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Organization of the
United Nations

VALUE CHAIN ANALYSIS OF FARMED RAINBOW TROUT IN ALBANIA

Summary report



DOCUMENT OF THE PROJECT "IMPROVING FISHERIES AND AQUACULTURE VALUE CHAINS
IN THE MEDITERRANEAN WITHIN THE BLUE GROWTH INITIATIVE" (GCP /INT/745/ITA)

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PREFACE

Sustainable Fisheries and Aquaculture Value Chains for the Mediterranean (SVC4MED) within the Blue Growth Initiative is a development project implemented by the Food and Agriculture Organization of the United Nations (FAO) with financial support from the Italian Government. Its objective was to analyse the value chains of wild shrimp and farmed rainbow trout in the Mediterranean region and identify policies and strategies to improve their competitiveness and sustainability. The value chain approach offers a holistic and multidisciplinary framework for understanding the distribution of economic returns from the main activities associated with transforming raw material into a consumer product, as well as the environmental and social impacts arising from these activities.

Albania, along with Lebanon, Italy, Tunisia and Türkiye, is one of five Mediterranean countries in which the SCV4MED project was implemented. The work in Albania focused on the analysis of the farmed rainbow trout value chain. The SVC4MED value chain analysis approach is based on the methodologies of FAO's Guidelines for Sustainable Food Value Chain Development (FAO, 2014) and the European Commission's Value Chain Analysis for Development (Fabre, Dabat & Orlandoni, 2021), adapted to the specific contexts of the recipient countries. It has three main components: functional analysis, sustainability assessment and upgrading strategy development.

The value chain analysis combines secondary data from existing statistical databases and primary data from interviews with value chain actors and key informants, field observations and focus group discussions. It serves as a basis for identifying policies and strategies to improve the sustainability performance of the value chain. The approach is highly participatory, involving value chain stakeholders from the outset to ensure national ownership. The results have been presented and discussed in dedicated stakeholder meetings that also provided an opportunity to disseminate and validate findings and share the strategy development process.

ACKNOWLEDGEMENTS

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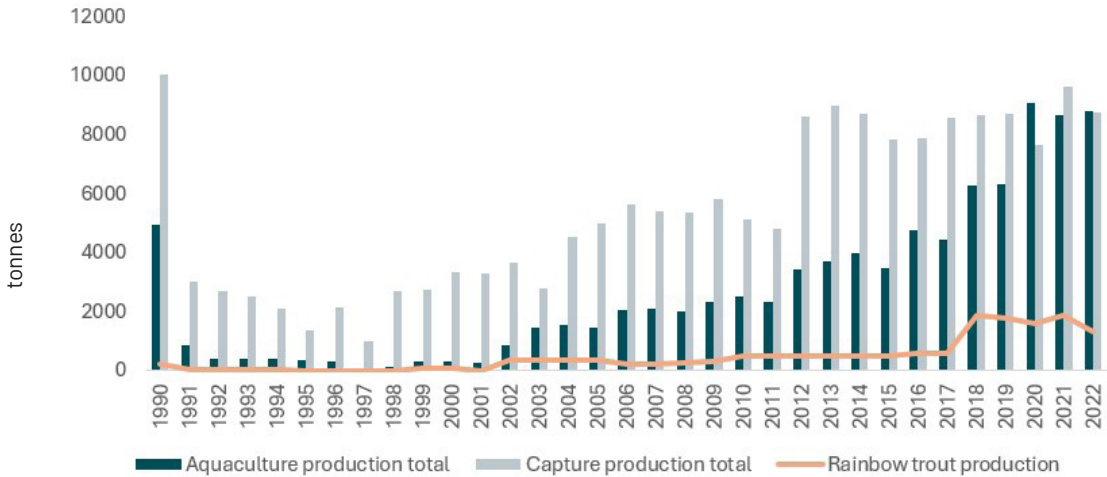
ABBREVIATIONS

AZA	Allocated Zones for Aquaculture
FAO	Food and Agriculture Organization of the United Nations
FMO	Fisheries Management Organization
GDP	Gross domestic product
HoReCa	Hotel, restaurant and catering
SVC4MED	Sustainable Fisheries and Aquaculture Value Chains for the Mediterranean

INTRODUCTION

Albania is a country rich in aquatic resources. It has coastline of 476 km, along which fishing activities take place, and inland aquatic resources on which fishery and aquaculture activities rely. In 2022 the aquaculture sector produced 8 812 tonnes (Figure 1), consisting of marine fishes (77 percent), rainbow trout (13 percent) and mussels (10 percent) (FAO, 2024a). Most of the production is exported.

► **FIGURE 1**
Fisheries and aquaculture in Albania



Source: Authors' own elaboration based on Global production by production source 1950–2022 (Release date: March 2024). (FishStat). In: *FishStatJ - Software for fishery and aquaculture statistical time series*. Rome. [Cited 30 July 2024]. www.fao.org/fishery/statistics/software/fishstatj/en.

This report focuses on the value chain of farmed rainbow trout in Albania. In 1980 the first rainbow trout farm and hatchery in Albania was constructed in the Vlora district. The demand for trout was met by several small family rainbow trout farmers using raceway systems in different parts of the country, but mainly in the northeast, north and south.

From 2001 until 2017, the recorded production almost doubled from 350 tonnes to about 600 tonnes. The establishment of a large cage-based trout farm in a freshwater reservoir led to a sharp

increase in the national output in 2018, reaching 1 850 tonnes (USD 6 million in value) which was the highest value recorded for this species (FAO, 2024a).

The production of rainbow trout is low compared to other species produced by aquaculture in Albania, but its sustainable growth, based on the country's rich aquatic resources, has the potential to significantly contribute to rural development, employment and food security, and supply the countries in the region with a valuable product

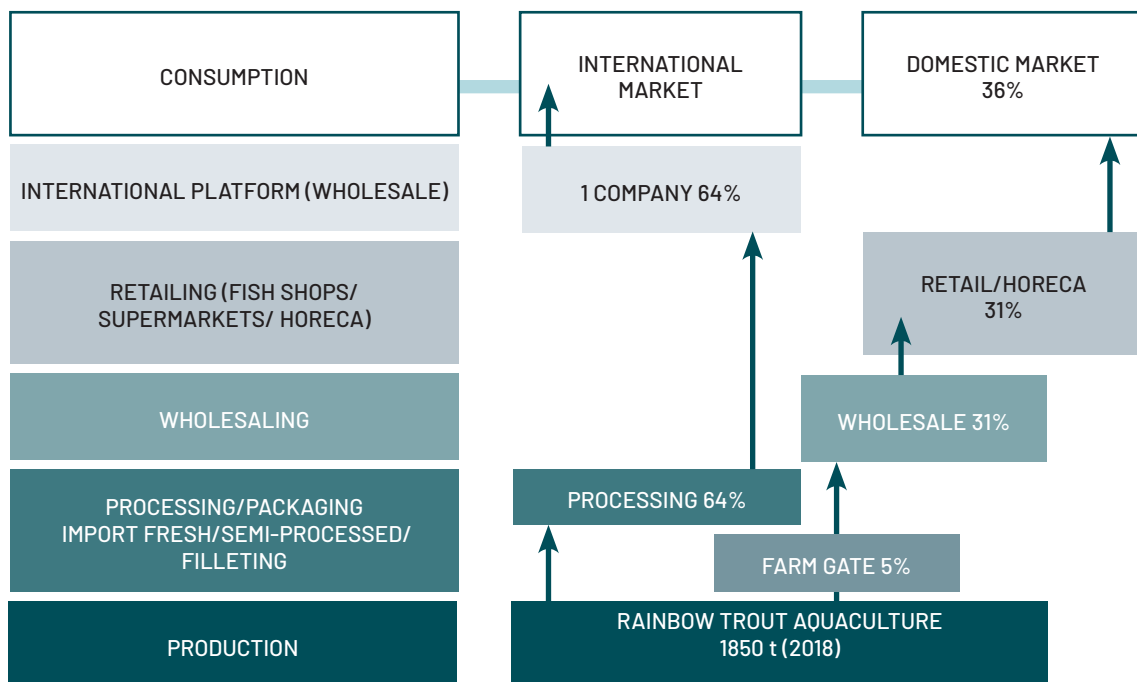
VALUE CHAIN STRUCTURE AND FUNCTIONING

VALUE CHAIN ACTIVITIES

The Albanian rainbow trout aquaculture value chain is relatively simple (Figure 2). The aquaculture farmer/operators deliver the harvested fish to the processing factory (after which it is exported) or to domestic wholesalers, fish shops or restaurants, or by direct sale at the farm gate. More than 60 percent of the produce is exported to the European Union, while domestic consumption of this species remains low.

► **FIGURE 2**

Value chain map of rainbow trout from Albania



FISH FARMING

The trout farms in Albania are in the northern, southern and western districts of the country, which have mountainous terrain and rich water resources. According to FAO, based on information

from 2018, there were approximately 60 trout farms in Albania (FAO, 2024b) but the present study, conducted in 2023, found there were 29 active trout farms.

All trout farms are owner-operated family businesses, some of which hire additional labour (between one and three people). These family businesses are the most common type of trout farm and they have been successful in Albania in recent years. Despite their limited production, these small aquaculture facilities are suitable for developing other activities, e.g. in the hospitality or restaurant sectors. They mostly use a closed production cycle (i.e. they obtain their own broodstock) or buy fingerlings and fatten them until they reach the accepted market size for trout.

With the exception of one farm, all rainbow trout farms in Albania are micro-scale enterprises because they employ less than 10 people (usually one or two people). A single farm may be classified as a small-scale enterprise because it employs between 10 and 50 people (approximately 30). A categorization of the enterprises can also be made according to aquaculture being a primary, secondary or auxiliary activity:

- Category A includes the largest number of aquaculture farms (20) in Albania. Most of these farms provide supplementary income for the households rather than being the primary source. The aquaculture activities are often complementary to other more important ventures such as hospitality services (restaurants, hotels or both), small hydropower stations, small factories, private employment and more.
- Category B consists of 6 out of 29 farms. In these farms aquaculture is the only activity and income source. These small family businesses are managed and operated by all family members who also work in all the activities on the aquaculture farm. These farms typically have one or two employees, or none at all, with family members undertaking most of the work.
- Category C is the most advanced level of aquaculture management. In these farms, aquaculture goes beyond sustaining the family to generating substantial income for investment. This category includes 3 out of 29 farms, producing between 150 tonnes to 1 200 tonnes of rainbow trout every year.

During the interviews a major issue identified was the shortage of human resources in inland aquaculture and especially in fish processing plants. As a result of significant emigration and relocation to larger urban areas, finding both qualified and unqualified workers has become very difficult. The lack of qualified personnel and extension services affect the quality and price of the product.

WHOLESALERS

In the case of rainbow trout, the role of wholesalers is limited. On small farms trout producers often eliminate this link from the value chain because they send their product directly to the market. In the case of larger trout farms, wholesalers play a role because they deal with the distribution of the product to final destinations, such as markets, hotels, restaurants or supermarkets. The wholesale fish sellers have a good relationship with the primary producers, informing them of market performance and the most appropriate time to harvest their product and send it to the markets.

PROCESSORS

About 65 percent of the trout produced in Albania is processed for export to the European Union. This trout is produced by one processing plant under a contractual arrangement between the

largest trout farmer and the processing plant. Only primary processing (gutting, freezing and filleting) is undertaken. The rainbow trout is produced under strict hygiene and safety controls and post-harvest activities are performed under cold chain conditions. Additionally, fish processing plants have the necessary infrastructure to meet all quality and safety standards.

Although the processing stage in the trout value chain is currently limited to only one company and primary processing, Albania has a well-developed fish and seafood processing sector. About 2 500 tonnes of fish products are exported annually making the fish and seafood processing sector one of the main contributors to Albania's total agri-food exports of around 6 000 tonnes. This sector also plays a significant role in employment.

RETAIL

Fish is retailed through the following channels:

Specialized fish shops – These shops are the most important in the Albanian fish market. They are primarily located in the major cities and sales significantly increase on the weekends, with some shops experiencing over a 100 percent increase compared to weekdays. The number of shops can rise during the summer season in coastal areas. However, there is no great fluctuation in the demand for trout, except over the Christmas period when sales increase significantly.

Supermarket network – Despite being well developed in Albania, supermarkets have limited fish trading, particularly for rainbow trout. Unlike in European supermarkets, finding a section for fresh fish in an Albanian supermarket is uncommon. These networks mainly trade frozen fish and molluscs, but not rainbow trout. However, hypermarkets are an exception as they have dedicated areas for fresh fish, including rainbow trout. In recent years the expansion of hypermarkets in interurban areas and inside large commercial centres, has led to an increase in the sale of fresh fish products.

Informal trade – This type of retail market includes sales directly from the farm and on the roadside. The latter has significantly reduced in recent years, but it still takes place, especially in rural areas and small and undeveloped areas of Albania. The phenomenon is almost non-existent in large cities and developed urban areas. Sales of trout directly from the farm are particularly notable at small rainbow trout farms. According to respondents, this method often results in significant sales, especially on weekends.

FISH FEED

Fish feed factories do not exist in Albania, so fish feed is supplied through advance contracts, mainly with wholesalers, food factory agents and larger aquaculture farms. Some of the fish feed is then resold to the smaller aquaculture farms. Challenges in obtaining the right quantities of fish feed can lead to higher prices, which in turn increases the cost of the final product. Since fish feed accounts for about 30 percent of the total production cost, a more favourable price could directly reduce consumer prices (e.g. through tax relief on imported feed).

HATCHERIES

Most of the farms have a closed production cycle which starts with the stripping of eggs from their own broodstock. However, they also use some fingerlings bought from other farms and imported from neighbouring countries.

ENABLING ENVIRONMENT

FISH HEALTH SERVICES

Veterinarian and fish health specialist services are not easily available to trout farmers in Albania. Fish farmers must find private veterinary services to resolve any potential health-related problems on their farm. There is also no vaccination of rainbow trout in Albania.

FINANCIAL SERVICES

The banking system does not play an important enabling role in the rainbow trout value chain. Many of the small aquaculture companies find it impossible to apply for bank loans because of high interest rates combined with low levels of disposable income. None of the farmers interviewed had benefited from any European Union or national support scheme.

POLICIES AND LAWS

One of the main issues for freshwater aquaculture in Albania is the approval of Allocated Zones for Aquaculture (AZA). According to Aquaculture Law 103/2016, areas designated for the development of aquaculture must be approved. The lack of adoption of these areas has stalled the sector's development. A study of AZA for inland waters conducted by the Agricultural University of Tirana has been completed and it is expected that adopting the proposals and receiving increased support through the European Union's Instrument for Pre-Accession Assistance for Rural Development (IPARD III) will significantly advance the development of the inland aquaculture industry.

INFRASTRUCTURE

The areas where trout aquaculture is located benefit from a constantly improving road network which makes markets more accessible. However, some small farms are still located a long way from urban areas and markets, requiring transportation along poorly maintained roads. This not only impacts the freshness of the products because of longer transport times but also increases fuel and vehicle maintenance costs. Improving the road infrastructure would therefore improve product quality and reduce final production costs.

THE NATURAL ENVIRONMENT

Albania is a country rich in water resources, including reservoirs, rivers and natural lakes. The country ranks among the top European countries for freshwater availability per capita. However, increasing pressure on these resources, e.g. from aquaculture, hydropower stations and tourism, sometimes leads to conflict. Implementation of AZA is needed to ameliorate this issue.

END-MARKET ANALYSIS

DOMESTIC MARKET

Fish consumption in Albania is much lower than the average for Europe and the world. The average annual per capita consumption of fishery and aquaculture products in Albania was estimated to be about 8.6 kg/year in 2020 (FAO, 2024c). This is significantly lower than the rest of the world, which reached 20.6 kg in 2021 (FAO, 2024d). Nonetheless, the domestic market is expanding due to a growing awareness of the benefits of consuming fish products.

The domestic market in Albania is mainly supplied with fresh fish and local products. The main products are hake, European seabass, gilthead seabream, sardines, anchovies, rainbow trout and common carp. To meet the domestic demand for fish, a certain quantity of fish also comes from imports such as sea bass and seabream followed by frozen squid, frozen shrimp, canned anchovies/sardines and canned tuna. Anchovies in salt, which are imported in large quantities as a semi-processed product, are mainly directed to the processing industry. After processing, these anchovies are canned and re-exported.

The findings indicate a strong preference by Albanian consumers for whole, fresh fish. More precisely, consumers are generally looking for a product that is intact at the time of trading, but that will be gutted or filleted by the vendor at the time of purchase. According to interviewees, gutting or filleting prior to the sale creates the impression that the product is not fresh. Thus, retailers have not diversified their offering by adding filleted trout or other value-added products from the processing industry. Trout are typically harvested and marketed as whole fish weighing 350 g to 500 g, but trout of up to 800 g can also be found.

Customers' preference for trout also depends on the area or districts of the country. The best place in the rankings, according to consumer preference for rainbow trout, is southeastern Albania. This area is furthest away from the coastline and in a mountainous region where freshwater fish have traditionally been caught and are more available on the local market.

Amongst these freshwater fish, Ohrid trout is best known. The quantity of this species is limited and in many cases rainbow trout is sold as Ohrid trout, especially in restaurants. The close resemblance of rainbow trout to Ohrid trout makes many traders label rainbow trout as Ohrid trout. In this way, rainbow trout sales have increased, especially for trout that feed on food containing astaxanthin, which gives the flesh a pink colour.

EXPORT MARKET

More than 60 percent of domestically produced rainbow trout are destined for the international market. Before being distributed abroad as a fresh or frozen product, the trout is gutted and sometimes filleted. The main exporting countries for Albanian rainbow trout are Poland and Romania. A much smaller quantity is exported to other countries like Bulgaria and Hungary.

VALUE CHAIN GOVERNANCE

With the exception of the largest producer in the trout aquaculture sector, business operators usually sell the harvested fish with no value added directly to retailers who then re-sell the fish to the end-consumers on the domestic market. The relationship between supplier and buyer is only partially regulated by supply contracts and in most cases based on an informal agreement and built on mutual trust between the parties.

The short supply chain allows farmers to capture more of the final value than in the case of longer chains. However, among the small trout manufacturers there is major competition in the sale of the product, which means that sometimes the farmers need to lower the price below the production cost. To capture more of the final value, farmers sometimes sell a part of their production directly from the farm to the final consumer.

The rainbow trout value chain is characterized by very weak horizontal links. There is no producer organization representing trout farms and encouraging cooperation between them. Instead, competition has been growing in recent years. Meanwhile, the entire aquaculture sector in general, and the large processing sector in Albania specifically, are not well linked to each other. In the local market the trout is sold whole and fresh without going through the processing phase.

SUSTAINABILITY

ECONOMIC SUSTAINABILITY

Agriculture accounts for about one-fifth of the gross domestic product (GDP) of Albania, and for slightly less than half of the total employment since the agriculture sector is dominated by small and family farms. Family farms and smallholders are critical for the country's food security, as well as for poverty reduction in rural areas.

The fishing and aquaculture sector contributes around EUR 120 millions (INSTAT, 2020) to the GDP, or 0.79 percent of the total national GDP. The contribution of rainbow trout to the fisheries GDP is only 6.3 percent. Trout aquaculture appears to be a profitable activity with the net profit margin per kg of production at the farm gate positive for all farms investigated. It ranged between EUR 0.86 per and EUR 2.4 per kg, equating to a 24 percent and 40 percent profit margin.

The rainbow trout aquaculture sector provides approximately 60 jobs, with seven held by women. Both the fishery and aquaculture sectors are considered challenging and often fail to generate sufficient income, making them less attractive to most employees. Some interviewees mentioned that they work in these fields out of economic necessity and do not find this sector attractive for long-term employment. Many continue in this line of work because of family tradition. In contrast, the sales sector, particularly the retail market, is perceived as more attractive.

SOCIAL SUSTAINABILITY

Gender equality

Men form the larger share of the workforce in rainbow trout aquaculture in Albania. The main trout enterprise in Albania (67 percent of total trout production) reported that 13 percent of staff were women. The other companies only employ men. As was mentioned above, these activities are family businesses and women always play a role, even if this is not reported. Women are mainly involved in aquaculture activities related to the hatchery, the selection process, sorting, packaging and sales.

The entire fishery and aquaculture sector in Albania employs 4 200 people, with a significant number of women employed, mostly in the processing industry where they account for as much as 99 percent of employment compared to men.

Decent employment

Most aquaculture operators are family businesses that have a limited number of salaried employees. The processing industry is the main employer in the fisheries and aquaculture value chain. A large proportion of the processed products in Albania are exported and this is also true for rainbow trout.

Albanian exporters are under increasing pressure from foreign clients to adhere to occupational safety and health standards. In addition to product-related criteria, some certifications such as the Safe Quality Food certification also include the welfare of employees. As part of the private certification process, certification bodies inspect occupational safety and health during audits. Children do not work in the aquaculture plants in the trout value chain, except if they are a member of the farm owner's family.

Environmental sustainability

Intensive inland aquaculture can impact aquatic resources in two ways: by taking water from local sources, which reduces the amount available, and by changing the physical and chemical qualities of the water in the receiving aquatic system.

In Albanian trout aquaculture, interviews revealed that there is no regulation on the use of aquatic resources, allowing farmers unlimited water use. It is suggested that this issue be addressed in aquaculture regulations as it is important for managing water resources.

Furthermore, only one Type C operator reported treating the water before discharging it from the farm. A cage aquaculture farm and two Type A enterprises using raceways mentioned that they periodically remove waste through a contracted company. All other interviewees said they do not treat the water before discharge.

However, environmental impact is very context specific and depends on several factors such as the concentration of pollutants in the water and the capacity of the environment to assimilate them. To determine the environmental impact of the activity, further investigation is needed, including the analysis of dissolved nutrients and organic matter.

RESILIENCE

Pandemic impact

One of the biggest disruptions to the value chain was COVID-19 in 2020 and 2021. The entire value chain's activities were paralyzed, interrupting the connections between sections due to the lockdown period. Despite this, the supply channels were only interrupted for a short period (one to two months).

The interviews revealed that production was not seriously affected, even under these conditions. While the hotel, restaurant and catering (HoReCa) segment was completely halted, other segments (including exports) were not significantly impacted. Once this major disruption ended, all the elements of the rainbow trout value chain recovered, including the less affected aquaculture plants, wholesale and retail markets and exports, and the HoReCa chain that was most affected.

Conflicts with other water-users

Conflict with tourism has led to the closure of some small-scale farms. Finding synergies between tourism and aquaculture could help mitigate this issue. Adapting aquaculture businesses to an agritourism model –where they raise trout and offer accommodation or even sports fishing– could sustain their commercial viability by reopening operations and increasing production and income.

Additionally, the increasing number of private hydroelectric plants has led to disputes with fish farms over the limited availability and potential for production of rainbow trout in Albanian waterbodies.

Climate change

Trout need good quality water with low temperatures. However, in recent years, trout farms have been impacted by decreased spring water resources. This is particularly problematic in the summer when high water temperatures cause hypoxia and stress, leading to mortalities, especially among juvenile rainbow trout.

This issue persists, forcing primary producers to reduce stocking densities, which affects the final price of the product. Improved water resource management and treatment of water discharged from aquaculture plants can mitigate the negative impacts of climate change and increase the production of rainbow trout.

VISION AND STRATEGY FOR UPGRADING

ANALYSIS OF STRENGTHS, WEAKNESSES, OPPORTUNITIES AND THREATS

Below is a summary of the main strengths, weaknesses, opportunities and threats of the rainbow trout value chain in Albania.

STRENGTHS	WEAKNESSES
Availability of high-quality freshwater resources	Lack of application of biosecurity measures for inland aquaculture
Legislation complies with European Union standards	Lack of adherence to established and internationally recognized standards for quality, safety and sustainability
Hatcheries are established for freshwater species	Insufficient technical and administrative knowledge of fish producers (including climate change-related threats and adaptation)
Reliable international transport services	Lack of training opportunities for fish producers
Import of raw material ensures more constant commercial conditions and quality	Lack of zoning for aquaculture in inland waters leading to conflict with other water resource users
Recent food safety legislation	Production fully dependent on the import of fish feed
Low labour costs compared to other countries in the region	Lack of organization of aquaculture associations for buying inputs for aquaculture (food and fingerlings)
Formal rural development strategy in place	Lack of coordination and good relationship with the processing sector
Some socioeconomic data being collected	Low competitiveness on the European Union market due to import tariffs
Strong political will for improved fisheries management and development	Limited market opportunities for freshwater products on the domestic market
New Decision of the Council of Ministers and regulations aligned with European Union Common Fisheries Policy (CFP)	Unemployment and limited income of local population are common constraints for investment in rural areas
Existing fisheries management organization (FMO) and producer organization (PO) structures	Land rights from agricultural to urban and vice versa are not flexible

CONT,

STRENGTHS	WEAKNESSES
Vertical integration of the processing plants, where established, allows great entrepreneurial flexibility, economy of scale and improved competitiveness	Insufficient coordination between different administrative structures, such as the fisheries inspectorate, protected areas agency and local government
Development of platforms allowing the region-wide distribution of the production	Lack of reliable statistics impacting the development of the sector at different levels
All processing plants are certified for export to the European Union market	Fragmented production with most farming enterprises being small and micro-scale
Major processing plants still have important capacity available to increase production	High concentration of production, few key players
Acceptance of the entrepreneurial risk is high, and business owners (BOs) are generally well oriented to make new investments	Extensive informal economy affects legitimate operations and tax revenues in inland waters
Quality certification widely spread among the BOs	Difficult access to and unfavourable conditions of credit from the bank sector
Important share of processing plants is specialized to mono products. Thus, can influence the market prices	High commercial lending interest rates
	Growing attention to compliance with environmental pollution requirements
	Lack of capacity of fisheries administration at all levels. Only seven staff spread over one directorate within the Ministry of Agriculture and Rural Development.
	Administrative budget constraints. Very limited budget for fisheries and aquaculture management
	Lack of wholesale market infrastructure and other services and facilities
	Poor bargaining power of trout farmers
	Lack of market information
	Illegal trading and lack of enforcement (in some cases)
	Lack of domestic and international market strategy for seafood
	Roadside sales of fish (illegally caught fish?) on Lake Ohrid
	Lack of up-to-date economic analysis of the sector and use in decision-making
	Lack of basic and specialized human capacity for fish processing

CONT,

STRENGTHS	WEAKNESSES
	Weak domestic market to absorb products processed by processing plants.
	Processing waste is not managed
OPPORTUNITIES	THREATS
Favourable government policy for the sector	Climate change impacting the environmental conditions critical for production (e.g. water temperature)
Tourism sector is growing and inland destinations with natural attractions, including natural lakes, are gaining the favour of adventure tourism in particular	Changing of consumers' food habits away from small freshwater fish
Proximity of Albania to the European Union and other key markets e.g. Russia	Increasing pressure of urban development. Disposable water must be earmarked for what it is intended for: fish, energy (hydropower), irrigation or as drinking water
Prospective accession to the European Union to support economic development and "blue growth"	Urban and agricultural water pollution adversely affects aquaculture plants
Domestic market demand is expected to grow	Increasing competition from imported products by larger producers (Greece and Turkey)
International market rewards organic production	Further reduction in the workforce in rural areas
Production of fish feed for the aquaculture sector could be developed	Changing regulatory requirements from external sources, including the European Union
New international markets (e.g. North Europe, Scandinavian countries and Africa) can offer new opportunities	Global economic and political instability
Brexit could reveal an opportunity for the export of quantities free of quotas	Reduced profitability will impact on new investment in the sector
	Socioeconomic pressures driving illegal, unreported and unregulated fishing (particularly on the lakes)
	Insufficient interest in the existing working conditions lead to an important migration flow (worsened by the increasing migration rate of whole families)
	European Union quotas heavily impact the processing sector
	Financial crisis can heavily impact the sector and requires a preparedness to approach new markets
	Limited offer of quality equipment maintenance service for the processing sector

UPGRADING PLANS

The various analyses carried out as part of this study have led to a strategy for upgrading the rainbow trout value chain in Albania. This strategy is aimed at the sustainable development of the value chain, with its triple objective of economic growth, social well-being and environmental resource sustainability.

The vision's translation into strategic objectives is presented below.

Vision: Sustainably growing the Albanian trout aquaculture value chain to increase the socioeconomic benefits to all actors, taking advantage of existing opportunities while successfully addressing existing challenges.

The following set of recommendations considers the analysis in the previous sections of this report and addresses them through three broad areas: the business level, enabling environment and value chain governance.

STRATEGIES AND ACTIONS FOR BUSINESS-LEVEL UPGRADING

Category A farms (family operated, aquaculture contributes to household income)

These micro-scale family operated enterprises for which aquaculture is one of number of income-generating activities, are faced with the challenge of changing market conditions towards increased sales through multiple retailers and away from roadside and farm-gate sales. These trends would render the long-term survival of this group of farms increasingly difficult, unless a change in the business model is implemented. Two possible routes emerge for improving the longer-term competitiveness of producers in this category. Depending on the specific circumstances of each farm, one or the other may be preferred:

- 1_ Some of the farms may be able to increase the scale of production (depending on location, aquatic resource availability, managerial capacity and more) and better integrate the farm into the broader national and international market:
 - a _ It may be a suitable strategy for some of the farms for which there is no potential for alternative sources of income (e.g. tourism or hydropower) to develop or sustain income generation for the future.
 - b _ It will require formalizing (legalizing) the businesses, significant investment to increase scale and training in better management practices.
- 2_ Strengthening the role of aquaculture in diversified business activities to exploit the strengths of this type of enterprise, such as through better integration with agrotourism – recreation, catering and accommodation.

- a – Pursuing this strategy will require an evaluation of the tourist opportunities of the location and investment to develop the related businesses..
- b – Training in small-scale fish processing (e.g. smoking), advertising and marketing, as well as other relevant business skills.

Strategies for developing aquaculture for this type of enterprise should be evaluated in the context of the overall business portfolio. It is important to seek synergies where aquaculture enhances the overall value-add and profit potential of the diversified business.

Category B farms (family operated, aquaculture sole household income)

The long-term survival of farms in this category will depend on the development of market demand for trout. Since the income generation of this type of business is entirely dependent on aquaculture, the trends in trout consumption in the target markets will need to be carefully considered in upgrading the business models of this category.

The general trend in trout consumption in Europe indicates a shift away from fresh home-cooked plate-size fish towards convenience products such as ready-to-cook products that are distributed through multiple retail chains. The competitive advantage of enterprises targeting this market is typically a lower price (linked to larger-scale and more efficient production), continuity of supply and product convenience.

Some of the farms in this category would be better suited to take advantage of this trend and upgrade their production to serve this growing market. Increasing capacity is key to introducing higher standards of production, together with cooperative action to sustain production to be competitive on the domestic market (against imports) and increase the popularity of trout, as well as to exploit the potential for export into the European Union and other foreign markets.

Specialization can also be sought in targeting the HoReCa segment. To pursue this strategy, additional investment will be required to increase capacity and improve productivity in farming through better management practices, to reduce losses and adhere to quality and safety standards, mechanization, certification and traceability. Increasing scale should allow for an improved and more balanced (in terms of bargaining power) link with the well-established processing industry to develop value-added products that are better suited to the consumption patterns of modern consumers. It will also increase the popularity of trout in Albania and benefit from possible vertical integration at the enterprise level to incorporate processing. For the farms unable to make a transition, a diversification of the business can be considered.

Category C farms (larger scale, investment enterprises)

Increasing the production from cage farming may be possible after analysis of the carrying capacity of the freshwater bodies capable of supporting this type of system. Support to improve export capabilities to exploit the comparative advantages of Albania should be provided to avoid competition with other domestic producers targeting the local markets. Some of the areas or targeted activities include:

- Greater compliance with European Union regulations on quality and food safety;
- Greater traceability of seafood products; and
- Greater value-adding through processing, product development and branding.

INCREASE PRODUCTIVITY AND SUSTAINABILITY OF FISH FARMS AND OTHER VALUE CHAIN ACTORS WEAKNESSES	
STRATEGY	ACTIONS
Introduce standards and training to improve the bio-technical performance of farms	<p>Develop mandatory standards, regulations and monitoring schemes for environmental food safety/ traceability, social responsibility and other critical aspects which hinder the sustainability of the value chain and its ability to comply with the requirements of end markets, including biosecurity measures for inland aquaculture; standards for quality, safety, sustainability and traceability along the value chain; and waste management along the value chain.</p> <p>Organize capacity building on bio-technical aspects of farm management (hatchery, pre-weaning and on-growing stages) through training and extension services.</p> <p>Distribute printed guidelines on trout farming to farmers.</p>
Create a mechanism for addressing existing and potential risks	<p>Promote awareness about fish health and welfare, as well as the ethical aspects of fish treatments.</p> <p>Establish a platform consisting of researchers, value chain actors and public administration to identify, assess and propose measures to adapt to climate change-related threats for aquaculture.</p> <p>Promote the level of awareness among farmers about natural hazards.</p> <p>Promote farmers' capacity building on risk assessment and management for small-scale farming and processing enterprises.</p> <p>Develop a plan for adaptation to climate change-related threats to aquaculture and promote its adoption.</p> <p>Facilitate financial compensation for natural hazards.</p> <p>Provide financial support to farmers to take advantage of aquaculture insurance coverage.</p>
Promote income diversification at farm level for applicable farms	<p>Train producers in the skills required for business diversification e.g. catering, simple processing techniques and advertising.</p> <p>Provide funding (long-term loans) for capital investment for interested farms.</p> <p>Provide financial incentives for production of niche products such as organic trout and organic trout caviar.</p>

INCREASE PRODUCTIVITY AND SUSTAINABILITY OF FISH FARMS AND OTHER VALUE CHAIN ACTORS WEAKNESSES

<p>Promote innovation along the value chain</p>	<p>Support research and development activities on trout value-added and innovative products (e.g. ready-to-eat, fast food).</p> <p>Organize a pilot production unit for product development and capacity building.</p>
<p>Improve technical capacity of producers</p>	<p>Improve the business management skills of farmers; provide support and training to improve the technical and administrative knowledge of fish producers, including accounting, compliance with production standards and adherence to state regulations.</p> <p>Provide specialized training in aquaculture to address the need for skilled personnel in trout farming.</p>

Strategies and actions for upgrading the enabling environment

IMPROVE THE DEMAND FOR TROUT AND MARKET ACCESS FOR PRODUCERS

STRATEGY	ACTIONS
<p>Improve consumer perception of trout and stimulate demand on the domestic market</p>	<p>Support domestic marketing campaigns on television and in mass media to increase the awareness of trout products and their benefits to consumers.</p> <p>Encourage farmers to organize open days on farms for consumers, focusing on schoolchildren.</p> <p>Focus on the health benefits of fish (trout) consumption through generic advertisements.</p> <p>Provide a tax exemption for processed products on the domestic market to ease affordability and accessibility.</p> <p>Conduct promotional campaigns to encourage consumption of farmed trout, targeting the younger generation.</p> <p>Facilitate cooperation between trout value chain actors and gastronomy schools for new recipes for trout.</p> <p>Promote the inclusion of trout in gastronomy programmes on television and social media channels.</p> <p>Increase recognition of the socioeconomic and cultural value of fishing in coastal and rural communities.</p>

IMPROVE THE DEMAND FOR TROUT AND MARKET ACCESS FOR PRODUCERS

<p>Encourage voluntary sustainability certification to improve market access and potential for export</p>	<p>Encourage the development and adaptation of voluntary guidelines on environmental, food safety, fish welfare, fish health and feed management for farms by trout farming stakeholders. Encourage the use of available international guidelines for better aquaculture practices.</p> <p>Promote third-party certification along the value chain.</p> <p>Support and facilitate collective certification schemes.</p>
<p>Improve access to market information for farmers</p>	<p>Develop and market data collection systems and make information publicly accessible.</p> <p>Provide training to value chain actors in the use of market information.</p> <p>Provide financial support to exporters/processors to visit international seafood trade shows for networking opportunities.</p> <p>Support digitalization and an enabling policy framework for e-commerce at sectoral level.</p> <p>Link local market to regional e-markets for online purchases and online auctions.</p>

SUPPORT THE DEVELOPMENT OF AN ENABLING ENVIRONMENT TO UPGRADE THE VALUE CHAIN

STRATEGY	ACTIONS
<p>Stimulate the development of support services for aquaculture growth and improved competitiveness</p>	<p>Provide financial support for the domestic production of formulated high quality and sustainable fish feed.</p> <p>Support production of certified disease-free trout eggs and fry in local hatcheries through financial incentives and technical cooperation with international organizations.</p> <p>Introduce wholesale markets in key locations e.g. low-cost refurbishment of existing buildings in Vlore and Shëngjin.</p> <p>Maintenance and equipment for the processing sector.</p>
<p>Improve access to financial support to invest in upgrading businesses</p>	<p>Facilitate the provision of accessible loans and grant schemes to upgrade aquaculture facilities.</p>

IMPROVE THE ADMINISTRATION AND MANAGEMENT OF THE SECTOR

STRATEGY	ACTIONS
Establish a development plan for the value chain	<p>Develop zoning for aquaculture in inland waters to avoid conflicts with other water resource users.</p> <p>Conduct a survey to identify the potential sites (water source and land) for expansion of the trout farming sector.</p> <p>Conduct an aquaculture carrying capacity assessment for the zones in which aquaculture is envisaged to develop.</p> <p>Develop/update the national strategy for sustainable development of the aquaculture sector.</p> <p>Develop national and international seafood markets, including opportunities for export without tariffs and quotas to improve the competitiveness of national products.</p>
Update and streamline the administrative framework	<p>Improve the flexibility of transition of land rights from agricultural to urban and vice versa.</p> <p>Adopt a "one-stop-shop" approach for farm licensing to avoid time-consuming bureaucratic procedures and to facilitate the licensing process.</p> <p>Further alignment with reformed European Union CFP.</p>
Improve the capacity of public administration systems	<p>Increase coordination between different administrative structures, such as the fisheries inspectorate, protected areas agency and local government.</p> <p>Develop up-to-date economic analyses of the sector to use in management decision-making.</p> <p>Address understaffing and financing issues in the relevant administrative structures.</p> <p>Enhance the technical and managerial capabilities of government officers and policymakers through training and technical collaboration with relevant international organizations (e.g. General Fisheries Commission for the Mediterranean).</p>
Enhance information management for policymaking	<p>Improve the quality of statistics to support the development of the sector at different levels.</p> <p>Promote systematic collection, processing and dissemination schemes for quantitative and qualitative data along the trout value chain.</p> <p>Promote market surveys on domestic and international markets.</p>

IMPROVE THE ADMINISTRATION AND MANAGEMENT OF THE SECTOR

Ensure legal operation of enterprises along the value chain	Ensure operating farms are registered and compliant with administrative rules and regulations. Address the illegal trade of fish and seafood products.
Ensure decent working conditions and awareness of workers' rights along the value chain	Enhance the inspection of enterprises. Support workers' organizations. Adopt health and safety legislation for farms and processing facilities.

Strategies and actions for upgrading value chain linkages (governance)

UPGRADE VALUE CHAIN LINKAGES

STRATEGY	ACTIONS
Facilitate collective actions along the value chain	Support the development and efficient functioning of aquaculture associations for buying inputs for aquaculture (feed and fingerlings), improving the link with the processing sector and market power distribution.
Support horizontal integration (merging)	Promote awareness of horizontal integration and its benefits in terms of economies of scale, concentrating supply, enhancing bargaining power and price setting. Facilitate integration by creating an enabling environment (legislative aspects and financial incentives).
Enhance dialogue and consultation among stakeholders	Create platforms for consultation such as biannual forums to discuss challenges and solutions. Co-construction of policies in consultation with a wide array of stakeholders as a level playing field.

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VALUE CHAIN ANALYSIS OF FARMED RAINBOW TROUT IN ALBANIA

Summary report

Sustainable Fisheries and Aquaculture Value Chains for the Mediterranean (SVC4MED) within the Blue Growth Initiative is a development project implemented by the Food and Agriculture Organization of the United Nations (FAO) with financial support from the Italian Government. Its objective was to analyse the value chains of wild shrimp and farmed rainbow trout in the Mediterranean region and identify policies and strategies to improve their competitiveness and sustainability. The value chain approach offers a holistic and multidisciplinary framework for understanding the distribution of economic returns from the main activities associated with transforming raw material into a consumer product, as well as the environmental and social impacts arising from these activities. Albania, along with Lebanon, Italy, Tunisia and Türkiye, is one of five Mediterranean countries in which the SVC4MED project was implemented. The work in Albania focused on the analysis of the farmed rainbow trout value chain. The SVC4MED value chain analysis approach is based on the methodologies of FAO's Guidelines for Sustainable Food Value Chain Development (FAO, 2014) and the European Commission's Value Chain Analysis for Development (Fabre, Dabat & Orlandoni, 2021), adapted to the specific contexts of the recipient countries. It has three main components: functional analysis, sustainability assessment and upgrading strategy development.

The value chain analysis combines secondary data from existing statistical databases and primary data from interviews with value chain actors and key informants, field observations and focus group discussions. It serves as a basis for identifying policies and strategies to improve the sustainability performance of the value chain. The approach is highly participatory, involving value chain stakeholders from the outset to ensure national ownership. The results have been presented and discussed in dedicated stakeholder meetings that also provided an opportunity to disseminate and validate findings and share the strategy development process.