



# A1.1 METHODOLOGY FOR COMPARATIVE ANALYSIS OF EXISTING FRAMEWORKS FOR LICENSING PROCEDURES AND EXTRA-SMES' ECONOMIC OPERATIONS

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# 1 Introduction

## 1.1 The deliverable

The Interreg EXTRA-SMEs brings together 8 regions from 7 countries, aiming at improving territorial policies relevant to the aquaculture value chain. This has the potential to boost the competitiveness and extraversion of SMEs in their regions, as aquaculture can become a significant driver of local economies.

In particular, a significant percentage of enterprises in EXTRA-SMEs regions are inland and coastal SMEs operating across and around the aquaculture value chain, contributing to growth and creation of jobs.

This deliverable will provide a methodology for partners to gather, compare and analyse their legislation touching upon the aquaculture value chain's licencing and operation conditions.

The goal is to enable partners to elaborate on which policies are meeting the needs of today's aquaculture value chain and coastal areas, so as to eventually integrate them in their own policy mix. To this end, the deliverable includes the following:

- It firstly describes the aquaculture value chain to ensure that all partners share a common baseline understanding.
- Secondly, it provides information on the policy objectives relevant to aquaculture in Europe, to allow partners understand what objectives could be achieved in their regions. This part also shows the dynamics among policy objectives, which can sometimes be contradictory.
- Finally, it offers partners a tool to identify and collect existing policies along the aquaculture value chain.

The tool will be used in the following steps of the EXTRA – SMEs project to help partners meet the objectives of the project.

## 1.2 The EXTRA-SMEs project

The EXTRA-SMEs project aims to support public authorities to jointly achieve the following objectives by improving their policies around the aquaculture value-chain:

- Increase their capacity to effectively implement policies on SMEs entrepreneurial development, internationalisation, and extraversion.
- Identify innovation pathways and raise awareness on the benefits of modernisation of the aquaculture SMEs value chain.
- Incentivise investments, outwards-looking entrepreneurship, address limited access to finance, lack of knowledge, and inability to expand in wider markets.

## 1.3 Why is it necessary to compare regulatory frameworks and policies

Comparative policy analysis examines policy decisions related to a specific issue, in our case aquaculture, as well as patterns in day-to-day interactions among policymakers of different jurisdictions. It helps at constructing, testing, and refining good practices in comparative perspective.

Exchanging policies, objectives and benchmarks can help partners:

- Learn from each other and avoid potential mistakes
- Innovate in their policy mix
- Compare benchmarks to see the actual potential of aquaculture
- Cooperate more in regional projects, as the authorities in charge have already established a common forum of discussion.

The European Union has been using the Open Method of Coordination (OMC) for aquaculture since 2014, as a process through which the European Commission and the Member States collaborate to support and encourage the sustainable development of aquaculture in the EU.

This OMC started with Member States drafting multiannual national plans for 2020. Therefore, the EXTRA-SMEs project could potentially help the partners to bring effective input to the review of the multiannual plans of their Member State.

This would be an additional benefit of the project, given that these plans will now be reviewed to assess to which extent they managed their objectives and to adjust policies wherever necessary.

## 1.4 The Interreg Europe Programme

Interreg is one of the key instruments of the European Union. It is supporting cooperation across borders through project funding. It aims to jointly tackle common challenges and find shared solutions in fields such as health, environment, research, education, transport, sustainable energy and more.

Interreg is one of the two goals of the EU Cohesion Policy in the 2014-2020 period and it is funded by the European Regional Development Fund (ERDF). It has a budget of EUR 10.1 billion invested in the several cooperation programmes responsible for managing project funding.

It has three types of programmes: cross-border, transnational and interregional.

## 2 Context of work

### 2.1 Aquaculture today

From a small niche in the 1980s, aquaculture has grown rapidly to a highly traded commodity. Global aquaculture production in 2016 included 80 million tonnes of food fish and 30.1 million tonnes of aquatic plants, as well as 37900 tonnes of non-food products.

In 2016, global aquaculture represented 47% of the global fish production. This is equal to 53% of global production if non-food uses (including reduction to fishmeal and fish oil) are excluded. Aquaculture was also the source of 96.5% by volume of the total 31.2 million tonnes of the full production of aquatic plants (collected in the sea or cultivated)<sup>1</sup>.

Globally, there are next to none countries that aquaculture is absent. However, fish production varies significantly both in terms of species and volumes<sup>2</sup>.

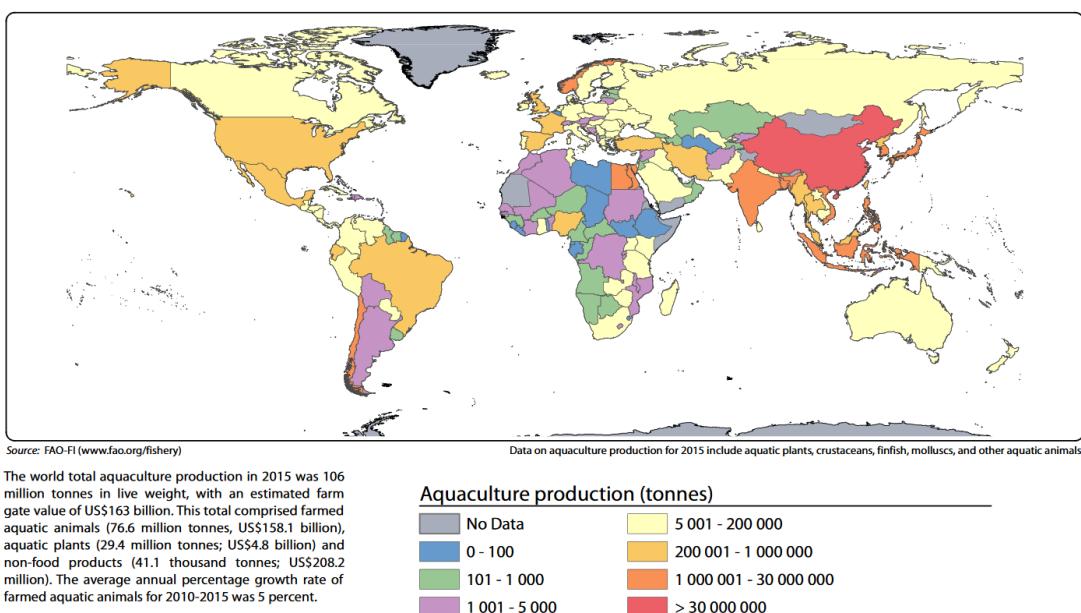


Figure 1 [Aquaculture production in 2015](#)

In the EU, the volume of aquaculture production was estimated at 1.3 million tonnes in 2015, equating to 25% of total EU fish production (fished and produced in aquaculture). Worldwide the EU aquaculture sector ranked ninth, with a 1.2% share in volume<sup>3</sup>.

Spain, the United Kingdom and France were responsible for more than half of the EU's aquaculture production in terms of volume (with shares of 23.3%, 16.8% and 13% respectively). The other major producers were Italy (11.8%) and Greece (8.4%)<sup>4</sup>. Ireland and Poland represented 3%, while Romania represented 1% and Lithuania 0.3% of the total EU production<sup>5</sup>.

In terms of economic value, the United Kingdom led with a 24.1% share, followed by France (15%), Spain (12%), Greece (11.2%) and Italy (10.6%). In other words, just five EU countries

<sup>1</sup> [FAO, 2018, \*The State of World Fisheries and Aquaculture 2018 - Meeting the sustainable development goals\*](#)

<sup>2</sup> See [global production per country in 2016](#)

<sup>3</sup> [Eurostat, Statistics Explained, Aquaculture](#)

<sup>4</sup> [Eurostat, Statistics Explained, Aquaculture](#)

<sup>5</sup> Eurostat, *Production from aquaculture excluding hatcheries and nurseries (from 2008 onwards)*, extracted on 7/11/2018

were responsible for almost three quarters of the aquaculture production volume and value in the Single Market. Ireland represented 3,3% of the total value, Poland 2%, Romania 0,5% and Lithuania 0,2%.<sup>6</sup>

Overall, in Europe (including non-EU countries) the last five years have seen substantial commercial investment in the production and use of “cleaner fish” and in technology to fight diseases, such as sea lice infestation. Moreover, it is expected that in the coming years, several pilot trials of new production systems will aim at minimising the environmental impact

Therefore, it is important that EXTRA – SMEs partners take into consideration that while the EU is not important in absolute volumes of aquaculture production, it may lead to innovation or quality standards in the coming years, including rules for cleaner fish.

of aquaculture<sup>7</sup>.

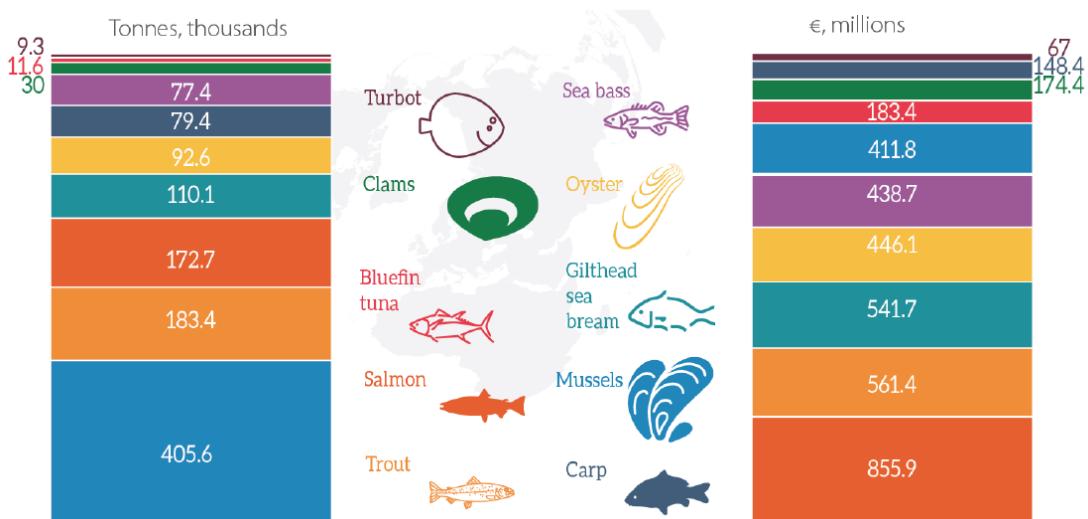
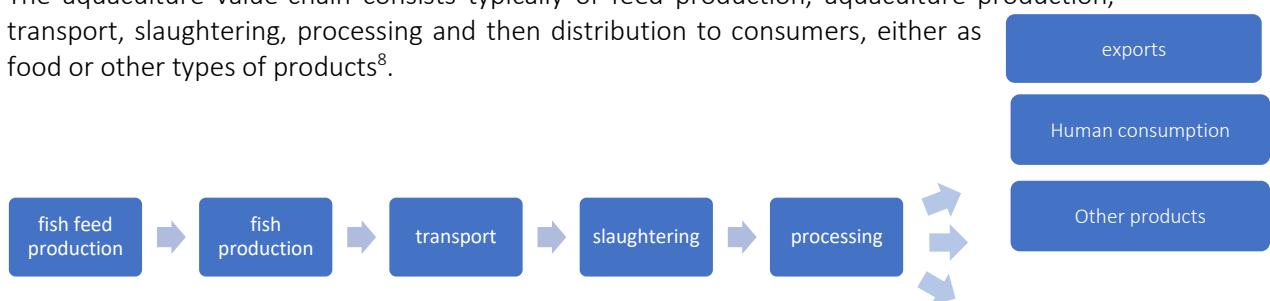


Figure 2 European Parliament's In-depth Analysis, Overview of the EU aquaculture

## 2.2 Breaking down the aquaculture value-chains

The aquaculture value-chain consists typically of feed production, aquaculture production, transport, slaughtering, processing and then distribution to consumers, either as food or other types of products<sup>8</sup>.



<sup>6</sup> Eurostat, *Production from aquaculture excluding hatcheries and nurseries in total values in euros*, extracted 07/11/2018

<sup>7</sup> FAO, *Aquaculture, global and regional reviews*

<sup>8</sup> Although the aquaculture value-chains model is presented in a linear manner here (for reasons of simplicity), several feedback loops may be considered within this model, mainly within the circular economy context.

### 2.2.1 Production of fish feed

The feed used in aquaculture is industrial fish and agricultural products, with the most prominent being fishmeal and fish oil<sup>9</sup>. It is usually composed mainly of proteins, fats, cereals, vitamins and minerals that are grounded, and mixed to be extruded, dried, and coated to become pellets<sup>10</sup>.

Feed is an important cost factor in aquaculture, even though there is very substantial variation between highly extensive species that are not provided with any feed, to intensive species with formula-based feed with a high share of marine ingredients.<sup>11</sup>

Moreover, other factors make the choice of feed important. For instance, regulatory limitations on catch fish<sup>12</sup> affect the fish feed industry. Also, consumer preferences are changing with some demanding fish to be fed with organic feed.

As a result, increasingly more consumable fish is used for human food and an increased part of marine by-products are now also utilised as raw material in the feed production. Furthermore, alternatives to using fishmeal and fish oil, such as using seaweed or soya, are researched<sup>13</sup>.

Therefore, it is advisable that EXTRA-SMEs partners consider adopting policies that could allow their aquaculture sector to provide competitive fish feed both for fish production in the region and for export.

Equally, it is important to define the conditions necessary for enabling producers to turn to organic feeding, if they wish to expand to this market.

### 2.2.2 Fish Production

Aquaculture production comes in various forms and techniques, while it also produces different types of fish, crustaceans and algae.

Firstly, a distinction can be drawn between inland, marine and coastal aquaculture.

- Inland aquaculture is typically practiced in freshwater within natural ponds, tanks, pens or cages.
- Marine aquaculture is practised in the sea, in a marine water environment.
- Coastal aquaculture is practised in completely or partially in human-made structures in areas adjacent to the sea, such as coastal ponds and gated lagoons<sup>14</sup>.

Secondly, aquaculture systems range from very extensive, through semi-intensive to intensive. In the EU, the more common are:

<sup>9</sup> [Seafish, 2016, Fishmeal and oil facts and figures](#)

<sup>10</sup> SENSE, 2013, *Harmonised Environmental Sustainability in the European food and drink chain, Key environmental challenges for food groups and regions representing the variation within the EU, chapter 3, Salmon Aquaculture Supply Chain*

<sup>11</sup> [OECD, Green Growth in Fisheries and Aquaculture Production and Trade](#)

<sup>12</sup> [EUfishmeal, Quotas](#)

<sup>13</sup> SENSE, 2013, *Harmonised Environmental Sustainability in the European food and drink chain, Key environmental challenges for food groups and regions representing the variation within the EU, chapter 3, Salmon Aquaculture Supply Chain*

<sup>14</sup> [FAO, 2018, The State of World Fisheries and Aquaculture 2018 - Meeting the sustainable development goals](#)

- **Extensive farming**, which is the most traditional aquaculture technique. It can be applied either with freshwater or in at a coast. It consists of maintaining natural or artificial ponds in a way that they foster the development of aquatic fauna to encourage the development of marketable animals at a higher yield than that of the natural ecosystem.
- **Semi-intensive freshwater aquaculture** means that feed is added to the pond allowing for higher stocking density and production per hectare.
- **Intensive inland freshwater fish farming** can be achieved with two techniques. One consists of several open-air concrete tanks, raceways or earth ponds of different sizes and depths suited to the different stages of growth of the fish. A race taps river water upstream and returns it to the river downstream after it has flowed through all the tanks. The second technique is water recirculation systems, where the water remains in a closed circuit and is recycled so it can be recirculated in the tanks using a piping system.
- Intensive sea farming takes place in sea cages. These hold fish captive in a large pocket-shaped net anchored to the bottom and maintained on the surface by a rectangular or circular floating framework. They are widely used in coastal and open waters, in areas sheltered from excessive wave action, with sufficiently deep water and relatively low current speeds.
- **Shellfish farming** is based primarily on specimens born in the wild and on nutrients provided by the environment, without any type of input since those animals feed on plankton filtered through their gills. Different techniques can be used, including bottom farming which is often practised in shallow coastal or estuarine areas, up to ten metres deep, inter-tidal shellfish farming where areas between high and low tide are used, and floating systems such as rafts and longlines, which can be used in open sea or estuarine environments.
- **Algae** can be cultivated on big ropes or nets in coastal area, protected from the winds and strong currents where they can be constantly immersed underwater<sup>15</sup>.

Moreover, it is worth mentioning that an important part of the production is **fish hatchery**. This consists of the artificial breeding, hatching, and rearing through the early life stages of fish. Hatcheries produce larval and juvenile fish, shellfish, and crustaceans, primarily to support the aquaculture industry where they are transferred to on-growing systems, such as fish farms, to reach harvest size. A fish hatchery may be part of an aquaculture production site or be placed in separate facilities.

Having in mind the very wide spectrum of production and business activities in the fisheries sector, another distinction can be made between two broad technologies:

- **Marine Farming**. In marine fishing the main activities are related to the production of:
  - Seabass
  - Seabream
  - Tuna
  - Shellfish.
- **Fresh Water Aquaculture**. This technology may be further decomposed in cold and warm water fishing. Within the technology of fresh water fishing as main activities are reported those related to the cultivation of:
  - Cyprinid

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<sup>15</sup> European Commission, [aquaculture methods](#)

- o Salmonid
- o Trout.

Each one of the two above technologies/products encompass various sub-technologies

It is important that the EXTRA-SMEs partners become familiar with the techniques used in their areas, to design policies to preserve and improve them, but also enrich the area's aquaculture practices. In addition, it is important to acknowledge the technological differentials and incorporate them, when necessary, in the analysis and policy suggestions; technological characteristics are often closely associated to country specificities.

closely associated to the species of fishing.

### 2.2.3 Transporting<sup>16</sup>

Fish is often transported alive to be slaughtered or to be sold alive. In the EU, all modes of transport are used.

Road transport by flatbed lorries is a frequent method of transferring fish among farms (to fit their stage of development) or to be slaughtered.

Sea transport is also used for transport of fish for slaughter or among production facilities. It takes place in well-boats, where the sea water quality is maintained at a high level by continuously pumping in or recirculating sea water.

Finally, helicopters may be used to move salmon smolts over small distances. These fish are densely stocked in an open bin containing highly oxygenated water carried underneath the helicopter.

Transport may cause pain and fear to fish and crustacea. They are exposed to a multitude of stressors, such as density changes, handling stress, water movement, noise and vibrations and poor water conditions. Therefore, transport of live fish falls under the EU Council Regulation [1/2005/EC](#), even though lighter conditions than the ones for animals apply.

Overall, it is important that EXTRA - SMEs partners look into the transporting practices allowed in their region to ensure transporters' compliance with the law. Also, it is worth it to ensure that transporting practices in their area abide with the market standards on animal welfare that are increasingly placed by large retailers (see below).

### 2.2.4 Slaughtering

The first step in fish processing is usually slaughter, which includes handling, restraining, stunning and killing.

The details of the slaughtering method vary according to the fish and among countries. For instance, asphyxia in ice of sea bass and sea bream is still practised in Greece, Spain and Italy<sup>17</sup>.

[Regulation 1099/2009/EU](#) on the protection of animals at the time of killing applies on fish, although without the provision of specific rules. However, Article 27(1) of Regulation

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<sup>16</sup> European Commission, 2017, [welfare of farmed fish: Common practices during transport and at slaughter](#)

<sup>17</sup> European Commission, 2017, [welfare of farmed fish: Common practices during transport and at slaughter](#)

1099/2009 allows Member States to maintain or adopt national rules regarding the protection of fish at the time of slaughter or killing, but requires them to inform the Commission thereof.

Moreover, the [standards of the World Organisation for Animal Health \(OIE\)](#) on animal welfare during stunning and the [recommendations of the European Food Safety Authority](#) can be

Therefore, it is important that EXTRA – SMEs partners look into the slaughtering practices in their regions to ensure that economic operators abide to international standards, so that they can take part in international value chains.

used as benchmarks for national legislation and certification.

## 2.2.5 Processing

Processing captures all steps between the time fish or crustacea is harvested to the time the final product is delivered to the customer (including slaughter). It differs vastly according to species and how they are consumed. For instance, processing smoked salmon may be shorter than fish ultimately used for industrial fish nuggets.

As fish can spoil rapidly, post-harvest handling, processing, preservation, packaging, storage and transportation require particular care to maintain its quality and nutritional attributes and avoid waste and losses<sup>18</sup>.

Fish processing can be subdivided into fish handling, which is the preliminary processing of raw fish, and the manufacture of fish products. Fish handling may include slaughtering, sorting fish, gutting it, cleaning it and preserving it with various methods, such as freezing, smoking or canning.

The manufacture of fish products may involve more advanced packaging, precision cutting, the preparation of food products, including sausages or full meals. Overall, it is focused on developing high-value products, such as ready, portion-controlled, uniform-quality meals, that call for sophisticated production equipment and methods.

In contrast to aquaculture, which takes place in most countries, the primary processing activity is concentrated in countries with lower labour costs. Some countries even export fish for processing and re-import them for consumption or advance processing.

For instance, in 2007, it was documented that whole fish from North America and Europe flew to China for filleting and packaging and was re-exported to North American and EU markets<sup>19</sup>.

Overall, the fish food sector has become more heterogeneous and dynamic. For example, producers are increasingly coordinating with processors and large firms and retailers, sometimes outside the production country.

<sup>18</sup> FAO, 2018, *The State of World Fisheries and Aquaculture 2018 - Meeting the sustainable development goals*

<sup>19</sup> FAO, OECD, 2007, *Globalisation and fisheries: proceedings of a FAO – OECD Workshop, 16-17 April 2007*

Therefore, EXTRA-SMEs partners need to ensure that they identify the right policy mix, including financing, that would allow for competitive processing in their region.

Moreover, they could foster high quality synergies between production and processing in their countries, improving consumer awareness and investing in innovative processing.

## 2.2.6 International trade in fish products

Similarly to production, fish trade takes place in most countries in the world.

International trade has been enabled thanks to the removal or limitation of tariffs and technical barriers to trade (though to a lesser extent). Globalisation also increased fish trade, as it brought changes in consumer preferences, who asking for more variety in fish products, convenience and all-year round availability.

Currently, developed countries with large urban populations of high-income consumers have a demand for fish and fish products that far outweighs domestic production, and consumption levels can only be maintained through heavy dependence on imports.

## 2.2.7 Retail practices for fish used for human consumption

Fish remains an important part of human diet, despite the differences among world regions. It can either be purchased for cooking and consumption (large retailers, or consumed through catering services).

Live, fresh or chilled is often the most preferred and highly priced form of fish, particularly when destined for human consumption. It represents the largest share of fish for direct human consumption, 45% in 2016, followed by frozen (31%), prepared and preserved (12%) and cured (dried, salted, in brine, fermented smoked) (12%).

In Europe and North America, fish in frozen, prepared and preserved forms represents more than two-thirds of the production of fish used for human consumption<sup>20</sup>.

Supermarket chains and large retailers are increasingly the key players in setting product requirements and influencing the expansion of international distribution channels. Processors and producers are working together more closely to enhance the product mix, obtain better yields and respond to evolving quality and safety requirements in importing countries as well as consumers' sustainability concerns<sup>21</sup>.

Hurdles to entering global value chains in aquaculture include resource access, capacity to meet international management and quality standards, perceptions of biases in access arrangements, perceived non-tariff barriers, lack of resources, logistics and knowledge<sup>22</sup>.

<sup>20</sup> FAO, 2018, *The State of World Fisheries and Aquaculture 2018 - Meeting the sustainable development goals*

<sup>21</sup> FAO, 2018, *The State of World Fisheries and Aquaculture 2018 - Meeting the sustainable development goals*

<sup>22</sup> FAO, OECD, 2007, *Globalisation and fisheries: proceedings of a FAO – OECD Workshop, 16-17 April 2007*

Therefore, it is important that EXTRA - SME partners investigate how aquaculture in their region can become part of the high-level global supply chains, by abiding to the market standards imposed by large retailers.

## 2.2.8 Non-food fish-based products

Not all fish, or at least not all parts of the fish, end up for human consumption. These in the past were thrown away as waste. Alternatively, they were used directly as feed for aquaculture, livestock, pets or animals reared for fur production or used in silage and fertilisers.

Over the past two decades, other uses of fish by-products have been gaining attention. This is very important, because, they may constitute up to 70% of fish used in industrial processing.

Fish by-products can serve a wide range of purposes. They are used in the production of feed (not only in the form of fishmeal and fish oil), biodiesel and biogas, dietetic products (chitosan), pharmaceuticals (including oils and hydroxyapatite to be used in bone repair), natural pigments, cosmetics, cleaning products and leather products.

Moreover, the internal organs of fish are an excellent source of specialised enzymes. A range of proteolytic fish enzymes are extracted, e.g. pepsin, trypsin, chymotrypsin, collagenases and lipases. Protease, for example, is a digestive enzyme used in the manufacture of cleaning products, in food processing and in biological research.

Therefore, EXTRA - SMEs partners should consider what kind of by-products from their aquaculture production can be absorbed by industry. It is also important to examine whether legislation, such as on disposal or transportation, may cause obstacles in the use of by-products by industry.

## 3 Public policy objectives and aquaculture

The main question of policymakers is how to address the often-conflicting public policy interests. This section describes these objectives starting from a theoretical point of view to the most recent policy objectives in the EU, to provide a toolkit to EXTRA- SMEs participants to contemplate on the policy objectives relevant to aquaculture in their region.

### 3.1 Designing aquaculture policies

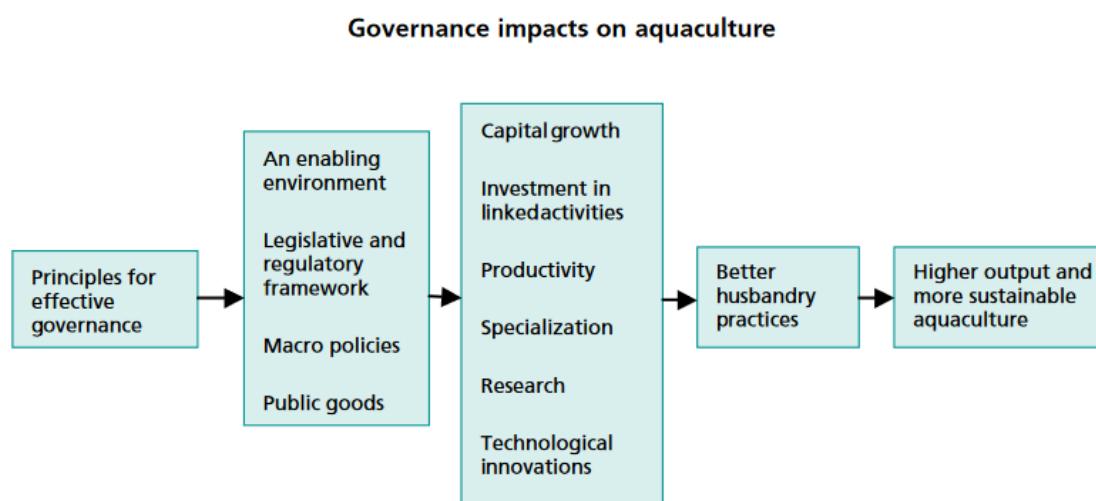
Today, there is a consensus that aquaculture has a business orientation, and that policies should foster entrepreneurship and extroversion.

Firstly, for resources to be initially invested, there must be an enabling economic environment, including financial stability and clear property rights for existing and new enterprises and particularly for SMEs. These conditions will not only attract new players in the region, but they will enable the current ones to operate in conditions that allow for long-term planning and investment in further activities or innovation.

Secondly, it is necessary to have a regulatory framework and incentives to curb short-sighted business behaviour that damages the environment or society<sup>23</sup>. Short-sighted investment can cause local pollution, disease outbreaks, coastal degradation, unwanted effects of fish feed and medication to humans, damage to other sectors of the economy and even stagnation in the aquaculture industry itself<sup>24</sup>. To prevent these, the regulatory framework should allow only profitable, environmentally neutral, technically feasible and socially acceptable aquaculture to operate.

Thirdly, macro-policies, such as the support of innovation and exports, can lead to qualitative improvements in the production and processing industries, which is essentially the main aspiration of the EXTRA-SMEs project. These in turn, enable local producers and processors to enter regional or global high-level value chains. The positive externalities of such development in the region include new types of employment, greater visibility and efficiency.

In the EU, aquaculture licensing and operations are governed by the [Common Fisheries Policy](#), which is a set of rules for managing European fishing fleets and for conserving fish stocks. In this framework, the European Commission published in 2013 [Strategic Guidelines for Aquaculture](#) and asked Member States to prepare [national multiannual plans for aquaculture](#).



*Figure 3 FAO, Policy and governance, lessons learnt and way forward, Rome 2014*

## 3.2 Policies for an enabling economic environment

These are policies that provide investors with satisfactory stability and accountability to invest in aquaculture and its value chain.

### 3.2.1 Clear property rights

Clear property rights, including a transparent and comprehensive property register, are necessary to prevent lengthy land claims and to provide stability to investors. Particularly for aquaculture and processing, it is important to foresee whether suitable land or coastal areas

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<sup>23</sup> FAO, 2014, *Policy and governance in aquaculture, lessons learned and way forward*

<sup>24</sup> OECD, *Introduction to aquaculture*

can be purchased. It is also useful that the regulatory frame foresees whether leasing of

Therefore, EXTRA – SMEs partners should examine the revision of their legal framework of property rights to ensure that investors feel secure to buy or lease land in their region.

aquaculture land and installations is possible and under which conditions.

### 3.2.2 Spatial planning

To attract investors, it also is important to clarify which areas can be used for aquaculture farming and fish processing. To this end, the needs of other industries and users need to be evaluated. For instance, coastal farming needs to be assessed in conjunction with the needs of tourism, energy infrastructure and professional fishing.

Furthermore, the sustainability aspects of aquaculture and processing planning need to be taken into consideration. For example, regulators need to assess whether these facilities can coexist in the framework or in proximity with protected areas.

EU Member States had to transpose by 2016 the [Maritime Spatial Planning Directive](#), which aims to reduce conflicts about land use between sectors and create synergies between different activities. It also aims to increase cross-border cooperation and protect the environment.

In the framework of this Directive, EU Member States need to present their spatial planning until 2021. This gives an opportunity to Member States and their regions to re-assess the effectiveness of their spatial planning.

Therefore, EXTRA – SMEs partners should ensure that the needs of aquaculture in their region are taken into consideration during the formation of the national spatial planning.

### 3.2.3 Operation permission

In most EU Member States aquaculture premises and processing units need permission to be constructed and launch operations (the same applies for the IPA countries). Effective building permission systems are based in clear rules and efficient administrative procedures.

The licencing procedure is based on the protection of other public interests, such as the protection of the environment. For instance, permits are assessed against the [Water Framework Directive](#) (2000/60/EU)<sup>25</sup>, the [Marine Strategy Framework Directive](#), the [Habitat Directive](#) (92/43/EEC) and the [Birds Directive](#).

Moreover, intensive fish farming projects and fishmeal processors have to undergo environmental assessment according to Directive [2011/92/EU](#). This may induce substantial costs to the establishment of aquaculture or processing units. Therefore, EXTRA – SMEs partners could review whether the implementation of the Directive is proportional and to which extent it could be simplified.

Besides the criteria for assessing permits, another tactical question is the length of the permits granted and whether permits can be leased to third parties. Certain countries have indefinite permits, while others request a review. In any case, grounds for revocation of

<sup>25</sup> The Water Framework Directive is expected to start being revised in 2022, see more [here](#).

licences should be explicit; whether lack of respect for environmental safeguards or the period within which an operation must be established<sup>26</sup>.

Most Member States acknowledge that their administrative procedures for building permissions are long and cumbersome<sup>27</sup>, despite great variations among them<sup>28</sup>. Another hurdle is the lack of communication among the regulatory authorities responsible for the

Therefore, it has been suggested as good regulatory practice to:

- Harmonise the legislation at national level, so that rules and procedures are predictable, if not identical, among the country's regions.
- Establish coordination workshops among the involved ministries to simplify the legislation and streamline the application procedures.
- Include stakeholders in the policymaking to inform authorities on technical, legal and societal issues.
- Simplify the access for applicants including one-stop-shops.
- Develop guidelines to make legislation and procedures more transparent, understandable and predictable.
- Take into consideration the cost of environmental impact assessments in the cost of application, when this is requested as part of the permission process.
- Establish a registry of licences, so that they can be tradable and mortgaged.
- Ensure that the size of the lease is specified for the licence, along with the species that can be cultivated and the length of the licence.
- Implement the principles of the overarching [Small Business Act](#) in the aquaculture and processing sectors, which address the issues of administrative burden from a broader point of view.

implementation of the regulatory framework.

### 3.2.4 Financing conditions

Access to finance for SMEs is relevant for aquaculture in the EXTRA – SMEs partners regions, where more than 90% of enterprises in the sector were SMEs.

Moreover, good financing conditions are important for the fish processing sector, which

EXTRA – SMEs partners could make the following considerations in order to assess and review their policies towards financing for SMEs:

- Bank loans and corresponding guarantee schemes for accessing loans availability
- Availability of funds dedicated to starting up a business
- National grants in place for supporting start-ups
- Risk capital availability for supporting SMEs or start-ups
- Availability of funding for innovation, proof-of-concept and commercialisation of innovation.
- To identify and examine the sovereignty and time persistence of financial constraints.

<sup>26</sup> FAO, 2014, *Policy and Governance in Aquaculture, Lessons Learned*

<sup>27</sup> European Commission, 2016, *Summary of the 27 Multiannual National Aquaculture Plans*

<sup>28</sup> See the chart within the 2013's *European Commission's Strategic Guidelines for Aquaculture*

requires substantial investment<sup>29</sup>

### 3.3 Regulatory framework managing the operation of aquaculture

The regulatory framework for the operation of aquaculture today usually aims at achieving sustainability in the aquaculture value chain, by preventing short-sighted business behaviour. It includes the policies designed to ensure that aquaculture is established and operates in a way that promotes certain public goods, such as food safety, food security, extroversion of SMEs, while it does not un-proportionally harm others, such as biodiversity or water quality.

#### 3.3.1 Food safety, labelling and traceability

Food safety policy is formed at EU level and implemented by Member States. Fish and crustacea marketed in the EU as food need to abide to the [General Food Safety Regulation 178/2002/EU](#) both in terms of safety and traceability. This applies equally to fish imported to the EU.

The EU regulatory framework relies on the recommendations of the European Food Safety Authority and international standards for developing detailed specifications on food categories. For instance, these include the Codex Code of Practice for Fish and Fishery Products and the Hazard Analysis Critical Control Point (HACCP) food safety management system<sup>30</sup>.

Moreover, [Regulation 1169/2011/EU](#) sets the minimum labelling obligations all food placed in the EU's market, including nutritional information. For example, fish labelling should state whether it is "formed fish", if it is defrosted and which substances related to allergies it may include.

Furthermore, the [Common Organisation of the Markets](#) establishes the specific information that must accompany fishery and aquaculture products sold to consumers and mass caterers. Under these rules, products bear the following information:

- [the commercial and scientific name of the species](#)
- whether the product was caught at sea or in freshwater, or was farmed
- the catch or production area and the type of fishing gear used to catch the product
- the date of minimum durability (also known as the 'best before' or 'use by' date), in line with general food labelling rules<sup>31</sup>

In particular, for organic aquaculture, the following regulatory framework exists:

- [Commission Regulation \(EC\)710/2009/EC](#) laying down detailed rules on organic aquaculture animal and seaweed production
- [Regulation 889/2008/EC](#) laying down detailed rules on organic production, labelling and control
- Council Regulation 834/2007/EC on organic production and labelling of organic products

These rules set a level playing field among competitors, as minimum safety standards need to be imposed by all. However, for this to work in favour of compliant market players, it is

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<sup>29</sup> European Commission, [2017, Small Business Act Fact Sheet & Scoreboard](#)

<sup>30</sup> FAO, [2018, The State of World Fisheries and Aquaculture 2018 - Meeting the sustainable development goals](#)

<sup>31</sup> The European Commission has published a [pocket guide to the EU's new fish and aquaculture consumer labels](#)

necessary that Member States conduct efficient market surveillance and enforce effective

Therefore, EXTRA – SMEs partners need to review their surveillance structure, activities and results to assess whether the way they implement the EU legislation is promoting a sound environment for food safety.

fines.

### 3.3.2 Animal health and welfare

Aquaculture production, transportation and slaughter in the EU must ensure a high level of health and well-being of farmed fish and crustacean.

As this is harmonised legislation at EU level, policymakers at national and regional level have little room for adjustments.

Therefore, EXTRA-SMEs partners should focus on the efficient implementation and enforcement of the Regulation in their jurisdiction to ensure that they provide a level playing field for compliant market players and that they have removed unnecessary red tape.

On the contrary, the EU does not have harmonised legislation on the slaughtering of fish. Therefore, EXTRA – SMEs partners should review how and to which extend they implement the [standards of the World Organisation for Animal Health \(OIE\)](#) on animal welfare during transport and stunning and the [recommendations of the European Food Safety Authority](#).

This can serve in improving their industry's competitiveness, as large retailers may impose animal welfare standards for products to enter their shops.<sup>1</sup>.

The [EU's Regulation on transmissible animal diseases \(2016/429/EU\)](#) is organised around a complex system of registration and licensing of farms, measures and programmes for the monitoring of and fight against specific contagious diseases, sanitary certifications for the movement of animals and products in the EU and internationally, and controls, inspections and penalties. The transportation of live fish falls under the EU Council Regulation [1/2005/EC](#).

### 3.3.3 Use and disposal of resources

While aquafarming and its processing industries rely in good water quality, they can also affect water quality negatively. Equally, while processing is now benefiting from many by-products, it produces waste, which needs to be managed.

Several EU rules, such as the Water Framework Directive, the Waste Directive or the [plans on the circular economy](#), affect the operation of aquaculture farms and processing units. They also establish obligations for Member States to support industry in minimising its environmental footprint.

Therefore, EXTRA – SMEs partners should ensure that they implement the EU's legislation on water and waste in a proportional and effective manner.

### 3.3.4 Biodiversity

The EU is protecting biodiversity and ecosystems from intrusive aquafarming through its framework on the use of alien species ([Regulation 304/2011/EU & Council Regulation 708/2007/EC](#) concerning use of alien and locally absent species in aquaculture)

The Regulation requires the translocation of species to be authorised by a competent authority and to be recorded in a publicly available register.

It allows exceptions for specific cases, such as closed recirculation systems, where the risks of interactions with the external environment are minimal.

It also recognises that some alien species have commonly been used in aquaculture for a long time in certain parts of the EU. For example, carp was introduced in Europe in Roman times, and Pacific oyster has been farmed since the end of the 19th century. These species, listed in Annex IV to the Regulation, are exempt from most provisions of the Regulation.

Therefore, EXTRA – SMEs partners need to consider whether their systems for granting and reviewing licences clearly state what kind of fish can be farmed and to which quantities, so as to provide investors with the necessary certainty. Moreover, they should remove any unnecessary burden for introducing alien species in aquaculture in their area, in order to promote innovation.

## 3.4 Promoting competitiveness

The regulatory framework plays an important role in promoting the competitiveness of the aquaculture sector. A favourable regulatory framework can support SMEs extroversion and integration in high-value international value chains. Thereby, SMEs could offer a wider range of employment opportunities, including both blue- and white-collar jobs.

### 3.4.1 Innovation

Innovation can play an important role in the aquaculture and fish processing industry. Innovation in this industry can expand in the areas of biology, zootechnics, precision farming, monitoring, alternatives to feed or medication, efficient processing, packaging, transporting and preserving.

As in every sector, innovation requires clear intellectual protection rights, including a simple framework for registering patents. Another consideration is the efficiency of the public administration in welcoming and promoting new technologies, such as big data, and pilot projects.

Therefore, it is important that EXTRA-SMEs partners review their administrative procedures to remove red tape from the usage of new technologies.

### 3.4.2 Internationalisation

Aquaculture products in the EU are subject to strict conditions applied on animal welfare, food safety and food labelling. While these may initially raise costs, it also allows them to participate in global high-level value chains.

Moreover, aquaculture products in the EU benefit from legal protection under different quality designations, in particular protected geographical indications (PGI), protected designations of origin (PDO) and traditional specialities guaranteed (TSG)<sup>32</sup>.

EXTRA – SMEs partners should ensure that their products enjoy the benefits of quality designations to the broadest extent possible. They should also review the administrative procedures for exporting fish products, so as to minimise the time to third markets, as well as their national certification or other rules, to ensure that their products are not burdened with unnecessary requirements.

Furthermore, legislation should allow for the entry of global players in their national markets to increase investment impetus and trigger technological transfers in the region<sup>1</sup>.

### 3.4.3 Regional cooperation

Regional cooperation is particularly important for neighbouring regions. These may already have common projects for water or other resources management. In this framework, it is important that administrative procedures do not complicate regional cooperation in terms of

Often in the EU, administrative traditions and language barriers discourage regional cooperation. Therefore, EXTRA – SMEs partners could jointly review part of their administrative procedures and create standard forms to foster cooperation.

Furthermore, workshops and trainings of officials can be jointly organised to exchange good practices and develop cooperation frameworks.

spatial planning, protection of the environment, innovation and biodiversity.

### 3.4.4 Employment & transition

The internationalisation of SMEs can improve employment conditions in their region. Particularly the employment effects of aquaculture and its processing industries play a significant role in the transition from intensive fishing and diversification of the activities of coastal communities.

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<sup>32</sup> European Parliament, In depth analysis, Overview for the EU, Aquaculture.

Therefore, besides the internationalisation efforts, EXTRA – SMEs partners should integrate the aquaculture industry in their employment policies. For example, they might design trainings relevant to aquaculture or suggest employment programmes for vulnerable groups.

## 4 Studying the aquaculture value chain & the policy mix in the EXTRA – SMEs regions

So far, the deliverable has described briefly the main activities of the aquaculture value chain and the main policies that affect aquaculture in the Member States of the EU. This part of the deliverable will make use of these descriptions to help EXTRA – SMEs partners:

1. Understand better their local aquaculture value chain, along with its strong points, shortcomings, growth potential and needs.
2. Review their policies with a scope to minimise the administrative burden, as well as promote innovation and extraversion to ensure that the aquaculture value chain in their region operates within conditions that allow taking risks, bringing new solutions to the market and expanding in other regions.

This section will also define the research question and then provide the methodological tools for EXTRA – SMEs partners to analyse better the situation in their region, and compare it with the other partners.

### 4.1 Research question

The research question aims to clarify the goal of the deliverable, which is to help EXTRA – SMEs partners assess how their policy mix can ensure that SMEs involved in the aquaculture value chain in their region will become part of international high-quality value chains

The research question of this deliverable can be defined as the following:

*Does the policy mix in my region enable SMEs involved in the aquaculture value chain to become part of international high quality value chains?*

This deliverable breaks the research question into questions with a smaller scope. Thereby, it will allow EXTRA – SMEs partners to build up their knowledge on the current policy mix in their region and the existing situation of the aquaculture value chain. This could enable them to reach informed conclusions on any necessary revisions and advancements.

### 4.2 Research methodology

The research focuses mostly on the regulatory and policy framework applicable in the EXTRA – SMEs regions. Given that EXTRA – SMEs partners are part of the regions' administration, they should have access on the laws and other policy documents that form the framework within aquaculture operates. Therefore, the main method of research will be desk research.

The first part of the research, which aims at helping EXTRA-SMEs partners better understand the aquaculture value chain in their region, requires research on the official statistics produced for aquaculture (Eurostat, FAO, OECD, National Authorities). If statistics are not available, data could possibly be found from the number of licences of the aquaculture enterprises in the region.

Data analysis will be based on the open coding method. Open coding is a type of data analysis that is guided by the creation of tentative labels for chunks of data that summarise the phenomena described therein (not based on existing theory – just based on the meaning that emerges from the data. This eventually leads to the development of a simple system of

codification for the patterns that they found. In this method, researchers code to identify all patterns that emerge from the data.

The second part focuses on policy mix, relevant to aquaculture's value chain. Therefore, desk research should be sufficient for answering all the questions.

Finally, EXTRA – SMEs partners **might want to conduct selective interviews with SMEs**, if they consider that the level of statistical data that they have acquired is not enough to assess the potential and disadvantages of the aquaculture value chain in their region. Nevertheless, these will not be obligatory for completing the input documentation forms of this activity. To this end, **Part B of the input documentation form (see Annex I)** has been designed to be used as an interview guide for relevant stakeholders.

## 4.3 Data collection procedure and performance considerations

In this activity, EXTRA – SMEs partners will be asked to fill a number of input documentation forms with the results of their desk research. The questions will be as closed as possible, so that they will be easily comparable. Moreover, EXTRA – SMEs partners will be asked to provide their thoughts on how their policy mix and administrative procedures affect the aquaculture value-chain.

Once the input documentation forms are filled in by all partners, they will be used to make comparative research among the regions, and they will be used to compile a set of best practices that could be used by the EXTRA – SMEs partners to review, revise and possibly advance their policy mix.

This research needs minimum data from each region to be able to conduct meaningful comparisons and draw comprehensive conclusions from them. Therefore, partners are kindly requested to ensure that they conduct desk research for all the questions regarding the policy mix. This should include contacting officials working in other parts of the administration, such as ministries, in order to provide answers considering policies designed at national level.

Nevertheless, it needs to be acknowledged that public authorities often face difficulties in collecting detailed data about the operation and results of enterprises in their regions. This may happen because there is no obligation for enterprises to share these data with authorities or because the territorial statistical data are lagging behind.

Therefore, the input documentation form has two types of questions:

1. Baseline questions that EXTRA – SMEs partners should answer for the input documentation forms to be considered complete.
2. Questions for deeper understanding that EXTRA – SMEs partners should answer to get a clear understanding of the aquaculture value chain and policy mix in their region. Nevertheless, even if some of these questions remain unanswered, the input documentation forms will be considered complete. These questions start with expressions such as "are you aware?", "share your thoughts" or "if possible".

Finally, EXTRA – SMEs partners are invited to provide the latest available data (2018 or 2017). If this is not possible, the latest available data, with an indication of the reference year, should be provided.

## 4.4 Time plan for data collection & analysis

After project partners have received the methodology, delivered by UPAT, feedback is expected within two weeks. Any comments will be incorporated into the final methodology report.

The **deadline** for EXTRA-SMEs partners to fill-in the input documentation forms is the **end of February 2019** (28/02/2019). UPAT, as the activity leader, will review the collected evidence. All responses should be gathered and delivered in an integrated format. The data gathered will be analysed and used for drafting the final report of the activity 1.1, titled 'Comparative baseline analysis on existing regulatory frameworks for licensing procedures and EXTRA-SMEs' economic operations', to be delivered by UPAT until the **middle of April 2019** (15/02/2019).

## ANNEX I: Input documentation form

### Input Documentation form

#### A. Understanding the local aquaculture value chain

The [European Commission Decision 2010/93/EU](#) can be used as a reference for statistics in this field, as it was used for drafting the multiannual plans for aquaculture. You can find your country's multiannual national plan [here](#).

- 1 How many aquaculture production enterprises and SMEs\* are active in your region?

\* SMEs (small and medium-sized enterprises) are defined as the enterprises which employ fewer than 250 persons and which have an annual turnover not exceeding EUR 50 million, and/or an annual balance sheet total not exceeding EUR 43 million.

Please provide the number of enterprises in total, and if possible, per sector

	Total	Enterprises	SMEs
Total			
Fish feed production			
Fish production			
Crustaceans (shellfish) production			
Hatcheries			
Algae production			

Other types of products or services based on aquaculture processing, such as slaughtering, sorting fish, gutting it, cleaning it and preserving it with various methods, such as freezing, smoking or canning. Please also mention whether there are SMEs that conduct advanced fish processing, such as preparing pre-cooked meals (please specify).	
<b>2 How many tonnes of aquaculture products are produced in your region?</b>	
	<b>Total</b>
Fish feed production	
Fish production (all aquaculture species excl. marine)	
Crustaceans (shellfish) production	
Hatcheries	
Algae production	
Other types of products or services based on aquaculture processing, such as slaughtering, sorting fish, gutting it, cleaning it and preserving it with various methods, such as freezing, smoking or canning. Please also mention whether there are SMEs that conduct advanced fish processing, such as preparing pre-cooked meals (please specify).	

**3 What is the total economic value of aquaculture products produced in your region?**

*Please provide the answer in euros, and if possibly refer to each category separately.*

Total	
Fish feed production	
Fish production (all aquaculture species excl. marine)	
Crustaceans (shellfish) production	
Hatcheries	
Algae production	
Other types of products or services based on aquaculture processing, such as slaughtering, sorting fish, gutting it, cleaning it and preserving it with various methods, such as freezing, smoking or canning. Please also mention whether there are SMEs that conduct advanced fish processing, such as preparing pre-cooked meals. (please specify)	

**4 Are you aware of the turnover of transport-related activities of live fish and crustaceans in your region?**

*Please provide your answer in euros*

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**5 What is the total value of exports of your region's aquaculture exports? (% of turnovers)**

*Please provide the answer in euros. If possible, please provide data in the following categories.*

	Total
Fish feed production	
Fish production (all aquaculture species excl. marine)	
Crustaceans (shellfish)	
Hatcheries	
Algae production	
Other types of products, including products not used for human nutrition (please specify):	

**6 Are you aware of non-obligatory standards and certificates that are used in your region?**

*Please provide their name and if possibly what are they certifying (such as fish welfare, quality, organic).*

7 Which aquaculture products in your region are protected under geographical indications (PGI), protected designations of origin (PDO) and traditional specialities guaranteed (TSG) in your region?	
Aquaculture products with geographical indications (PGI)	
Aquaculture products with protected designations of origin (PDO)	
Aquaculture products with protection of and traditional specialities guaranteed (TSG)	

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8 Are you aware of innovative aquaculture production or aquaculture processing SMEs in your region?

*Please a) describe briefly their innovative solutions and whether they maintain a research department. In addition, please b) tick the boxes that apply to your case.*

## B. Policies relevant to the investment framework

9 Is there a complete property register in your region, public or otherwise easily accessible?

If possible, please provide information on the regulatory framework establishing it and on how it is accessible.

10 How is the spatial planning of coastal areas organised in your region?

*Please provide a description of how the planning principles. If possible, It would also be positive to make references to the transposition of the [Maritime Spatial Planning Directive](#) and – looking to the future – to whether your region or state has started preparing the spatial planning required by the Directive for 2021.*

11 What is the procedure and cost for obtaining a permit? Please also inform if there are any public guidelines for applicants that guide them through the permission procedure

Aquaculture production permit

Aquaculture processing unit permit

*(Please indicate if the conditions are different than for aquaculture production units. If yes, please indicate the legal basis and administrative procedure.)*

12 Which are the circumstances that an aquaculture facility might require a review or change of its permit?	
Permits are granted for a limited number of years	Yes/no ( <i>if possible, specify number of years</i> )
Permits need to be reviewed according to changes to more intensive farming	Yes/no
Introducing new species requires permit revision	Yes/no
Introducing new types of activities, such as hatcheries requires permit revision	Yes/no
Expanding the facility requires permit revision	Yes/no
Other circumstances that require review (please specify)	

13 Are you aware if the regulatory framework in your territory promotes synergies in the aquaculture value chain?

*Please provide examples, such as facilitations for permits for synergies between producing fish and processing it.*

**14 How do you ensure consumers' safety regarding fish & crustaceans consumption?**

*For your convenience, you may want to refer to the application of the [General Food Safety Regulation 178/2002/EU](#) regarding fish products and crustaceans in your region. You may also want to indicate the nature and frequency of controls in your region. Information on the span of penalties imposed is also interesting.*

**15 Which rules do you apply for labelling of fish and crustaceans products regarding product safety?**

*For your convenience you may want to refer to rules applying [Regulation 1169/2011/EU](#) and the [Common Organisation of the Markets](#). It is also useful to note any important deviation from the Regulation that might still be applicable in your region.*

- 16 Are you aware of rules, administrative procedures or costs that may discourage the use of fish-processing or fish-producing by-products as raw material for other types of products?

*Please share your thoughts on why they could act as hurdle to the use of by-products to produce other goods.*

- 17 Do you consider that the regulatory framework in your region may act counterproductively against innovation in sectors, such as biology, biotechnologies, zootechnics, and circular economy?

*Please justify your answers by explaining how the regulatory framework affects research, development and particularly commercialisation of innovative solutions.*

**18 How can enterprises in the aquaculture value chain receive support for innovation in your region?**

*Please provide information that you consider relevant, such as criteria for selection, and the administrative procedures for enterprises to receive financial or other support to conduct research and innovation activities concerning the aquaculture value chain.*

**19 How can SMEs in the aquaculture value chain receive support for expanding to new (foreign or domestic: EU, rest of the world) markets in your region?**

*Please provide information regarding financial support, but also available resources and services, such as support to conduct SWOT analysis, translation services, and support in participation in international trade shows, synergies with foreign embassies or synergies with trade associations. The support may come both from the regional administration, national administration or private sectors, such as trade and industrial associations.*

- 20 What is the procedure for registering aquaculture products for geographical indications (PGI), protected designations of origin (PDO) and traditional specialities guaranteed (TSG) in your region?

*Please express your thoughts on whether the system could be simplified to attract more SMEs into registering their products.*

- 21 Are there specific rules that restrict foreign direct investments in aquaculture in your region?

*Please provide your thoughts on what could limit foreign players from investing in your region. These may include for example restrictions in acquiring land or receiving permits.*

**22 Has your region taken measures to promote employment in the aquaculture value chain?**

*Please indicate relevant policies and their timeframe. Policies may include subsidies for employing unemployed persons, courses for acquiring skills relevant to aquaculture and its processing industries or seminars for the professional orientation towards aquaculture.*

**23 Does your region provide education and training possibilities relevant to aquaculture production and processing?**

*Please indicate any relevant possibilities, including continuing education, such as mid-career, transition or executive education, as well as higher education facilities relevant to aquaculture production, food production, biology, food technology, engineering or other fields that could be relevant to aquaculture.*

- 24 Which policies ensure the availability of funds dedicated to starting up a business, as well as supporting start-ups and SMEs the aquaculture value chain in your region?

*Please provide a description of the policies, along with your thoughts on their effectiveness.*

## 5 References

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