotiation for the EU quotas of certain products.	
Financial crisis can heavily impact the sector and require the preparedness to approach new markets		Diversification of the production and support from GoA to approach new markets are necessary.
Still unresolved land property rights hampers investment	Improve mechanisms to define land property rights.	
The bank sector is not sufficiently responsive in supporting the BOs' investments programmes (access and conditions to the credit)	The GoA shall facilitate the dialog between the BOs representative bodies and the bank sector to support the growth of the sector.	
CA inspection procedures not sufficiently adapted to the different production process (possibly leading to misunderstanding)	The periodical review of the inspections procedures (possibly with the contribution of BOs professional associations) shall lead to the adoption of procedures compliant with the requirements and benefitting of the largest consensus.	
The limited offer of quality equipment maintenance service		Promotion of private investments in the sector of the service to the industry.

CHAPTER 10 IDENTIFICATION OF TRAINING NEEDS IN THE SECTOR

In the aquaculture sector operators and staff benefit of trainings delivered in general by goods or service suppliers as it is the case of traceability programmes, the quality certifications for which they apply as well as on-farm accounting. Also the participation to fairs is acknowledged as an opportunity to increase awareness and knowledge.

Also in the fish processing sector great importance is given to the training. In some companies it is stated that all staff is under training for specific topics (e.g. mechanical training). This because the training is considered to have been the key for success.

In the fish wholesale sub-sector training needs are less complex. Usually, untrained and inexperienced persons are employed and they pass through a training phase during the initial working period. However, the training is more addressed to the women due to the more specialised work they are expected to accomplish with.

10.1 TECHNICAL AND VOCATIONAL TRAINING

Vocational Education and Training (VET) together with active employment and job creation policies remain high on the agenda of GoA. In this framework a new VET Law[42] was adopted in 2017. It aims to create and develop a unified VET system responsive to the socio-economic and technological changes, in full accordance with the needs of the domestic and global labour market. The new Law establishes the National Agency for Vocational Education and Training and Qualifications (NAVETQ) under the responsibility of the Ministry of Finance and Economy as the responsible body for developing the system of vocational qualifications based on the labour market needs and in line with Albanian Qualifications Framework.

The majority of the training programmes follow a 2+1+1 structure, consisting of a two-year basic vocational training, one year of specialisation and one-year consolidation. Upon completion of the final examination, students are awarded both a certificate as a Technician or Middle Manager, corresponding to level 4 of the Albanian Qualifications Framework, and a Vocational State Matura Diploma, allowing access to tertiary education.

However, as seen, the critical element is the lack of manpower as generally claimed in all sectors, namely fishery, aquaculture and processing sectors. Lack of professionalism is spread among the fishers and this is considered directly linked to the lack of manpower. Further, the improving of the production quality management requires the employment of specialised profiles. As reported by a respondent, two specific profiles are nowadays important, namely the responsible for quality certifications and the responsible for the international market. In addition, specific competences are also considered necessary to allow the company profit of the possible project grant opportunities. All such competences are rarely available in the domestic market.

Some realities in the aquaculture sector follow an advanced approach in the management of staff based on the principle that every employee should be able to perform most of the work operations done on the farm. The advantages are multiple ranging from the capacity to replace temporarily absent employees to the application of a position rotation scheme, so facilitating the accomplishment with the most demanding tasks. This entails an important training effort, however cost effective.

From the above it arises clear that before approaching the modalities to create skills and capacities it is necessary to make available the human resources. To this purpose, it is indicative what some respondents stated: even the ones that have been already trained after a short time leave the position, mainly to emigrate. Therefore, the political will and commitment to reverse the existing migration flow is considered the precondition based on which to prepare the design of specific campaigns to promote the existing job opportunities in the fishery and aquaculture primary production and the fishery processing sector, and the design of *ad hoc* vocational training courses associated to elements (e.g., job perspectives) motivating the potential candidates to enrol into the course. The training programme shall be conceived in close collaboration with the BOs of the concerned sectors in order to facilitate the matching of the job offer with the demand.

[42] 15/2017 date 16.02.2017

In the past a vocational fishing high school was established in Durrës but it does not exist anymore due to the limited number of subscriptions and since then no new similar schools were opened. In fact, it is a matter of fact that fishing is a profession not very popular with the last generations and it is not preferred and inherited between generations. That is why today the fishing sector attracts foreign fishermen (Egyptian in particular). A similar issue impacts the mussel farms as well. The problem is also worsened by the fact that it is a relatively difficult job, so it remains unpopular with a large number of people with the result that even unskilled workers are not found. The same applies to professionals that, due to the volume of work in these plants, prefer to find an alternative or other work. According to the opinions gathered, a vocational fishing high school could be of great help for the training of sector operators but the limited size of the sector (about 1,600 professional fishers) can likely arise doubts about its sustainability. Hence the difficulty to consider today the fishery sector training needs within the new VET framework.

Probably, a solution able to offer the due flexibility and the completeness of courses curricula according to the needs would see the involvement of the University. To this purpose, it is worth to mention that something similar already exists for what related to the assessment of pollution. In this case, according to the law, companies need to consult the Faculty of Natural Sciences at the University of Tirana or the Agricultural University of Tirana. Accordingly, the Department in charge for aquaculture and fishery related matters of the Agricultural University of Tirana could provide advice, counselling and training in such fields.

Eventually, the technical and vocational training shall also take into account the needs of other categories, also including the ones relevant to the service providers:

- The preparation of the fishers (the few available lack of professionalism). The importance of such an initiative is evident when thinking to the need of transferring know-how about for instance the reduction and management of waste during the fishing activity.
- The preparation of professionals in the field of the maintenance of fishing vessels hull from different materials (e.g., wood made ones are still serving), marine engines and taken on board equipment.

10.2 TRAINING TO VALUE CHAIN ACTORS

From the above discussions it arises the good capacity demonstrated by the BOs. Nevertheless, it is also possible to identify certain gaps in particular related to the growing attention for the protection of the environment and the climate changes.

According to the above, a series of areas where it is considered necessary to strengthen the knowledge and management capacity of the BOs, is here below presented. For practical reasons related to the scope of IPARD III in the fishery sector targeting the support to processing establishments (Measure 3) and to the aquaculture (Measure 7), the value chain actors considered here are the ones relevant to those measures.

Marine aquaculture

Water pollution and mitigation measures

Animal welfare and nutrition

Diseases prevention

Climate changes resilient measures

Inland aquaculture

Water pollution and mitigation measures

Animal welfare and nutrition

Diseases prevention

Improvement of fingerlings production techniques

Climate changes resilient measures

Biodiversity protection

Fish processing

Waste management

10.3 IMPROVING ADVISORY AND TECHNICAL SERVICES

The advisory and technical services are only provided by the private sector. However, the public sector could, to some extent, provide advisory service through the fishery inspectors and the NFA inspectors during the accomplishment of their duties according to the principle of supporting the BOs in achieving the compliance with the requirements (support to the BOs to facilitate the correct interpretation of the norms and the adoption of the corrective measures, where required). Important could be their role in specific areas such as for instance the prudent use of antimicrobials. These extension activities are thought to be more effective if designed with the support of the results of the inspection activities and their implementation ultimately leads to a better service delivering.

The private sector can as well provide a precious contribution to the professional growth of the sector. Private advisors from different disciplines such as veterinary sciences, marine and freshwater biology, fishery production and management (including for instance the assistance to apply for subsidies/grants), economics, biotechnology, computer technology, population dynamics and many others could provide inputs on regular basis or, in the case of very specialist areas, upon call when the need arises.

In both cases the required competences are mostly missing and specific support shall be delivered to fill the gap. To this purpose, the university could be a precious partner with its lecturers already collaborating with some of the aquaculture farms and its participation to the ERASMUS "ALMARS" project[43].

CHAPTER 11 ALIGNING TO THE EU GREEN DEAL

11.1 EU GREEN DEAL RELEVANCE TO THE SECTOR

In the following chapters the contribution of the fishery sector to the Green Deal is discussed.

11.1.1. Farm to fork policy actions

The EU Green Deal policy, by combining agricultural policies with the blue economy ones relevant to aquaculture and fisheries sectors, is expected to give, among others, a boost to the Farm to Fork strategy. In turn, the contribution of the “farm to fork” chain to the Green Deal is quite diversified due to the many levels where different types of actions can take place along the supply chain of the fisheries products. Here some of the specific aspects relevant to the aquaculture and the fishery processing are taken into account.

While the primary production has an important role in contributing to the EU Green Deal, the fish processing sector plays a less evident but however necessary role. To this purpose, it is necessary to make reference to the fisheries control system presently submitted to a revision aimed at modernising and simplifying the rules for monitoring fisheries activities and ensuring compliance with the Common Fisheries Policy (CFP). The fish processing sub-sector is a primary actor in the marketing of fishery products and one of the links of the supply chain. Therefore, it is expected to comply with the obligations of the control system, in particular for what related to the improvement of the traceability. To this purpose, a specific lot of fishery products is linked to a particular landing by a fishing vessel (identified by the unique fishing trip number). Processing BOs shall ensure that information on each lot of fishery products is recorded and transmitted electronically along the supply chain. From the above it descends that any interruption in the traceability chain would prevent the monitoring of the compliance of all actors upstream the processing BOs. Eventually, it is noted that operators dealing with fishery products imported into the EU must also provide such information. The correct functioning of the system ensures the compliance with the food safety requirements as well as with the marine protection ones and at its founding is the collection of reliable data (a precondition to plan any intervention).

As reported, organic aquaculture is not practiced in Albania yet. In the EU zone the organic farming in general is intensively stimulated for its great potential for farmers and consumers alike. The benefits of organic farming are associated with its positive impact on the biodiversity, higher returns for the farmers and growing interest from the consumers who recognise its value. Similarly, the organic farming in aquaculture aims to promote environment

[43] ALMARS is a three-year Erasmus+ capacity building project (Key Action 2) with a focus on Enhancing the Marine Fishery industry in Albania. Started in 2019, it will be completed in 2022.

protection, maintain the biodiversity and build consumer trust in organic products. Specific rules govern the organic aquaculture sector, as identified in the EU Regulation 889/2008[44]. These rules follow the same broad principles as the regulations for all other organic products but have been adapted to fit the sector. Key features of the aquaculture regulation include:

- Strict maximum stocking densities. This criterion is relevant to multiple purposes and in particular to ensure reasonable conditions of animal welfare (so preventing conditions of immunodepression from distress) and to maintain the water pollution within limits better managed in the natural environment.
- Water quality requirements. Beyond the chemical profile of the water with a special attention to the pollutants, important parameters for the quality of the production and the animal welfare, are the oxygen concentration and the water flow rate.
- Rules that specify that biodiversity should be respected, and which do not allow the use of induced spawning by artificial hormones.
- Handling minimised to avoid stress and physical damage.
- The provision that organic feeds should be used, supplemented by fish feeds derived from sustainably managed fisheries.

When considering the products of animal origin, the One Health concept, strongly supported by the EU policy, puts the focus at the interface of humans, animals, plants and environment. It recognises that human health is tightly connected to the health of animals and the environment, for example that animal feed, human food, animal and human health, and environmental contamination are closely linked. In such a context, the Antimicrobial Resistance and Emerging Threats are relevant issues also for the aquaculture sector. Actually, modifying the common production practices at farm level by for instance adopting good hygiene practices or good farming practices positively reflects on the human health and ultimately on the environment. It is the case of the prudent use of antimicrobials in veterinary medicine, as better framed by the new EU Regulation of veterinary medicinal products[45]. Here the major issue is the growing of the Antimicrobial Resistance (AMR) linked to the excessive and inappropriate use of antimicrobials in animal and human healthcare (33,000 human deaths are estimated to occur in the EU/EEA every year[46] associated to considerable healthcare costs). The matter is considered in the Farm-to-Fork and Biodiversity Strategies where the decreasing of the overall EU sales of antimicrobials for farmed animals and in aquaculture by 50% is targeted to be achieved by 2030.

To make it possible a series of elements are necessary covering the whole supply chain of the veterinary medicinal products, from the marketing to the prescription and the administering to the animal. At farm level the critical elements are the establishment of the register of medicinal products and their administration, and the identification of the person responsible for the management of the veterinary medicinal products (usually the veterinarian). Nevertheless, a helpful element in the present context is represented by the quality certifications. Such certifications, largely adopted by the operators include, among others, the antibiotics free production. On the CA side, it is noted that the Albania Law on Veterinary Service establishes important prerequisites such as:

- A daily register of VMPs movements is kept at the veterinary pharmacy indicating, among others, name and address of the buyer, name and address of the veterinary doctor that has issued the prescription (Art.98). And such data are to be kept for three years;
- VMPs used in food producing animals and that have a withdrawal period are sold only upon submission of a prescription issued by a veterinary doctor exercising his activity in compliance with the requirements of the Law (Art. 99).

However, an additional critical element can be the capacity of inspection of the CA. The ongoing strengthening of the veterinary service could offer an opportunity to overcome the problem if the contrast to the AMR will find room in the Veterinary Service programmes. In addition, it will also require the support from the public health authority in the framework of the One Health coordination. Actually, it seems possible for BOs to buy antimicrobials from other channels that veterinary pharmacies (e,g, the human pharmacies) without prescription.

[44] Commission Regulation (EC) No 889/2008 of 5 September 2008 laying down detailed rules for the implementation of Council Regulation (EC) No 834/2007 on organic production and labelling of organic products with regard to organic production, labelling and control

[45] Regulation (EU) 2019/6 of the European Parliament and of the Council of 11 December 2018 on veterinary medicinal products and repealing Directive 2001/82/EC

[46] Cassini et al., (2019) 'Attributable deaths and disability-adjusted life-years caused by infections with antibiotic-resistant bacteria in the EU and the European Economic Area in 2015: a population-level modelling analysis', in Lancet Infect Dis. Vol.19, issue 1, pp. 55-56.

The above considerations on the role of the animal health status in influencing and being influenced by the other components of the One Health concept cannot overlook the Animal Welfare (AW). In fact, as scientifically proved[47], the strong link between AW and animal health, human health, and environment is evident. Taking care of AW and implementation of the related standards is contributing to the reduction of the environmental impact from animal farms (including aquaculture), so taking care of the environmental health. Likewise, AW standards can regulate and influence food safety and antimicrobial resistance (primary factors for human health). Improving AW in farms will reduce stress-induced immunosuppression, the incidence of infectious diseases on farms and the shedding of human pathogens by farm animals, antibiotic use and antibiotic resistance, and the environmental impact from the farm animals. Eventually, to further confirm the importance accorded to the AW related issues, a "One Welfare" platform was recently presented, where the interconnections between AW, human well-being, and environment are recognized.

The transposition into practice of the AW standards requires a different level of investment by the concerned operator, sometimes quite substantial. This in turn requires a relatively long period for the full enforcement of the adopted national standards. The current situation in Albania in the aquaculture sector shows few good examples some BOs apply a reduced fish density in the cages to ensure a better quality of the product (consequence of the improved welfare condition). However, it is considered that the compliance with the basic animal welfare requirements shall be ensured, as part of the necessary compliance with the national minimum requirements.

11.1.2 Energy efficiency and use of renewable energies

No specific measures of energy efficiency have been adopted in the fishery sector.

Considering the available technology, the fishery sector could make use of renewable energy through the installation of solar rooftops or wind turbines in the fishery processing plants as well as in the aquaculture land facilities.

A further opportunity is represented by the above discussed development of wastewater or fish by-product processing where the additional energy required by the process could be provided partially or totally through the combustion of fuels on site (e.g. part of the oil produced).

The aquaculture and the processing sectors could also contribute to limit their environmental footprint by adopting electric powered means such as service boats in the fish farms and terrestrial means for the handling of products internally to the processing plant.

11.1.3 Fostering circular economy

The development of a fishery by-products and wastewater management system would contribute to minimise the waste generation and to the reuse of the rendering outputs. To this purpose, the interventions aimed to renew the processing plants shall preferably include investments for the wastewater and by-products management. Further, the investment is compliant with the MARD-FDP measure focusing on the improvement of the treatment and handling of waste and the utilisation of by-products. The processing of fishery by-products can rely on an important volume of raw material, as highlighted in the

[47] **de Passillé AM**, Rushen J. Food safety and environmental issues in animal welfare. Rev Sci Tech (2005) 24(2):757–66. **Goldberg AM.** Farm animal welfare and human health. Curr Environ Health Rep (2016) 3(3):313–21. doi:10.1007/s40572-016-0097-9

Annex 8.

In the freshwater aquaculture sector, the use of agriculture by-products (manure from livestock and waste from arable crops, vegetable production, the milling industry and the olive oil industry) to promote the growing of natural feed in the ponds and AWRs and to feed fish would further contribute to the fostering of the circular economy.

The large use of glass made jars greatly limits the use of the plastic in the processing sector.

11.1.4. Contribution to Biodiversity Strategy 2030

In the context of the EU Green Deal, the protection of the biodiversity deserves a special place. Different aspects are worth to be mentioned. The first one is the overfishing of some species having a direct impact on the biodiversity, in particular when exposed to the climatic changes[48]. Achieving good environmental status of marine ecosystems must involve the restoration of carbon-rich ecosystems as well as important fish spawning and nursery areas (also as protected areas). Marine resources must be harvested sustainably and there must be zero-tolerance for illegal practices. In this regard, the full implementation of the EU's Common Fisheries Policy, Marine Strategy Framework Directive and Birds and Habitats Directives is essential and it requires the firm commitment from the CA.

An additional aspect further challenging the biodiversity is the progressive spread of alien invasive species. Example in the Albanian waters is, as highlighted above, the blue crab (*Callinectes sapidus)*, responsible of heavily impacting, among others, the fish reproduction cycle by feeding fish eggs and young fish and damaging fishing equipment (gears). The control and management of alien invasive species is primarily based on the prevention due to the high cost (and possibly social and ethical issues) generally resulting from the implementation of eradication programmes. However, in our case effective solutions could consider the turning of the problem into an opportunity, considering the culinary value of the crabs. This would greatly contribute to limit the costs of the programme aimed to at least control one alien invasive species challenging the biodiversity and hence impacting the marine ecosystem. To this purpose, a programme for the promotion of the commercial fishing of blue crabs shall be designed in order to assess the actual dimension of the problem, to identify the most appropriate control measures and to establish an initial public-private partnership in view of leaving the totality of the initiative to the private sector.

In all cases the matter offers the opportunity to bring the attention of the CA on the need to apply, among the measures to prevent the incursion of alien species possibly becoming invasive, the regular control of the de-ballasting of the cargo ships[49] according to the International Convention on the Control and Management of Ships' Ballast Water and Sediments and the relevant EU legislation[50].

As part of the protection of the marine environment, the organic aquaculture is an element becoming more and more popular with the growing of the sector, Actually, the high stocking densities facilitate the onset of numerous diseases which can also be transmitted to wild stocks. Hence, large quantities of antibiotics and other chemicals are used on the fish farms to combat the spread of diseases, which end up in the sea, contaminating the entire wild marine food chain. In addition, the escape of farmed fish can cause genetic pollution of wild populations. Organic aquaculture, including, among others, the "antibiotic free" certification some producers already have, has much lower impacts than conventional aquaculture and is therefore to be preferred as it is more sustainable.

Eventually, the solid waste in particular from the intensive marine farming affects not only the area surrounding and directly affected by the effluent but can also alter a wider coastal zone at different ecosystem levels, thus reducing the biomass, density and diversity of the benthos, plankton and nekton, and modifying natural food webs with possible consequences on the fish farm itself.

[48] It is considered that the ongoing climate change is producing a more serious impact on the marine environment than on the terrestrial one, but this is not so evident or made public just because most of resources are allocated to study the effects on the environment where people live.

[49] The importance of this control is in the fact that a ship freely de-ballasting releases samples of about 7,000 different marine species originated from the place of departure.

[50] **Regulation (EU) 1143/2014** of the European Parliament and of the Council of 22 October 2014 on the prevention and management of the introduction and spread of invasive alien species; **Directive 2005/35/EC** of the European Parliament and of the Council of 7 September 2005 on ship-source pollution and on the introduction of penalties, including criminal penalties, for pollution offences.

11.1.5. Climate change implications and impact on investments needed

The Green Deal takes on a great importance for the fishery sector due to finding that the ocean ecosystems remain the epicentre of global warming. This is expected to trigger a series of harmful consequences impacting the marine environment and by extension the human activities depending from this environment. Among them, it is worth to mention the migrations of fish toward the poles in response to ocean warming. This would have easily predictable consequences on fisheries that would add to the already critical situation due to the overexploitation of some species. In addition, the increasing of the marine water acidification[51] would have the capacity to heavily impact the marine life. In fact, studies have shown that calcium carbonate formation is disrupted if water becomes too acidic and the consequence is the damaging of many marine species that use calcium carbonate to form their skeletons and shells.

A conservative approach to the matter recommends considering the marine environment as a fragile one in the path of not reversible negative modifications. Accordingly, the fishery sector being the first beneficiary of the marine environment healthy status, all investments shall be calibrated to include climate change mitigations measures.

For what specifically related to the aquaculture, it is proved how the fish feed is a significant source of GHG emissions and among the different contributors along its production process, the transport plays a major role. As consequence, it is intuitive that reducing the distance between fish feed plant and fish farm a proportional reduction of GHG emission is achieved.

11.2 EU GREEN DEAL POTENTIAL ACTIONS

11.2.1 General context

In the Context Analysis the EU Green Deal has been extensively discussed for what related to its importance in the context of the present sector analyses. In particular, the discussion focused on the identification of possible actions relevant to contrast the climate changes, the supply of clean, affordable and secure energy, the promotion of the circular economy in the concerned industrial sectors, improving the energy and resource efficiency in building and renovating, accelerating the shift to sustainable and smart mobility, the design of a fair, healthy and environmentally-friendly “Farm to Fork”, preserve and restore ecosystems and biodiversity, and a zero-pollution ambition for a toxic-free environment.

11.2.2 Specific actions

Here below the specific actions identified as compliant with the Green Deal are presented more in detail. Due to the fact that the achievement of the Green Deal cannot be expected with the only contribution of the private sector, some of the below considerations involve also the CA.

- Treatment of fishery industry by-products. It is considered that likely more than 50% of the remaining material from the total fish capture is not used as food. Hence the quantity of differently disposed waste is enormous, it is an important environmental contamination source and its disposal prevent the production of marketable derived products. The establishment of a plant taking care of the collection of the solid waste from all processing plants, its processing and trade of the derived products shall be taken into account.
- Introduction of new processing lines adopting the rational use of water during fish handling and processing. In addition to reduce the water consumption, the new system would lead to the concentration of the waste components in the effluent wastewater (proteins and fat as oil and grease). This could provide an alternative in the treatment of the wastewater.
- Treatment of the wastewater at the processing plant outlet with the possible recovery of marketable component (the above-mentioned proteins and fat, etc.).
- Certification of antibiotic free aquaculture. If on the one hand it contributes to the quality of the production addressing commercial requirements, on the other hand contributes to decrease the use of antimicrobials in the animal production compartment.
- Fish density minor than the EU standards. Actually, the ideal density shall be assessed as part of the EIA where the possible impact, according to parameters such as the oxygen concentration and the water

[51] It has been assessed that the trend in ocean acidification is about 30 times greater than natural variation, and average surface ocean pH has dropped by 0.1 unit, a 25% increase in acidity, which is significant.

flow/exchange, of the farm waste on the environment with specific reference to the benthos, plankton and nekton, and the natural food webs is assessed.
- Self-production of energy through solar rooftops or wind turbines in fishery processing plants and aquaculture land facilities.
- Self-production of energy by using the oil from the processing of fish by-products.
- Support the establishment of one domestic fish feed production plant.
- Aquaculture production management system. The advanced information management offered by such systems allows, among others, the real-time monitoring of the production, so reducing the losses, optimising the timing for harvesting, timely detecting problems impacting the production, providing the exact quantity of inputs. All this contributes to keep the environmental footprint of the farm at the minimum level.

CHAPTER 12 OUTCOME

12.1 KEY FINDINGS AND CONCLUSIONS FROM THE SECTOR ANALYSIS RELATED TO IPARD III PROGRAM

From a general point of view, a better performance of the sector could be facilitated if infrastructures and services for fisheries and aquaculture (e.g. shipyards, ship and equipment maintenance skills, etc.) are made available, subsidizing policies are adopted on behalf of all BOs and eventually, AZA are approved. In addition, the block since 2017 of the issue of business activity licenses without having approved the AZA areas is considered a major constraint to the sector development.

Considering the decoupling of the primary production from the processing sector as a characteristic element of the local context due to different factors, the vertical integration of the business is probably the main strength allowing the operators to diversify the company source of profit (from primary production to retail passing through the processing) and achieve an economy of scale making the company competitive.

Among the sector weaknesses, the insufficient coordination and representativeness, limited fight against IUU, lack of domestic availability of inputs for the aquaculture and the limited diversification of the processing are recorded. Apparently, most of them could be overcome with relatively small efforts.

In general, the domestic and international market to which the Albanian production is oriented offer good opportunities due to both the Albania low consumption of fish products, destined to increase, and the big dimension of the EU market compared with the Albania fishery sector total production.

The sources of possible threats are the fluctuations of the international market to which a sector strongly dependent on it is exposed, a certain insufficient support of the GoA for what related to the alignment to the decisions to be taken to fully regulate the sector and a high pressure of NFA official controls not apparently justified by the circumstances.

Here below specific considerations are addressed for what related to the primary production and the fishery processing sectors.

12.1.1 Primary production

Key findings to correctly design the support to the sector in the context of the Measure 7 – Diversification are the following.

The marine aquaculture

The sector is generally healthy and in the future its growth is expected to continue. Nevertheless, major constraints could impact those expectations due to the dependency of the domestic production from the import of crucial inputs (i.e. fingerlings and fish feed) leading to costs that could further increase and significantly impact the competitiveness of the sector on the international market (the reference market for the sector).

- The advanced skills and professional competence of major marine aquaculture business operators leads to high quality products, as demonstrated by the positive market trend. Nevertheless, some technical and administrative gaps exist, in particular for what related to climate changes and consequent, related threats, as it is for instance with the biodiversity. Similarly, the pollution of the intensive fish farms, in particular the marine ones, appears to be overlooked even if some business-oriented decisions tend to

mitigate the problem (e.g. emplacement of the cages where there is relatively deep water and good sea current).
- The restocking of the marine aquaculture farms based on the production of fingerlings as well as the fish feeding fully depend on the import. If on the one hand this likely ensures more constant commercial conditions and more standardised quality, on the other hand impacts the production costs and prevents the development of a new industry in the country. A positive partnership between research institutions (e.g. Fisheries Research Institute, University) and BOs should be promoted to develop the capacity of domestically producing seabass and seabream fingerlings as well as fish feed. The challenging future of fish captures and the growing market demand for fish contribute to create an opportunity for the marine aquaculture that shall be maximised with the ultimate result of improving the competitiveness.
- To diversify the species under culture, especially with the ones with high market prices.

The freshwater aquaculture

The sector does not perform as well as the marine aquaculture. Nevertheless, it represents an important activity sector in the internal areas of Albania and growing perspectives exists if correctly addressed. Some additional key findings are briefly discussed here below.

- The freshwater aquaculture does not have a particularly positive market trend. However, different options are on the table to support the relaunch of the sector. They do not reciprocally exclude and, on the opposite, can be complementary.
- There are important and high-quality water resources all over the country making feasible the establishment of new inland aquaculture initiatives. However, in some cases as the exploitation of the AWRs, some governance issues risk to prevent of profiting from an opportunity.
- A simplified access to the market due to the short value chain. An important advantage when thinking to small scale quality productions, as it is in the case of farm diversification activities.
- FMOs are already established.
- Hatcheries for freshwater species are established and good experience exists in the production of fingerlings. Nevertheless, the lack of implementation of restocking plans consistent with the needs makes the sustainability of the hatcheries arguable.
- Among the major weaknesses, it is worth to mention the very limited relationships with the processing sector and this drastically cuts the production outlet opportunities. An aspect particularly important when, among the threats, the change of consumers' habits leads to the shrinking of the demand for a given product, as it occurs in the freshwater aquaculture. Accordingly, the sector shall pursue the diversification of its production outlets and to this purpose, the extending of the delivering of the production to the fish processing sector becomes an opportunity that, associated to the expected increased demand for freshwater finfish, would support the renewed development of the freshwater aquaculture compartment.
- Though freshwater aquaculture farms have a rather good results, their fish seed supply with quality fingerlings could be improved through improving both the efficiency and reliability of already widely practiced propagation of trout.
- The inland aquaculture can positively interact with some agriculture practices. It is for instance the case of:
    - Manure produced by animal husbandry could be used in suitable AWRs.
    - Waste from arable crops, vegetable production, the milling industry and the olive oil industry could be used to feed fish in the AWRs.
- It can become an important complement to the rural economy through some specific activities such as:
    - Captures during recreational fishing possibly offered in the context of agritourism facilities. The tourism to Albania is following an important growing trend and inland destinations with natural attractions also including natural lakes are gaining the favour of adventure tourism in particular.
    - Produced fish can be sold effectively through the tourist industry in the local restaurants (as in some cases already is).

12.1.2 Fish processing

Key findings to correctly design the support to the sector in the context of the Measure 3 are the following.

- All processing plants are certified to export their products to EU and the quality certifications is widely spread among them. Based on this we note that investments shall aim to:

  - maintain the achieved standard and further expand the penetration of the international market.
  - To introduce new processing technologies to diversify production and leading to create additional job opportunities.

In all cases it is mattered to note that, according to the respondents, the bank sector is not sufficiently responsive in supporting the BOs' investments programmes in terms of access to the credit and related conditions.

- The fish processing sector is growing and the international markets as well as the domestic one can absorb major quantities and broad range of products. To some extent the sector is ready to profit of such an opportunity. However, the lack of manpower is reported as the main issue able to prevent the growing of the production. Actually, the social dimension of the problem impacts many if not all Albanian production sectors and appropriate policies are to be implemented by the GoA.
- An important number of plants are mono-product, so missing a certain degree of diversification of the production that can play a buffer role when disruptions of the market occur thanks to the diversification of the profit sources. The already discussed economic crisis in the EU and the opportunities in new markets such as North Europe and Africa make the diversification of the production a must to allow BOs to better tailor their offer to the characteristics of new markets. The business shall constantly look for new products to be proposed in the market and in such a context, two aspects are highlighted:
  - The extending of the processing activity to the inland finfish aquaculture products (the trout in particular) could reveal a win-win alternative by offering new business opportunities to the processing sector by enlarging the range of processed fish products to be offered to the consumers and a new outlet to the freshwater production, as mentioned above.
  - The strengthening of the processing capacity to produce diversified products. It could be for instance the case of fish fillets straight or prepared or, once the export ban lifted, mussel-based preparations. To differentiate the production would also be a way to mitigate the impact of the quotas on the plant processing capacity. A further opportunity concerns the processing of freshwater production, as discussed above. It could be the case, for instance, of a smoking line for cyprinid fish, similar to what is already done in Hungary or the Czech Republic.
  - In the framework of the diversification of products processing it is worth to mention that an investment support programme such IPARD III could motivate BOs to extend their business to less profitable working options (e.g. to strengthen the processing of sardines in addition to the anchovies) today partially neglected due to the existing EU quota and because privileging only those investments allowing to maximise the profit. This would instead contribute to optimise the sustainable exploitation of all available natural resources. BOs indicate that the opening of sardine canning lines (associated to the review of the EU quota) would increase production by at least 200% and creating many new job opportunities.

12.2 PRIORITY INVESTMENTS IN AQUACULTURE

The investments here considered are conceived for implementation within the Measure 7 – Diversification. Under such a context the aid to investments is intended addressed to the rural farms through the starting-up of non-agricultural activities, as the inland aquaculture is.

However, the analysis carried out has identified the filling of some gaps in the marine aquaculture (to improve the competitiveness, in particular in the international market) as the most apparently cost-effective investment in the aquaculture sector. In fact, marine aquaculture is the best performing sector among the fisheries and it also benefits of growing perspectives. According to this, additional investments are below proposed for the activity diversification of marine aquaculture farms rather than agriculture farms.

12.2.1 Types of investments

Here below the table indicating the types of investments has been elaborated. In addition, for each investment, the possible premiality criteria consistent with the Green Deal have been identified. The latter shall be considered in addition to general premiality factors (gender related, young farmers/entrepreneurs).

Table 12-1 Types of investments and Green Deal premiality criteria (aquaculture)

Sector	Investment	Green Deal	
		Category	Rewarding criteria
Freshwater	Recreational fishing	Production of renewable energy Preserving and restoring ecosystems and biodiversity Sustainable and smart mobility Circular economy From "Farm to Fork"	Solar rooftops or wind turbines Sustainable aquaculture practices → Organic freshwater aquaculture Use of electric powered service boats Use of agriculture by-products to feed the fish and promote the growing of natural feed Aquaculture organic farming Adoption of fish welfare standards Certification of antibiotic free production
	Commercial fishing		
	Preserving of freshwater fishes	Production of renewable energy	Solar rooftops
Marine	Fingerlings production	Reduce greenhouse emission	Reduced transport distance to final consumer
	Fish feed production		Local supply of ingredients Reduced transport distance to final consumer

- Recreational fishing. Its development is intended in the context of tourist attractions, practice a marginal commercial fishing for fish group management and support the fingerlings production of existing hatcheries. To this purpose, it will be planned the restocking of AWRs and small natural lakes with carp and other cyprinid. It is noted that in particular in the case of the AWRs, the carp farming will contribute to the maintenance of the basin due to its herbivore diet.
- The recreational fishing can also be developed in appropriate riverine environment. The restocking would be done with fingerlings produced by existing trout farms. One consideration is here addressed relevant to the prevention of the spread of alien species. The likely retained trout will be the rainbow trout (*Oncorhynchus mykiss*). Its presence could challenge the Albanian endemic brown trout (*Salmo trutta fario*) possibly up to the level of an invasive species. However, the adoption of appropriate measures[52] to prevent its escape associated with its incapacity to reproduce in the free environment shall be sufficient to successfully manage the risk.
- The artisanal preparation of preserved freshwater fishes. The four most popular methods of fish preservation are freezing, canning, smoking and pickling. Such a diversification activity could well be associated to other tourist-oriented farm activities such as the agrotourism.
- The diversification of aquaculture farm activity by
    - the development of the production of fingerlings for marine aquaculture.

[52] Among the measures, a mandatory and preliminary environmental impact assessment study with a special focus on flooding risk, hydro-geologic situation and habitat to long-distance migrant species is included. The study will lead to the prescriptions of measures such as, for instance: (i) application of the precautionary principle or 'polluter pays' principle to minimise the risk of escapee fish entering the wider environment; (ii) increase of relevant tract of river embankment height to prevent escape of the species during periods of flooding; and (iii) construction of containment structures that provide some biosecurity.

- the development of the production of fish feed.
- extending it with the handling of harvested products (e.g. size-based sorting, ice production, packaging, etc.) in compliance with hygienic and food safety standards in view of improving the export opportunities[53].

The above proposed investments for the production of fingerlings and fish feed could be an opportunity for the marine aquaculture producer organisation for collective investments, access to the products (critical inputs for the productions) and profit from the selling of exceeding quantities, if any.

Considering the activity diversification scope of the investments, the expected responsiveness to the future calls and the average dimension of the initiatives, the freshwater aquaculture is expected to absorb between 0.5 and 1 million euro per year.

As far as the diversification in the marine aquaculture is concerned, two proposals could be expected to be approved, one for the fingerlings production and one for the fish feed production.

For the production of seabass and seabream fingerlings it is assessed an investment of about 500.000-700,000 euro to establish the fingerlings farm including the production cost of a hatchery of about 1-1.5 million fingerlings/year and a medium size building hosting the tanks and the required operational sections.

The investment for a fish food factory of medium size is assessed to be about 1.5 million of euro (500 000 euro for the construction and about 1 million euro for the equipment). The factory would have the maximum capacity of about 10 tonnes of food/hour, sufficient to cover the needs of marine aquaculture in Albania.

12.2.2 Proposed eligibility criteria

The applicant should:

- At the time of application for freshwater aquaculture the concerned agriculture farm shall be registered in the National Registration Centre and included in the national farm register. It shall as well comply with the respective national standards for what related to its main activity.

- The application for investments related to the marine aquaculture sector are limited to companies already operating in the sector and intending to diversify their activity.

- At the time of application the marine aquaculture company shall be registered in the National Registration Centre, included in the national aquaculture farm register and it shall comply with the relevant national standards. In the case that an association of aquaculture companies applies, all the members are expected to satisfy the above requirements.

- Each application is completed with a business plan in accordance with the format to be developed by the IPARD Agency. For small investments, a simplified business plan will be submitted. The business plan should demonstrate the economic viability of the enterprise at the end of the realisation of the investment. The verification of the economic viability of the investment shall be a transparent procedure based on a series of predefined criteria.

- The application for freshwater aquaculture is limited to micro/small size agriculture farm employing less than 50 persons and having annual turnover of less than 1 million euro.

- The capacity of the investment should be at least 3 tonnes/year in the case of rainbow trout and 6 tonnes/year in the case of cyprinids by the time of final payment claim.

- The aquaculture holding should be certified by the time of final payment claim according to the existing legislation.

- Species to be supported are: Trout, Carp, Crayfish, Frog, Perch, Pike, Tilapia, Sturgeon, European Eel.

- The application for marine aquaculture is limited to small/medium size aquaculture farms employing less than 250 persons and having annual turnover of not less than 3 million euro.

[53] It is worth to mention the great dimension of the neighbour Italian market (about 120,000 tonnes/year out of which 12,000 tonnes only are locally produced) and the support to the opening of new markets foreseen within the above mentioned MARD-DFP.

- An applicant may not submit an application before the final payment on previous grant contract is achieved. However, one applicant may be granted more than one project, but the total eligible cost of the investments per recipient under this measure may not exceed EUR 600,000 for the programming period.

12.2.3 Eligible costs

Here below the proposed eligible costs.

- Purchase of new machinery and equipment as defined for each sector.
- Purchase of machinery/ equipment and construction works necessary to implement the above indicated rewarding criteria encompassed within the mentioned Green Deal categories.
- ICT equipment including software, if it is an integrated part of the project.
- General costs linked to expenditure such as architects', engineers' and other consultation fees up to a ceiling of 12% of the eligible costs.
- Works for the improvement of ponds and reservoirs, and rivers banks.
- Equipment for improving the efficiency of the production process, optimisation of feeding, fish feeder or feeding automation equipment (freshwater aquaculture only).
- Installation of small cold stores for storing of product post harvesting (freshwater aquaculture only).
- Expenditures for electricity grid connections including transformers, energy transmission lines, circuit breakers and so on (marine aquaculture only).
- Construction and purchasing of equipment for fish feed mill (marine aquaculture only)
- Equipment for water re-circulation systems (marine aquaculture only).
- Construction and purchasing of equipment for egg and fry production (marine aquaculture only).
- Equipment for improving the quality and hygiene conditions of the production and harvesting.
- Equipment for diminishing the environmental impact of the aquaculture holdings, in accordance with EU standards in this field: waste management systems, equipment for purification of waters released from ponds and reservoirs and for monitoring the characteristics of the water quality parameters.

12.3 PRIORITY INVESTMENTS IN PROCESSING

12.3.1 Types of investments

Similar to the above, also for the processing the table below presents the types of investments identified and, for each investment, the possible premiality criteria consistent with the EU Green Deal.

Table 12-2 Types of investments and Green Deal premiality criteria (processing)

Investment	EU Green Deal	
	Category	**Premiality criteria**
Renewal of processing equipment	Production of renewable energy	Solar rooftops or wind turbines
	Sustainable and smart mobility	Electric powered means for commodities handling
	Reduce waste	Rational use of water during fish handling and processing
	Reduce waste/ From 'Farm to Fork'	Collection and treatment of fishery industry by-products to produce derived products
	Preserving and restoring ecosystems and biodiversity	Processing of products from withdrawn alien invasive species
New processing lines destined to diversify the production	Digital technologies to increase sustainability	Production monitoring through data/image recording

- Renewal of processing equipment. The renewal of the processing equipment could contribute to the diversification of the production. To this purpose, it has been made the example of the smoking of

freshwater fishes, but it could also be the case of innovative products with different forms of packaging with local products combined with aromatic plants or local spices (Albania is a worldwide renowned origin country for Medicinal and Aromatic Plats) or canned products largely required by the African market. This includes also the improvement of the product cooling technology with a special focus on the advanced freezing systems. Actually, the European market is looking for high quality products and such technology would contribute to achieve it.

- New processing lines destined to diversify the production but also to ensure the compliance with the hygiene and food safety requirements as well as to contribute to the achievement of the green deal for what in particular related to the saving of energy, its preferably origin from renewable sources and the reduction of waste (wastewater in particular).

Considering the investments scope, the expected responsiveness to the future calls and the expected dimension of the initiatives, the processing sector is expected to absorb between 2 and 3 million euro per year.

12.3.2 Proposed eligibility criteria

The applicant should:

- At the time of application, the processing company shall be registered in the National Registration Centre. It shall as well comply with the respective national standards for what related to its business.

- The application for investments are limited to companies already operating in the sector since 5 years, classified as small/medium enterprises (less than 250 employees and 50 million euro of annual turnover) and providing evidence of an annual growing trend of 7%, at least.

- Each application is completed with a business plan in accordance with the format to be developed by the IPARD Agency. For small investments, a simplified business plan will be submitted. The business plan should demonstrate the economic viability of the investment at the end of the realisation. The verification of the economic viability of the investment shall be a transparent procedure based on a series of predefined criteria.

- The capacity of the investment dealing with the renewal of the processing equipment should preferably include a reasonable and justified augmentation of the production.

- An applicant may not submit an application before the final payment on previous grant contract is achieved.

12.3.3 Eligible costs

Here below the eligible costs.

- Purchase of new machinery and equipment as defined for each sector and necessary to renew the existing one or to extend the processing in terms of capacity and range of products (new processing protocols).

- Equipment for improving the efficiency of the production process.

- Purchase of machinery/ equipment and construction works necessary to implement the above indicated rewarding criteria encompassed within the mentioned Green Deal categories.

- ICT equipment including software, if it is an integrated part of the project.

- General costs linked to expenditure referred to consultation fees up to a ceiling of 12% of the eligible costs.

- Investments for environmental protection (equipment and facilities for reprocessing of intermediate products and treatable waste - treatment and elimination of waste) beyond the existing national requirements to which the company is to be already compliant by the time of the application submission.

12.4 SPECIFIC INVESTMENTS ISSUES

12.4.1 Investments requiring intervention on the external context to become feasible

No investments have been identified the sustainability of which depends on interventions on the external context. Here some interventions are recommended to improve such sustainability (rather than ensure) with benefits for the whole considered sector.

- The enforcing of the legal framework is particularly relevant in the field of the waste treatment. As above presented, most of BOs, with very few exceptions, freely dispose in the environment (sea and landfills) the solid and liquid waste produced by their plants. In most cases the infringement is very well known as proved by the claims addressed by the public opinion, but no administrative actions have been undertaken to solve the issue, so far. The situation creates a condition of unfair competition among BOs of the processing sector.
- The lack of AZA definition has generated a negative impact on the development of the aquaculture sector. The approval of AZA would increase the sustainability of the foreseen support to the diversification actions in the marine aquaculture sector.
- The lift of the ban on the export of mussels will ensure the sustainability of the investments aimed to establish new seafood processing lines.
- The administrative rules related to the exploitation rights of the AWRs need to be reviewed to avoid conflicting situations between parties vesting different interests (i.e. irrigation and fishing).
- The limited knowledge about the measure to mitigate the impact of the climate changes requires the organisation of training sessions and delivery of advisory services aimed to support the adoption of climate resilient production strategies.
- The investments in the inland aquaculture sector could require the support for the rehabilitation of the hatcheries in view of a growing demand for juveniles.
- GoA shall support programmes aimed to establish and develop quality maintenance services for equipment and means.
- The advisory and technical services to support in particular the primary production shall be improved

12.4.2 Investments and supports required to increase effectiveness and impact of the programme

Some critical aspects able to increase the effectiveness and impact of the programme are here below discussed.

- The GoA commitment to promote new markets will be particularly relevant to support the investments in the freshwater aquaculture sector. Further, the Brexit in such a context could represent an opportunity for the GoA to support the export of the processing sector beyond the EU quotas system.
- The possibility of reviewing the agreed EU quotas for the export of fishery products shall be assessed.
- The updating and enforcing of the legal framework require necessary investments as it is the case with the patrolling capacity and coordination to combat IUU. To this purpose, the "Report of the IPA 2016 Action Programme for Albania: Support to Fishery Sector" already identified the need for an improvement of the inter-institutional cooperation and coordination[54] to ensure a better use of resources, higher mobility of the service and better enforcing of law.
- The GoA shall promote a consultative table involving BOs and bank sector representatives to facilitate the access to and conditions regulating the credit.
- To increase the control at the borders and the traceability of products to contrast the illegal import of fish products (from freshwater aquaculture in particular).
- The lack of manpower requires the mandatory intervention of the GoA to mitigate it and then to reverse the migration flow.

[54] The fishery law of 2012 identifies such institutions as State Police, Tax and Customs Administration, Municipality Police, Coast Guard, Port Authority, Inter-institutional Maritime Operational Centre and National Food Authority.

12.5 RECOMMENDATIONS FOR COMPLEMENTARY INTERVENTIONS: CONSIDERATIONS ABOUT NATIONAL POLICIES

Here below some considerations on specific aspects the national policies should approach are presented.

- One of the main pending aspects in the national policy concerns the approval of the AZA. Following the adoption of Law 103/2016 On Aquaculture, areas destined to aquaculture development shall be approved. The lack of their definition, as mentioned above, has generated a negative impact on the further development of this sector.

AZA's preliminary report has been completed and the comments and contributions from the other concerned ministries are pending. It could be possible that the final text will be approved by the government during the present year. Critical aspects for the approval concern the impact of the AZA on the environment and the tourism. In fact, the proposal has tried to avoid tourist areas while the impact on the environment will need to be managed through specific measures. However, regarding the tourism, the objections focus on the capacity of the marine aquaculture to penalise the tourism because their presence leads to the risk of water and visual pollution, but it is a matter of fact that a direct correlation apparently exists between aquaculture and tourism. In the Mediterranean countries where aquaculture is developed there is also a very developed tourism sector (Turkey, Greece, Spain, Italy, etc.)[55]. On the other hand, it is expected that the approval of AZA will lead to increase 4 to 5 times the marine aquaculture, so requiring an attentive development planning.

- Concerning fiscal related matters, support to the fishery sector is provided through some fiscal measures also adopted recently. It is for instance the case of the equipment for aquaculture and fishing where, as an example, VAT was removed since about 6 months for imported fishing nets and the lifting of excise duty on fuel for fishing vessels. However, the measures apply to the different fishery sub-sector in different way (e.g. the import of nets for mollusc aquaculture or for the marine aquaculture cages do not benefit of exemption from VAT or excise duty on fuel).
- As already extensively discussed, the lack of basic and specialised manpower is a critical factor impacting the sector development perspectives. Policy decision makers shall approach this serious criticality to create the ideal conditions for the success of the present programme.
- As reported by some respondents, the import of marine aquaculture products contributes to keep the price on the domestic market even 20% lower than if the only domestic production would be available. Actually, the production scale but also production environment factors at the origin of the imported products are such allowing a competitive price compared with the same product locally produced (e.g. the gilthead sea bream from Turkey is sold in the wholesale market actually at 2.5 - 3 euro/kg, while domestic producers enter in the market for the same product at 3.5-4 euro/kg). Further, some of the processing companies import raw or semi-processed products because it reveals cheaper than supplying the plant with locally produced raw material.

From the above it arises that the fishery sector lacks competitiveness. The present study contributes to increase such competitiveness by proposing the removal of two major factors impacting the production costs (i.e. the import of fish food and fingerlings for marine aquaculture) but more would be necessary to be done by decision-making bodies to make domestic producers more competitive against imported semi-fresh or fresh products.

- According to the opinion of exporting BOs, the price in the European market is not very favourable for them. Producers from other countries (e.g. Greece, Turkey) can be strongly competitive also thanks to subsidy programmes and support provided by the respective governments. It results that the Albanian BOs, not benefitting of similar conditions, compete from a disadvantaged position.
- It is noted that apparently all major BOs had not benefitted from EU/national financial support schemes,

[55] Statistics would indicate that 75% of the production of seabream and European seabass for Europe comes from Greece and Turkey which have the most developed tourism.

even during their starting up phase. The need for a support extended to BOs of the sector similar to what Croatia or other EU Member States did (e.g. Italy, Germany) was recalled by some BOs.

- Lack of support and lack of assistance in the internationalisation are main issues recorded in the freshwater aquaculture. The matter is also of concern for the mollusc aquaculture for what related to the lifting of the ban on the export of mussels.
- Support to the access to new international markets shall find application through the support to the fish processing BOs in obtaining the MSC and Friends of the Sea certifications. The initiative shall be completed by appropriate communication towards the BOs to avoid the past difficulties.
- The above-mentioned action toward the lifting of the ban shall be accompanied by a substantial programme to relaunch technically and socially the mussel production in Butrinti lagoon, as expression of a clear political will and commitment (see relevant issues in Section 3.1.6 above).
- The existing EU quotas (1,600 tonnes/year of fish and fish products) depresses the fish processing sector and prevents its development.
- A major circulation of the information about fish market (quantities traded and prices) and the organisation of a fish auction system would contribute to develop an efficient fish market.
- The setting of investments support programmes would motivate BOs to extend their business to less profitable working options (e.g. processing of sardines in addition to the anchovies) today neglected because privileging only those investments allowing maximising the profit. This would instead contribute to optimise the sustainable exploitation of all available natural resources.
- Development of infrastructures has an important delay compared with the development of fisheries. The situation of the ports and related services requires attention to improve the effectiveness of the fishery sector and to decrease some of its production costs. Also the road network, under the Ministry of Infrastructure and Transport competence, needs in some cases to be improved (in particular for instance in the areas of Saranda and Vlora). Some infrastructural improvements have been achieved such as the establishment of two fish markets where one in the port of Shëngjin is already completed and another one is in the construction phase in the fishing port of Vlora. Further, additional fish markets are planned to be constructed in Saranda and other ports.
- Strengthening of the extension capacity of MARD. Other than in the agriculture sector where a directorate specifically relates to the advisory service, the aquaculture and fisheries sector does not have any service related to advisory and consulting. The delivering of training and advice in technical and financial matters are considered pressing needs in particular for freshwater aquaculture operators apparently having fewer opportunities of knowledge exchanges compared with the colleagues from the marine aquaculture. In general terms aquaculture and fishery greatly differ. While an important percentage of fishermen are still not familiar with the requirements for conserving the products, aquaculture operators have a much more advanced knowledge and skill due to the need to comply with all requirements and standards to access the EU market, in addition to the ones related to the domestic market.
- Vocational high schools in the field of fishing are not established. However, the limited popularity of the fishing profession needs to be taken into account when planning an intervention in this field.
- To support the development of the local market, closely related to tourism, through the strengthening of the artisanal fishery, at present lagging behind the professional one in terms of development (i.e. insufficient means but also professionalism) and the development of "fishing tourism". To some extent the matter is already approached in the Specific Development Objective 10 “Establishment of sustainable recreational fishery on Albania’s coasts, rivers and lakes” of the Fishery Strategy for Albania[56]. The latter requiring close collaboration between MARD and the Ministry of Tourism and Environment.
- The management of the AWRs shall be reviewed to privilege the adoption of a system based on the economic fact that it shall be in the users’ (in this case WUAs) interest to benefit from the same resource

[56] Particip and Poseidon, 2015. Albania Fisheries Strategy. Prepared for the Delegation of the EU to Albania, April, 2015.

of both the irrigations and the fishery. Therefore, WUAs should be trained how to integrate irrigation and fish culture.

CHAPTER 13 ANNEXES

Annex 1 Table of context indicators fisheries and fish processing

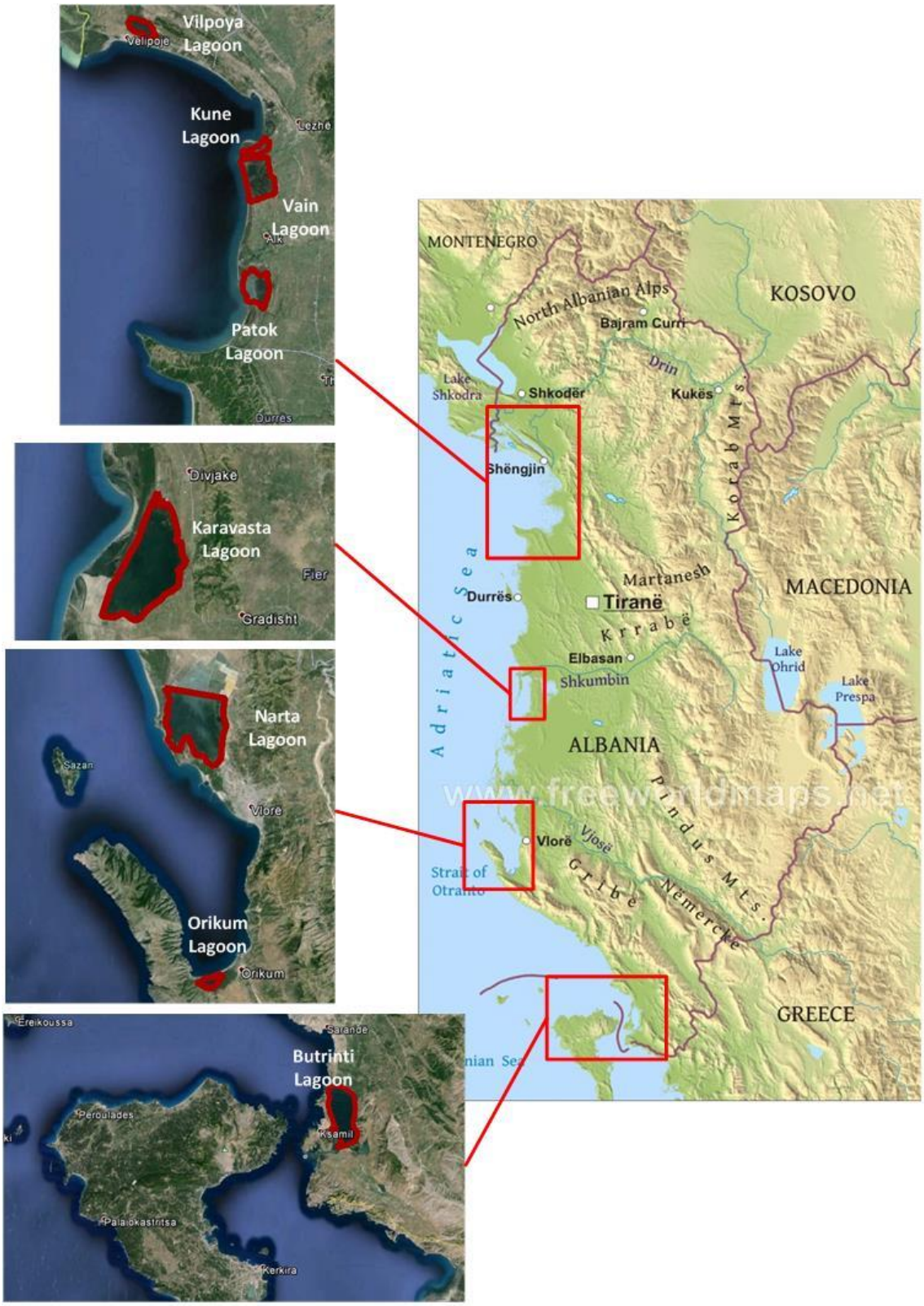
Note: GT: Gross Tonnage; FTE: Full Time Equivalent; PO: Producers' Organisation

EMFF Union priority	**1. Promoting environmentally sustainable, resource–efficient, innovative, competitive and knowledge–based fisheries**				
Context indicator presenting the initial situation	**Baseline year**	**Value**	**Measurement unit**	**Source of information**	**Comments/ Justification**
1. Fishing fleet	2020	658 93324 8053	number of vessels KW Gross Tonnage (GT)	Ministry of Agriculture and Rural Development	
2. Gross value added per FTE(1) employee (thousand Euros per FTE employee)		N/A	thousands of Euro		
3. Net profit (thousand Euros)		N/A	thousands of Euro		…
4. Return on investment of fixed tangible assets		N/A	percent		

EMFF Union priority	**2. Fostering environmentally sustainable, resource-efficient, innovative, competitive and knowledge-based aquaculture**				
Context indicator presenting the initial situation	**Baseline year**	**Value**	**Measurement unit**	**Source of information**	**Comments/ Justification**
1. Volume of aquaculture production	2018	4408 1850	Tonnes (marine) Tonnes (inland)	FAO FishStat	
2. Value of aquaculture production	2019	6,100,000 N/A	Euro (marine) Euro (inland)	https://www.researchgate.net/publication/335444671_Albania	…
3. Net profit (thousand Euros)		N/A			
4. Volume of production organic aquaculture (tonnes)		N/A	0 N/A		Not practiced
5. Volume of production recirculation system (tonnes)		N/A	N/A		Not practiced
6. Number of employed (FTE) a) Number of employed (FTE) including male and female b) Number of employed (FTE) female		a) N/A b) N/A	Number Number		

EMFF Union priority	**5. Fostering marketing and processing**				
Context indicator presenting the initial situation	**Baseline year**	**Value**	**Measurement unit**	**Source of information**	**Comments/ Justification**
2. Annual value 9 of turnover of EU marketed production					
a) Annual value of turnover of EU marketed production (thousand Euros)	2020	104	million Euro	*MARD (code 030, 1604, 1605)*	
b) % of production placed on the market (value) by POs		N/A	number		*POs do not market the production of the members*
c) % of production placed on the market (value) by association of POs		N/A	percent		*Do not exist*
d) % of production placed on the market (value) by IBOs		N/A	percent		
e) % of production placed on the market (volume) by POs		N/A	percent		
f) % of production placed on the market (volume) by association of POs		N/A	percent		*POs do not market the production of the members*
g) % of production placed on the market (volume) by IBOs		N/A	percent		*Do not exist*

Annex 2 The Albanian coastal lagoons



Source: Particip and Poseidon, 2015. Albania Fisheries Strategy. Prepared for the Delegation of the EU to Albania, April, 2015.

Annex 3 Albanian EU-approved processing plants

COUNTRY **Albania**
SECTION **Fishery products**

Validity date from 17/06/2020
Date of publication 28/07/2007
00092

WARNING **Please note that listing pursuant to Article 127 of Regulation (EU) 2017/625 and Commission Delegated Regulation (EU) 2019/625 is without prejudice to compliance with other requirements, such as those in Council Regulation (EC) No 1005/2008 establishing a Community system to prevent, deter and eliminate illegal, unreported and unregulated fishing,**

List in force

Approval number	Name	City	Regions	Activities	Remark	Date of request
1	Konservimi Adriatik	Durres	Durres	PP		
12	Limjon Peska	Sarande	Vlore	PP	Aq	
13	Acquario-Sali Peshk	Vlore	Vlore	PP		
2	Vival Novosel	Vlore	Vlore	PP		
27	Rozafa	Lezhe	Lezhe	PP	Aq	
28	Poseidon	Lezhe	Lezhe	PP		
30	Mare Adriatik	Shkoder	Shkoder	PP		
32	Eurofish	Lezha	Lezhe	PP		
36	Orik Peshk	Vlore	Vlore	PP		
37	ITTICA - San Giovanni	Lezha	Lezhe	PP		
38	Sea-Fish	Tirane	Tirane	PP	Aq	
4	Albamar	Durres	Durres	PP		
40	Coral	Durres	Durres	PP	Aq	23/11/2007

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List in force

Approval number	Name	City	Regions	Activities	Remark	Date of request
43	Fama	Sarande	Vlore	PP		19/03/2012
44	DRINFISH SHPK	Vau I Dejes	Shkoder	PP		09/07/2013
45	ALBA FISH	Lezhe	Lezhe	PP		23/09/2013
47	Fenix I.C.	Elbasan	Elbasan	PP		19/09/2014
48	KIARA-FISH	Elbasan	Elbasan	PP		11/06/2015
49	ACQUARIO SALI PESHK	Durres	Durres	PP	Aq	11/12/2015
50	ROZAFA	Elbasan	Elbasan	PP		29/02/2016
51	Turturici All Stars Vlora	Vlore	Vlore	PP		21/06/2016
52	Artic Group Sh.p.k.	Durres	Durres	PP		17/08/2016
54	Alb-Adriatico 2013 Sh.p.k.	Vlore	Vlore	PP	Aq	21/02/2017
55	ALMARINA OR	Vlore	Vlore	PP	Aq	10/03/2017
57	CORAL	Kavaje	Tirane	PP	Aq	24/07/2017
58	LAKBR	Durres	Durres	PP		09/10/2017
59	Mare Adriatik Sh.p.k.	Tirana	Tirana	PP		26/01/2018
60	SOFISH	Tirana	Tirana	PP		25/01/2019
62	VIVIMPEX	Vlore	Vlore	PP		27/03/2019
63	OCCHIO VIVO	Durres	Durres	PP		17/04/2019
LN-0495-05-2020	"Nettuno SHPK Import-Eksport Converse Ittiche"	Lushnje	Fier	PP		02/07/2020
LN-0882-07-2020	QËNDRA shpk	Sarande	Vlore	PP	Aq	17/11/2020
LN 72354-05-2019	VLORA FISH	Vlora	Vlore	PP	Aq	08/04/2020

List in force

Approval number	Name	City	Regions	Activities	Remark	Date of request
LN 7875-07-2019	"ROZAFA" SH.P.K:	Librazhd	Elbasan	PP		12/05/2020

Activities Legend :

PP Processing Plant

Remarks Legend :

Aq Aquaculture product (farmed product except bivalve molluscs)

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Annex 4 Catches by species in Marine, Costal line and Costal lagoons, 2014 – 2019 (tonnes)

Speciet	Species	2014	2015	2016	2017	2018	2019
Açuga	European anchovy	1236	250	280	320	1516	1227
Karkalec i thellësisë	Deep-water rose shrimp	1430	1290	1460	1473	1275	962
Merluc	European hake	902	914	948	940	872	731
Sardele	European pilchard	1106	1200	890	1065	460	677
Barbun	Surmullets nei	380	466	475	470	347	373
Të pa specifikuar	Marine fishes nei	534	528	547	155	41	16
Skampi	Norway lobster	400	405	411	389	257	213
Oktapod	Common octopus	173	124	154	137	176	185
Kallamar	Common squids nei	105	134	128	113	129	170
Skumbër	Scomber mackerels nei	24	39	28	37	116	97
Ton	Atlantic bluefin tuna	34	40	47	57	100	156
Stavride	Jack and horse mackerels nei	95	115	100	105	95	163
Sepje	Common cuttlefish	75	82	83	83	79	60
Vope	Bogue	78	90	80	83	75	100
Gjuhëz	Common sole	44	71	68	69	67	20
Koce	Gilthead seabream	43	62	68	65	57	59
Levrek	European seabass	44	41	45	43	45	60
Qefull	Mullets nei	78	52	64	72	44	40
Karkalec i tokës	Caramote prawn	33	22	34	33	38	43
Spalcë	Pandoras nei	43	42	47	44	31	52
Gjel	Gurnards	6	12	11	10	22	19
Shojzë	Megrim	21	23	20	21	20	21
Papalina	European sprat	27	19	20	22	17	20
Peskatriçe	Monkfishes nei	16	19	22	21	17	32
Dental	Common dentex	11	15	18	17	15	16
Shojzë	European flounder	12	12	13	10	11	10
Palamid	Atlantic bonito	3	27	12	11	7	29
Konger	European conger	10	9	8	5	6	5
Kern	Groupers nei	4	8	8	7	6	1

Speciet	Species	2014	2015	2016	2017	2018	2019
Lojbë	Leerfish	12	11	13	12	6	9
Peshkaqen Pëllumb	Smooth hounds nei	35	39	37	37	5	0
Symadhe	Silversides	4	5	5	5	4	4
Gofë	Greater amberjack	4	8	7	6	3	5
Vongola	Striped venus	1	1	1	1	2	4
Korbë	Croakers	5	4	4	3	0	0
Midhja mesdetare	Mediterranean mussel	18	22	24	25	0	0
Peshkë Shpat	Swordfish	11	14	15	16	0	0
Rombe	Turbot	2	1	1	1	0	23
Karkaleci i kuq	Aristaeomorpha foliacea	0	0	0	0	0	48
Gaforrja blu	Blue Crab	0	0	0	0	0	20
Karkaleci violet	Blue and red shrimp	0	0	0	198	125	130
Moskardin	Eledone spp.	0	0	0	0	0	7
Peshku Kovaç	John dory	0	0	0	0	0	9
Çikale	Mantis Shrimp	0	0	0	101	116	123
Gjithsej	**Total**	**7059**	**6216**	**6196**	**6282**	**6202**	**5936**

Source: Ministry of Agriculture and Rural Development.

Annex 5 Catches by species in inland water, 2014 – 2019 (tonnes)

Speciet	2014	2015	2016	2017	2018	2019	Species
Krap	434	480	460	530	572	652	Common carp
Skortë	370	364	400	430	482	538	Roaches nei
Karas	110	164	144	345	480	523	Crucian carp
Ballgjer i bardhë	190	198	231	219	237	267	Silver carp
Qefull	193	205	230	209	217	259	Mullets nei
Perka ose Sharmak	22	19	23	36	162	189	European perch
Gjucë	210	80	60	80	90	109	Bleak
Troftë	52	50	52	58	64	70	Salmonoids nei
Njalë	43	50	41	47	60	70	European eel
Kubla	14	16	14	15	18	25	Shads nei
Ballgjer laraman	10	16	15	14	17	23	Bighead carp
Të pa specifikuar	0	2	4	10	9	14	Freshwater fishes nei
Amur i bardhë	3	3	4	5	7	12	White amur
Luçiperka	7	7	6	5	7	14	Pikeperch
Klen ose Mlysh	5	5	4	4	5	7	Common dace
Gjithësej	**1,663**	**1,659**	**1,688**	**2,007**	**2,427**	**2,772**	**Total**

Source: Ministry of Agriculture and Rural Development.

Annex 6 Products of the inland fishery

Order	Family	Species	Status	FB name	Name
Salmoniformes	Salmonidae	*Acantholingua ohridana*	native		Belushka
Acipenseriformes	Acipenseridae	*Acipenser naccarii*	native	Adriatic sturgeon	Blini i bardhe
Acipenseriformes	Acipenseridae	*Acipenser sturio*	native	Sturgeon	Blini turigjate
Cypriniformes	Cyprinidae	*Alburnus albidus*	native	Italian bleak	
Cypriniformes	Cyprinidae	*Alburnus belvica*	native		
Siluriformes	Ictaluridae	*Ameiurus melas*	introduced	Black bullhead	
Anguilliformes	Anguillidae	*Anguilla anguilla*	native	European eel	Ngjala
Cyprinodontiformes	Cyprinodontidae	*Aphanius fasciatus*	native		Celiku
Cyprinodontiformes	Cyprinodontidae	*Aphanius iberus*	native	Spanish toothcarp	Lareza vizake
Cypriniformes	Cyprinidae	*Aristichthys nobilis*	introduced	Bighead carp	Ballgjeri laraman
Cypriniformes	Cyprinidae	*Aspius aspius*	native	Asp	
Atheriniformes	Atherinidae	*Atherina boyeri*	native	Big-scale sand smelt	Aterina symadhe
Cypriniformes	Cyprinidae	*Barbus albanicus*	questionable		
Cypriniformes	Cyprinidae	*Barbus graecus*	native		Millona deti
Cypriniformes	Cyprinidae	*Barbus meridionalis*	native	Mediterranean barbel	Mustak i lumit
Cypriniformes	Cyprinidae	*Barbus prespensis*	native		Mrene e prespes
Cypriniformes	Cyprinidae	*Blicca bjoerkna*	questionable	White bream	
Cypriniformes	Cyprinidae	*Carassius auratus auratus*	introduced	Goldfish	Peshk i kuq
Cypriniformes	Cyprinidae	*Carassius carassius*	native	Crucian carp	Karasi
Mugiliformes	Mugilidae	*Chelon labrosus*	native	Thicklip grey mullet	Qefulli i dimrit
Cypriniformes	Cyprinidae	*Chondrostoma prespense*	native		Skobuzi i pogradecit
Cypriniformes	Cyprinidae	*Chondrostoma scodrense*	native		
Cypriniformes	Cobitidae	*Cobitis meridionalis*	native		
Cypriniformes	Cyprinidae	*Cyprinus carpio carpio*	introduced	Common carp	Krapi
Petromyzontiformes	Petromyzontidae	*Eudontomyzon mariae*	native	Ukrainian brook lamprey	
Cyprinodontiformes	Poeciliidae	*Gambusia affinis*	introduced	Mosquitofish	Barkaleci
Cypriniformes	Cyprinidae	*Gobio gobio gobio*	native	Gudgeon	Mustaku i lumit
Perciformes	Gobiidae	*Gobius paganellus*	native	Rock goby	Burdullak
Perciformes	Gobiidae	*Knipowitschia panizzae*	native		Barburiqi
Cypriniformes	Cyprinidae	*Leuciscus illyricus*	native		Mëlyshi i zi
Cypriniformes	Cyprinidae	*Leuciscus svallize*	native		
Cypriniformes	Cyprinidae	*Leuciscus turskyi*	native		
Cypriniformes	Cyprinidae	*Leuciscus ukliva*	native		
Mugiliformes	Mugilidae	*Liza aurata*	native	Golden grey mullet	Veshari
Mugiliformes	Mugilidae	*Liza ramado*	native	Thinlip mullet	Qefulli i vjeshtes
Mugiliformes	Mugilidae	*Mugil cephalus*	native	Flathead mullet	Qefulli i veres
Cypriniformes	Cyprinidae	*Mylopharyngodon piceus*	not established	Black carp	

Salmoniformes	Salmonidae	*Oncorhynchus mykiss*	introduced	Rainbow trout	Trofte ylberi
Cypriniformes	Cyprinidae	*Pachychilon pictum*	native		Skorti i zi
Perciformes	Percidae	*Perca fluviatilis*	native	European perch	Sharmak
Petromyzontiformes	Petromyzontidae	*Petromyzon marinus*	native	Sea lamprey	Peshk kavall
Cypriniformes	Cyprinidae	*Phoxinellus adspersus*	native		
Cypriniformes	Cyprinidae	*Phoxinellus pstrossii*	native		
Pleuronectiformes	Pleuronectidae	*Platichthys flesus*	native	Flounder	Ushojze e zeze
Cyprinodontiformes	Poeciliidae	*Poecilia reticulata*	introduced	Guppy	Lareza tripikaloshe
Cypriniformes	Cyprinidae	*Pseudophoxinus epiroticus*	native		
Cypriniformes	Cyprinidae	*Pseudophoxinus minutus*	native		Gurnec
Cypriniformes	Cyprinidae	*Pseudorasbora parva*	introduced	Stone moroko	
Cypriniformes	Cyprinidae	*Rutilus karamani*	native		
Cypriniformes	Cyprinidae	*Rutilus prespensis*	native		
Cypriniformes	Cyprinidae	*Rutilus rubilio*	native		Skort i bardhe
Perciformes	Blenniidae	*Salaria fluviatilis*	native	Freshwater blenny	
Salmoniformes	Salmonidae	*Salmo lumi*	native		Koran lumi
Salmoniformes	Salmonidae	*Salmo marmoratus*	native		Trofte njile
Salmoniformes	Salmonidae	*Salmo obtusirostris*	native	Adriatic trout	Trofte e cemit
Cypriniformes	Cyprinidae	*Scardinius erythrophthalmus*	native	Rudd	Lloska-ë
Cypriniformes	Cyprinidae	*Scardinius knezevici*	native		
Cypriniformes	Cyprinidae	*Scardinius scardafa*	questionable		
Syngnathiformes	Syngnathidae	*Syngnathus abaster*	native	Black-striped pipefish	
Cyprinodontiformes	Valenciidae	*Valencia letourneuxi*	native	Corfu toothcarp	

Source: FishStat – FAO (2020).

Annex 7 State of play of the Albanian Fishery Strategy

The status of the Albanian Fishery Strategy implementation, having in mind its main objectives and measures, is as follow[57]:

- A fully functional DG Fishery within the Ministry of Agriculture and Rural Development was established.
- A new organigram of MARD is in the process of endorsement (as per April 2021, the new organigram of MARD has been approved).

  Conceptually, the Directorate of Policies and Programming of Fisheries and Aquaculture will be subordinated to the General Directorate of Agriculture, Food Safety and Rural Development Policies. This directorate will be headed by the Director of the Directorate of Fisheries and Aquaculture. The Directorate of Fisheries and Aquaculture have two sectors:
  - **Fisheries and Aquaculture Policy Sector** with one Head of Sector and three experts. This sector is currently subordinated to the same General Directorate but with the title Sector of Fisheries and Aquaculture Development Policies and Strategies. It has the composition 1 + 2. A Specialist is added to this sector, due to the workload that will be associated with the unification of Albanian policies with those of the EU.
  - **Sector for Data Monitoring, Processing and Analysis** with current organizational composition 1 + 2. This sector is currently subordinated to the same Directorate but it is named Sector of Development Programs in the Field of Fisheries and Aquaculture with the same composition. The tasks of this sector will be the processing of data on fishing capacity, fishing effort and data collected under the Decision of Council of Ministers No 256 of 24.4.2019 "On determining the rules for the collection, management and use of data in the fisheries sector and support for scientific advice on the national fisheries strategy".

  As above, these two sectors are cut off respectively from the Directorate of Policies and Strategies of Agriculture, Livestock and Rural Development and from the Directorate of Programming of Agricultural Development and Rural Development and are attached to the Directorate of Fisheries and Aquaculture.
- A fully functioning FMIS established and fishery port offices strengthened.
  - Partially. DG Fisheries has a functioning vessel register and catch certification is in place.
  - The new MTU will have e-logbook module and the implementation of the e-logbook will start in 2022.
- Capacity development of fisheries co-management structure.
  - There are MoU between MARD and FMOs to implement the national strategic plan and fisheries management plans in all-natural lakes, some coastal lagoons and H/P artificial lakes.
  - National FMO Federation (representative body for FMOs) is established.
  - Yearly update of the FMO business plans.
- Functioning advisory Central Consultative Commission for Fishery and Aquaculture (CCCFA) and Commission for Coordination of Scientific and Technological Research (CCSTR).
  - Both commissions are active.
- Strengthening of CFP administrative procedures and legislation.
  - CFP legislation is adopted.
  - Policy documents are adopted and implemented.
- Development and implementation of an Operational Programme.
  - The National Fisheries Strategy is approved and implemented step by step (as per April 2021, a new Strategy paper is under development).
- Develop Monitoring Control and Surveillance to enforce fisheries regulations.
  - The Fisheries Inspectorate has undertaken port-based and at sea inspection.
  - The Fisheries inspectors have participated in Joint Inspection in Adriatic Sea(EFCA).

[57] Extract from European Union – Albania 12th Subcommittee Meeting Agriculture and Fisheries - Tirana, 3 December 2020.

  - 24/7 Fisheries Inspection is in place. By the Order of the Prime Minister No 95 of 17.7.2020 "On the approval of the structure and staff of the Directorate of Fisheries and Aquaculture Services", the number of fisheries inspectors is increased to ensure 24/7 service in each designated port. There are five Fisheries Inspectors in each designated ports. The number of inspectors was increased by 6 inspectors bringing the total number to 29.
- Fisheries Data Collection Framework.
  - Albania reports annual statistical fisheries data using DCRF/GFCM.
- Develop Fisheries Science Capacity
  - Albania fully participates in regional fisheries management activities (GFCM, ICCAT).
  - Albania prepared annual stock status report based on national and regional survey with close collaboration and the support of AdriaMed project.
- Balancing fleet capacity with fisheries resources
    - The Law No 42/2020 "For some changes and additions to the Law No 64/2012 "On Fisheries", changed. The aims of these amendments are to determine:
      - The valid period of a fishing permit (10 years)
      - No more new fishing permits will be issued for the fishing vessels that operate with trawl nets (bottom or pelagic, single or in pairs), surrounding nets (purse seiner) for fishing small and large pelagics, hydraulic dredges (turbo-soffiante). (Commercial fishing) .
      - New fishing permits will be issued only for fishing vessels that will have a tonnage and engine power equal or smaller than an existing vessel with valid fishing licence, as its replacement or as a replacement of fishing vessels being sunken, that have a valid fishing permit.
  - Albania has fully adopted and is implementing the Rec. GFCM 42/2018/8 on further emergency measures in 2019-2021 for small pelagic stocks in the Adriatic Sea (geographical subareas 17 and 18).
  - Albania has fully adopted and is implementing the Rec. GFCM 43/2019/5 on a multiannual management plan for sustainable demersal fisheries in the Adriatic Sea (geographical subareas 17 and 18).
  - To improve economic performance there are DCM in place to provide fishing vessel with fuel without tax or the abolition of VAT on fishing gears, mechanical and electronic equipment on board of fishing vessels.
  - With the support of EU (IPA Fisheries project) we will start the fleet modernisation with strict funding criteria – open to active, legal vessels & not increasing fishing capacity (this action already started) .
- Development of a fisheries management capability for national and shared coastal & inland waterbodies
  - There are Fisheries Management Organizations (FMO) established in all natural lakes and coastal lagoons.
- Fisheries Management Plans developed for all the key lagoon and inland water bodies
  - There are FMP in place for all FMOs.
- A comprehensive, knowledge-based and transparent fisheries licensing system.
  - There is an online application for fisheries licensing system, one-stop-shop (NBC), and a close number license in marine fisheries and in natural lakes. In the inland water (except in the management geographic areas in which operate FMO) the permits system is on – line through e-Albania portal.
- Development of a comprehensive MCS strategy for coastal and inland waterbodies.
  - A MCS strategy and action plan is developed based on a co-management approach with the FMOs in coastal and inland water bodies.
- Development of a multi-annual national strategic plan for aquaculture development in Albania and Integration of aquaculture into maritime, coastal and inland spatial planning
  - The allocated zones for aquaculture are being identified aiming to agree and embed them into a national, multi-sectoral marine and land spatial planning network with technical support of EU-IPA Fisheries project
- Establishment of a functional fish wholesale market and a fish marketing information system.

- A wholesale market for the fishery product in the Shëngjin fishing port has been completed with the state budget and it is under technical test phase.
- While the wholesale fish market in Vlora is in construction process.

Annex 8 Inputs and outputs of various fish processes

	Inputs		Outputs	
Process	Fresh or frozen fish (kg)	Energy (kW h)	Wastewater	Solid waste (kg)
White fish filleting	1000	Ice: 10–12 Freezing: 50–70 Filleting: 5	5–11 m^3: BOD 35 kg, COD_5 50 kg	Skin: 40–50 Heads: 210–250 Bones: 240–340
Oily fish filleting	1000	Ice: 10–12 Freezing: 50–70 Filleting: 2–5	5–8 m^3: BOD 50 kg, COD_5 85 kg, Nitrogen 2.5 kg N, Phosphate 0.1–0.3 kg P	400–450
Canning	1000	150–190	15 m^3: BOD 52 kg, COD_5 116 kg, Nitrogen 3 kg N, Phosphate 0.1–0.4 kg P	Heads/entrails: 250 Bones: 100–150
Fish meal and fish oil production	1000	Fuel: 49 L Electricity: 32	–	–
Frozen fish thawing	1000	–	5 m^3: COD_5 1–7 kg	–
De-icing and washing	1000	0.8–1.2	1 m^3: COD_5 0.7–4.9 kg	0–20
Granding	1000	0.1–0.3	0.3–0.4 m^3: COD_5 0.4–1.7 kg	0–20
Scaling of white fish	1000	0.1–0.3	10–15 m^3	Scales: 20–40
De-heading of white fish	1000	0.3–0.8	1 m^3: COD_5 2–4 kg	Heads and debris: 270–320
Filleting of de-headed white fish	1000	1.8	1–3 m^3: COD_5 4–12 kg	Frames and offcuts: 200–300
Filleting of un-gutted oily fish	1000	0.7–2.2	1–2 m^3: COD_5 7–15 kg	Entrails, tails, heads and frames: 400
Skinning white fish	1000	0.4–0.9	0.2–0.6 m^3: COD_5 1.7–5.0 kg	Skin: 40
Skinning oily fish	1000	0.2–0.4	0.2–0.9 m^3: COD_5 3.0–5.0 kg	Skin: 40
Trimming and cutting white fish	1000	0.3–3.0	0.1 m^3	Bones and cut-off: 240–340
Packaging of fillets	1000	5.0–7.5	–	–
Freezing and storage	1000	10.0–14.0	–	–
Unloading fish for canning	1000	3.0	2.0–5.0 m^3: COD_5 27.0–34.0 kg	–
Grading of fish	1000	0.15	0.2 m^3: COD_5 0.35–1.7 kg	0.30
Nobbing and packing in cans	1000	0.4–1.5	0.2–0.9 m^3: COD_5 7.0–15.0 kg	Heads and entrails: 150 Bones and meat: 100–150
Skinning of nobbed fish	1000	–	17.0 m^3: COD_5 3.0–5.0 kg	Skin: 55

Source: Ioannis S. Arvanitoyannis1, Aikaterini Kassaveti. Fish industry waste: treatments, environmental impacts, current and potential uses. International Journal of Food Science and Technology 2008, 43, 726–745

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Annex 10 List of interviewed stakeholders

Name	Position	Date
Institutional actors		
GOVERNMENT POLICY FOR THE SECTOR		
Roland Kristo	Deputy Minister MARD	22-10-20
Roland Kristo	Deputy Minister MARD	20-11-20
Roland Kristo	Deputy Minister MARD	15-12-20
Roland Kristo	Deputy Minister MARD	10-01-21
Roland Kristo	Deputy Minister MARD	18-01-21
Roland Kristo	Deputy Minister MARD	05-02-21
Roland Kristo	Deputy Minister MARD	09-02-21
Roland Kristo	Deputy Minister MARD	10-02-21
Rigers Bakiu	Head of Department of Aquaculture and Fisheries AUT	11-02-21
Elsa Bozhaj	Head of the Sector of Monitoring, Processing and Data Analysis, MARD	12-02-21
Armand Raveli	Director, Institute Food Security and Veterinary	20-01-21
Pjerin Shoshi	Directorate of Programmes, MARD	11-02-21
Abedin Dyli	Monitoring and Control Specialist MARD	09-02-21
Ali Baze	Head of Fishery Inspectorate MARD	02-12-20
Elvis Mustafa	Mussel Monitoring and Control Specialist MARD	05-12-20
Arjan Demiri	Director of Directory of Aquaculture and Fisheries Services MARD	04-12-20
Arjan Palluqi	Former director of Directorate of Fisheries MARD	04-12-20
Producers, processors, traders		
PROCESSING INDUSTRY		
Mark Babani	Mare Adriatik sh.p.k/Shelqet, Shkoder	11-12-20
Aldi Ndoci	Mare Adriatik sh.p.k/Shelqet, Shkoder	11-12-20
Tonin Suli	Lissus Adria	11-12-20
Helidon Rruga	"Koral" sh.p.k/Durrës	08-12-20
Muharrem Jazaj	Alb Adriatico 2013 /Karaburun, Vlore	09-12-20
Taulant Kalo	Sea Fish shpk	25-11-20
FISHERY/AQUACULTURE PRIMARY PRODUCTION		
Muharrem Jazaj	Alb Adriatico 2013 /Karaburun, Vlore	09-12-20
Assaf Binder	Marine biologist from Israel,/Himare, Vlore	09-12-20
Sheme Kondi	Managing director "Almarina"/ Karaburun, Vlore	09-12-20
Vasiar Shermadhi	Manager Akua Shermadhi?Belsh, Elbasan	02-12-20
Englena Doci	Trout aquaculture/Lure, Diber	03-12-20
Fredi Gjika	Gjika A. (Mussel, Butrint, Sarande)	04-12-20
Shahin Shehaj	Dashpeshk Shpk/Gjirokaster	10-12-20
Ermir Shehaj	Sheni Trofte Shpk /Gjirokaster	10-12-20
Abedun Dyli	Freshwater aquaculture/ Fier	07-12-20
MARKET AND TRADE		
Haxhi Haka	Fish seller	07-12-20
Xhelil Xhelili	Fish seller	07-12-20
Taulant Kalo	Sea Fish shpk	25-11-20
Name	**Position**	**Date**

Input and service providers, including extension service		
IDENTIFICATION OF TRAINING AND ADVISORY NEEDS FOR THE SECTOR		
Roland Kristo	Deputy Minister MARD	10-12-20
Assaf Binder	Marine biologist from Israel; Himare, Vlore	09-12-20
Rigers Bakiu	Head of Department of Aquaculture and Fisheries AUT	13-12-20
Experts, other projects, other key informants		
Rigers Bakiu	Head of Department of Aquaculture and Fisheries AUT	02-12-20
Elvis Kamberi	Biologist/AUT	02-12-20
Ermir topalli	Freshwater specialist/Tapize, Fushe-Kruje	04-12-20
Çelnike Shegani	Director of the koran restocking hatchery/Lin, Pogradec	04-12-20
Enton Spaho	Head of Department of Aquaculture MARD	06-12-20
Abedin Dyli	Monitoring and Control Specialist MARD	05-12-20