Spain: opportunities in aquaculture

Madrid, March 2016
Welcome to Spain!

Dear reader. Innovation Norway’s office in Madrid welcome you to investigate the opportunities in the Spanish market. Spain is planning to more than double its production within the aquaculture industry in the coming 10 years. This represents opportunities for the Norwegian aquaculture industry, both when it comes to selling technology, as well as participating in the investments themselves.

Innovation Norway in Madrid has followed the aquaculture industry in both Norway and Spain for more than 30 years, and have good contacts in both markets. One of the important reasons why we believe the time has come to keep an eye on Spain, is that we see increased ambitions from the authorities (EU, National and regional) as well as a recovering economy in Spain.

The content of this report reveals some very concrete opportunities right now, as well as some in the early stage that we believe to be concrete in the coming years.

Innovation Norway in Madrid has a good collaboration with the Spanish embassy in Oslo, and the Spanish Norwegian Chamber of commerce in this market approach. And together with these institutions we are ready to assist the Norwegian aquaculture industry in doing business in Spain.

Hope you’ll find some interesting business cases and opportunities in this report. And if you do, please do not hesitate to contact us!
You’ll find our contact information at the last page.

Best regards,

Gaute Hagerup
Director Innovation Norway Madrid

Juan Bergas-Negre
Special Advisor, Innovation Norway Madrid
Reasons to invest in the Spanish aquaculture

- Huge seafood market in Europe and in Spain. Increasing seafood demand in other EU countries due to “health reasons”.
- Importance of the Aquaculture in the new Common Fisheries Policy.
- New “Multi-year Strategic Plan of the Spanish Aquaculture 2014 – 2020”.
- Availability of EU funds. The MFF counts with 960,000 million euros for the period 2014-2020.
- The aquaculture production will increase by 120% from now to 2030.
- Simplification of the administrative licensing and authorization process.
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Introduction

Background,
Why Spain? Why now?
Objectives
Background

✓ Long tradition in fish farming.

  - Main species: mussel, sea bream, sea bass, rainbow trout, turbot and sole.
  - New species: yellowtail, tuna and meagre (*might be important in the new future*)

✓ In late 1980’s more than 20 Norwegian companies invested in the Spanish aquaculture sector.

✓ Today, after 25 years, we only find 3 companies: one producing turbot and sole in Galicia, another producing shrimps in Castilla-León and another producing tuna in Murcia.

✓ The sector and the market situation has changed.
✓ It is time to explore new opportunities for investments and technology.
Why Spain? Why now?

EU is the most important and attractive market for the aquaculture products.

- However, the information supplied today to the consumers is very limited.

Aquaculture is an important sector in the EU.

Production exceeded 1,28 million tons in 2013.

France, UK (the 1st producer in the EU in terms of value), Greece, Italy.

Spain is the EU member with highest volume of production of aquaculture products.

223709 tons in 2013, representing a 17.5% on total.

Other important countries.

Main species: mussel, trout, salmon, sea bream, Japanese oyster, sea bass, carp, brown algae, clam, and turbot.

Spain is a huge market for seafood. The seafood trade balance is in deficit (This also applies to Europe). In order to reduce the dependence on imports the EU promotes the increase of the production of the aquaculture.
Increase in Aquaculture production from now to 2030

- Aquaculture production increase by 119% from now to 2030
- Spain offers many opportunities to Norwegian investors that want to participate in the development of new species (like sole, meagre, tuna, yellowtail, or in the actual species like sea bass, sea bream or turbot)
- The Government approved The Strategic Aquaculture National Plan 2014-2020 includes also the Regional Plans approved by the Regional Governments. The Plan estimates an important development and growth the marine fish farming species (moderate scenario):

<table>
<thead>
<tr>
<th></th>
<th>2015</th>
<th>2020</th>
<th>2025</th>
<th>2030</th>
</tr>
</thead>
<tbody>
<tr>
<td>Marine fish</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>(tons)</td>
<td>55,500</td>
<td>69,000</td>
<td>91,300</td>
<td>121,800</td>
</tr>
<tr>
<td>Marine fish</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>(Million €)</td>
<td>340</td>
<td>475</td>
<td>660</td>
<td>937,8</td>
</tr>
</tbody>
</table>
Significant increase in bass & bream even in pessimistic scenarios

The Aquaculture Strategic National Plan estimates an **important increase in the production of these species**. The forecast for the production for the different fish species and scenarios are shown in the charts in this slide and in the following.

![Sea bream production estimates 2015-2030](image)

![Sea bass production estimates 2015-2030](image)
Steady growth in turbot and sharp increase in meagre from now to 2030

Turbot production estimates 2015-2030

Meagre production estimates 2015-2030
The plan foresee a significant growth in sole and tuna productions

Sole production estimates 2015-2030

Tuna production estimates 2015-2030

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Why Spain? Why now?

✓ The Spanish authorities are in a process oriented to the reduction of the application and licensing proceedings to facilitate the start up of the activities to the companies.

✓ The objectives of the new EU Common Fishery Policy include:
  - Promote the competitiveness of the aquaculture sector
  - Support its development and innovation
  - Ensure equal and fair conditions to the aquaculture companies.

✓ The funding has been included in the MFF 2014-2020 (Multiannual Financial Frame) which includes the European Development Fund and the European Social Fund. The MFF counts with 960,000 million euros for the period 2014-2020.

✓ Now is the right time to consider possible investments in the Spanish Aquaculture sector.

✓ There are also opportunities in technology. The Norwegian technology is perceived as the best, but also the most expensive.
Objectives of the report

The main objectives of this report are:

- To give an **overview** of the Spanish Aquaculture sector.
- To Identify **concrete opportunities** for Norwegian companies that might consider **to invest** in the Spanish aquaculture sector.
- To identify **interesting opportunities** for Norwegian aquaculture technology.
Aquaculture Data
Volumes, Species, Regions
Main farmed fish species in 2014 (tons)

Sea bream = Dorada
Sea bass = Lubina
Turbot = Rodaballo
Red tuna = Atún rojo

Meagre = Corvina
Sole = Lenguado
Eel = Anguila
Spanish bream = Besugo

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Aquaculture installations are located along the Mediterranean coast, Cadiz, Galicia and Canary Isl.

- **Sea bream**: Valencia, Murcia and Canary islands
- **Sea bass**: Murcia, Canary Islands, Valencia and Andalucia
- **Turbot**: Galicia and Cantabria
- **Sole**: Galicia, Canary Islands and Andalucia
- **Meagre**: Valencia
- **Tuna**: Andalucía and Murcia
- **Spanish bream**: Galicia
Regional production of sea bream in 2014

Valencia and Murcia count for 77% of the production of sea bream.

- Valenciana: 53%
- Murcia: 24%
- Cataluña: 6%
- Canarias: 10%
- Andalucía: 7%
Regional production of sea bass in 2014

Murcia and Canary Islands count for 61% of the production of sea bass
Regional production of sole in 2014

Production of sole is concentrated in Galicia and Andalusia

- Calicia: 66%
- Andalucia: 30%
- Canarias: 4%
- **Turbot** and Spanish bream are concentrated in **Galicia**.
- Production of **Meagre** (Corvina) is located in **Valencia and Murcia**.
- **Tuna** production is located in **Cadiz and Murcia**.
Licenses, authorizations, and challenges

Regional differences
Introduction

• Aquaculture is an activity where is necessary to obtain licenses, authorizations, concessions and permits. The actual situation shows a distortion of the market due to important differences in the licensing process in the different Regions, as well as to the long period that takes to receive the license, concession or authorization.

• The sector demands a simple and fast proceeding to obtain the licenses and authorizations for the fish farms. There is vast amount of norms regulating the different aspects related to the farms: water intake, water use, discharge of water, use of areas, biomass, taxes, fees, etc. The companies require a one-stop shop in each region where to apply for licenses, authorizations and concessions.

• Most Regions are in the process of planning the simplification of the processes. At this moment the situation differs from Region to Region, but all are aiming at reducing the time of granting licenses, concessions and authorizations.
Galicia

→ It is working in a new decree in order to simplify and reduce the time for the authorizations. Nowadays, in a stand-by situation.

→ The Regional Government is preparing the “ESGA” (Galicia Strategy for Aquaculture): a document that will rule the planning and management of the aquaculture activity in Galicia to the horizon 2030.

→ Main objective: Re-launch the aquaculture in such a way that this activity provides employment and wealth in balance and with respect for the environment.

→ The Galician Government plans:
  ✓ To develop a specific Law for Fish Farming.
  ✓ To approve a Decree regarding farming areas.
  ✓ To create a centralized body for the licensing and authorization process.
  ✓ To approve the following Plans: “Masterplan for coastal aquaculture”, “Management Plan of farming in sea areas”, “Management Plan of farming in maritime areas”, and “Mussels Strategic Plan”.
From the beginning, the Regional Government decided to create sea fish farming parks or areas due to a very high interest in the Region, and at the same time, due to the fact that there are many military installations (air & navy bases). This special situation would require to send applications to different authorities (Defense, Coasts, Environment, Fisheries).

In 2002 was approved the first Fish farming area “Polígono San Pedro del Pinatar” and in 2006 a new area, “Polígono Garguel”. A “Polígono” is a maritime predefined area where the Regional Government has decided that it is suitable for fish farming. The administration made the environmental impact studies, as well as the distribution of the area, etc. Now they are planning a third Area.

In theory this facilitates the application process. The companies do not have to present an environmental impact study nor have to apply for other authorizations before other administrative departments.
Andalucia

The applications are handled quite easily, fast and without problems (provided that all the documents, and formalities are fulfilled). Applications are presented before the Fisheries Delegation in the Province (Huelva, Cádiz, Malaga, Granada, Almeria).

In the licensing and concession process, the companies can also get assistance either from the Regional Association of Fish Farmers (ASEMA), either from CTAQUA, a private foundation.

Cádiz is probably the province where we can find more investment opportunities. Projects located within the “Natural Park of the Cadiz Bay” are subject to the restrictions derived from the Park Legislation. There are areas within the Park that can be used for fish farming, and main restrictions are related to discharge of water into the Park.
An interesting area in the Province of Cadiz is Puerto de Santa Maria. It is possible to have land based aquaculture installations within the Port Area. Companies like Futuna Blue are already located in this area. In this case the company interested in an installation in this area will have to apply for a concession before the Port Authority. When the concession is granted, then the company can apply for the license before the Regional Fisheries Delegation.

This area in the Port is already accepted for aquaculture installations. According to different companies and to the authorities, this will facilitate and somehow speed up the license and authorization process.
Canary Islands

In the Canary islands there are two Plans in a stand by situation, and thus waiting for approval:

- PIOT – Land based Aquaculture Plan in Gran Canaria
- PROAC – Aquaculture at Sea Plan

PROAC. Since 2013 is not possible to apply for any license. There is no information on what will be the next step. However we expect that the Plan could be approved by mid 2016.

In this Plan the potential areas for fish farming are defined (ZIES). There have been many objections to the Plan. Although the aquaculture is considered a priority sector, it does not has the importance of the Tourism, Fisheries, Navigation-Shipping, and Communications. It is also a Hub for the oil sector.
Canary Islands

The PROAC defines the areas (ZIES) suitable for fish farming and, in addition, in each area it defines in detail the number of cages, density, etc. Therefore it would not be necessary for the company to present an environmental impact study. The key is thus to get a ZIE. If/when the Plan is approved there will not be any problem with licenses, concessions, etc.

**PIOT**. The PIOT is also in a stand-by situation. In principle should be approved during 2016. However it is not clear the political will of approving the Plan.

Until these Plans are in force or approved we do recommend caution when planning or considering investments in this Region. As mentioned earlier, different sources mentioned that these Plans might be approved during 2016. However it is a risk to initiate investments.
Challenges: Achieve a sustainable growth of the aquaculture

- The approval of Aquaculture Plans might contribute to reduce uncertainty and facilitate investments.
- The approval by the authorities of areas suitable for fish farming would also impel the expansion of the aquaculture. The restrictive interpretation of the aquaculture activities within the areas of Red Natura 2000 and the uncertainty of the projects feasibility, implies the automatic refusal of most interesting areas for aquaculture.
- It is essential to favor the flexibility of the criteria of the environmental sustainability of those projects that present the three aspects of the sustainability (environmental, economic, and social).
- An adequate strategic planning of the aquaculture and a corresponding spatial planning would reduce notably the proceedings. An important part of the necessary formalities to receive the different authorizations are common to all applications.
Challenges: Strengthen competition

There are multiple taxes and fees affecting the aquaculture companies and produce some distortion in the free competition.

There are many different “fees” for the use of the maritime space, for the use of water, for discharging water, for water treatment, charged by different public organization.

Port duties are different in the different ports, and thus introduce also competitive difference depending on the port the company has to use have to use.
Opportunities
Investments and Technology
Opportunities in technology

Opportunities can be found (among other) in:
- Cages
- Feeding systems
- Fish feed
- Water treatment, water filtering
- Etc.

Investment Opportunities

We see Investment Opportunities in:
- Traditional species (sea bass, sea bream, turbot)
- New species (sole, tuna, yellowtail)
- And in the Regions of Andalusia, Murcia, Cataluña, Galicia and Canary Islands.
Futuna Blue España, S. A.
Meeting in El Puerto de Santa Maria, Cadiz on November 13th, 2015

Futuna Blue España

Web: http://www.futunablue.com/
Activity: Production of tuna, yellowtail, and sole juveniles. They also produce copepods for own consumption.
Futuna is one of the most important private business ventures in the Mediterranean for bluefin tuna juvenile production with methods of sustainable aquaculture. They also work yellowtail (greater amberjack) and sole (Solea senegalensis).

Challenges:
- Tuna. They have achieved all the objectives at the hatchery level. The main problem so far has been the transportation to the sea cages. Now they are in the process of passing the sea cage barrier.
- Yellowtail. They have achieved satisfactory results up to commercial size. In 2015 they produced 100,000 juveniles.

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Miguel Llerena, CEO
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Email: info@futunablue.com

Investment opportunities:
- Sole. The company is planning an investment of 5.7€ million in installations and 3€ million in working capital. The objective is to produce 480 tons of sole. Today the company produces 60 tons.

- Yellowtail. Futuna plans an investment of 5€ million in installations and 2€ million in working capital, with a production objective of 480 tons of yellowtail.

In both cases the new/external investor could have up to 51%
Futuna Blue España, S.A. (continued)

Meeting with Mr. Miguel Llerena, CEO

- **Tuna fish.** They collect tuna eggs from the cages where they on-grow the tuna catch in “Almadraba”. They have passed all the barriers, and now they have to invest in the sea i.e. floating cages at sea to on-grow the tuna. So far the main problem has been the transportation from the hatchery to the sea. They have developed a feed together with Skretting, CSIC (Research Council) and Futuna Blue.

- **Seriola (yellowtail).** They have researching the yellowtail and already obtained satisfactory results to the commercial size. This year have produced 100,000 juveniles, sold to other companies (Andromeda Spain).

- **Sole.** They are producing some 40 tons of sole and want to expand to 400.

**OPPORTUNITIES:**

- **Sole.** They are looking for investor(s) partner with possibility of subsidy from the Regional Government. The financial partner should invest 3 million euros for on growing sole. They have a commercial partner that sells all the fish produced by the farm. This partner would also participate with 0,5 million euros.
In order to produce 480 tons of sole they have to invest 5,7 millions euros in installations and 3 million working capital.

**Yellowtail:** to produce 480 tons of yellow tail they would invest 5 million euros in installations and 2 million in working capital. The production cost is much lower and the time is shorter. The price for yellowtail juvenile is 3€ per unit. The wholesale price for the yellowtail is 14€ per kg. In 1 year it is possible to get a 2 kg fish.

**Opportunities in technology.** He considers that Norway and Denmark have the best technology available. But it is also very expensive, therefore is cheaper to develop it in Spain.

**Licencing.** No problems in their area because they are located in an industrial area with concessions up to 30 yeas renewable every 10 years. They applied before the Regional government and it took around 1 year to get the authorization. Pumping sea water into the installation is part of the concession.
**Fortuna Mare**

Meeting in Cartagena, Murcia, January 13th, 2016

| Information: | Jan-Helge Dahl has more than 30 years experience in fish farming: salmon, trout, halibut, cod and tuna. In 2011 the company started with tuna, together with the Spanish Institute of Oceanography (IEO), following the Japanese protocol. In 2012 the company purchased several litres of tuna eggs from the IEO and sent it to Norway for testing with different protocols, processes and feeds. One of the feeds were developed by SINTEF: copepods. |
| Challenges: | • Important differences between the Norwegian and the Spanish administrative licensing and authorisation proceedings.  
• It is necessary a simplification and speed up the administrative processes. |

**Contact details:**
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**Investment and technology opportunities:**
Fortuna Mare SL is planning an investment of 8€ million. The company plans to build a new hatchery, new nets, catamaran, etc. The cost of the hatchery is 2.5€ million and the cost for the catamaran is 0.8€ million.

In this project, 70% of the technology in the hatchery will be from Norway or from Denmark: tanks, water quality control and monitoring systems, cleaning systems, protocols. Other opportunities for the Norwegian technology are water recycling and filtering for both water discharged and water pumped in.
Fortuna Mare

Meeting with Jan-Helge Dahl, CEO

- Interesting Norwegian technologies for the hatcheries are tanks, water quality control and monitoring systems, cleaning systems, and protocols, water treatment/recycling (for both water used and water pumped into the hatchery) and feeding systems.
- It is also possible to produce the equipment in Spain under license in order to reduce the production costs.
- According to Mr. Jan H. Dahl there are important differences in the administrative licensing proceeding in Norway and in Spain. According to Mr. Dahl it is necessary to simply and speed up the formalities, and thus to reduce the time required to receive the concession for a project.
Investment Opportunity in Catalonia

Information from the project leader (former Technical director of CONEI Aquaculture group)

Opportunity in Catalonia

<table>
<thead>
<tr>
<th>Proposal:</th>
<th>The promoters have developed a Business Plan for establishing a vertically integrated aquaculture project, by purchasing existing assets with all permit granted.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Assets:</td>
<td>Assets to be purchased:</td>
</tr>
<tr>
<td></td>
<td>• On-shore facilities for the hatchery (40,000 sq. m.)</td>
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<tr>
<td></td>
<td>• Sea Cages for grow-out, composed of basements for 12 x 21m &amp; 2 x 16m nets &amp; cage structure, and machinery, including a boat with crane and a maintenance boat.</td>
</tr>
<tr>
<td>Production:</td>
<td>Initial production would be:</td>
</tr>
<tr>
<td></td>
<td>• Sea bass juveniles (10-12g): 1 million for own consumption and 1.3 million for sale.</td>
</tr>
<tr>
<td></td>
<td>• Sea bass (400-600g): 417 tons</td>
</tr>
<tr>
<td></td>
<td>• Meagre (1kg): 288 tons</td>
</tr>
<tr>
<td></td>
<td>• Sole Fingerlings (12-14g): 719,000 units</td>
</tr>
</tbody>
</table>

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Investment opportunity
• Catalonia with more than 7.5 million population does not has any production of bass, meagre or sole.
• Additional values are short distance to the market, freshness, low carbon footprint due to proximity to local market, together with low transport costs.
• Investment for immediate purchase of the assets is estimated at around 2€ million. Additional investment to cover start up costs and working capital will require additional 2€ million.
• The assets are at 40% of its value, and has all the permits to operate. The infrastructure also includes processing, storing, and logistics.
• Growth potential. Today the authorisations is for up to 2,000 tons/year, with the possibility of increasing the production up to 7,000 tons/year.

Investment
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<table>
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<tbody>
<tr>
<td>Assets</td>
<td>1,597,000</td>
</tr>
<tr>
<td>Upgrading</td>
<td>356,000</td>
</tr>
<tr>
<td>Working Capital</td>
<td>1,600,000</td>
</tr>
<tr>
<td>Startup cost</td>
<td>700,000</td>
</tr>
<tr>
<td>Total</td>
<td>4,253,000</td>
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</tbody>
</table>
Other Opportunities in Murcia
Information from the Head of the Fisheries and Aquaculture Department in the Regional Government

Opportunities in Murcia

Fish feed:
The region of Murcia could be of high interest for investment in fish feed due to the fact that Cartagena is very important port for cereals. At this moment there is a feed plant on sale (CEFUSA).

Exchange program (hospitering):
Exchange programs between local institutions like IMIDA (San Pedro del Pinatar) or like the “Manuel Tárrega Aquaculture Institute” and SINTEF. IMIDA is a Research and Development Institute of the Region of Murcia. They have a Department for Aquaculture with the following lines of action:
- Economic optimization of marine farms. Decreased production costs particularly food. Increased consumption and selling price. food quality.
- Diversification of species and marine aquaculture products.
- Interaction aquaculture and the environment. environmental impact of marine aquaculture facilities in floating cages. environmental mitigation of the impact of marine farms.
- Technology, economy and technology transfer.
- Crops in floating cages in the open sea.
- Recirculation systems in marine aquaculture.
- Training of researchers and technicians.

The I. M. Tárrega offers technical education for persons that want to work in the fish farms. They offer two programs:
- Fish farming (Medium Grade)
- Aquaculture (Superior Grade)
The main challenge in Cadiz is that the whole aquaculture area is part of a Natural Park. The difficulties mainly comes from the environmental authorities (the Park).

Sometimes it takes years to have an answer to an application to expand the installation. There are many differences between regions and within a region. It is not the same Cadiz than Huelva, Almeria or San Fernando with respect to for example El Puerto de Santa Maria. In addition there are different administrations involved: Region/Province, Regional Environmental authority/Provincial Environmental Authority, municipalities and National Direction of Coasts in the Central Governments.

Species of interest in the area are sea bass and sea bream in semi-intensive and sole in intensive.

Opportunities in technology: Recirculation, pools, automatisms, feeding systems, fish handling, etc.
“The development of the aquaculture will depend on what happens in the solution of the administrative challenges” says Mr. Larrazabal who has a long experience in the sector and has a large number of examples of administrative problems when applying for licenses, authorizations or concessions.

- The Spanish aquaculture sector has been through a strong crisis during the period 2007 to 2013 due to low prices as consequence of the actions of the Greek and Turkish companies. The three main Greek groups were selling under cost. At the end, the Greek Banks took over with the main groups (now on sale). These three groups represent 20% of the sector, Turkey included. From 2014 prices improved up to today. The crisis has resulted in a reduction of the number of farms. As an example, in Canary Islands the reduction has been from 17-18 down to less than 9.

- The ideal situation would be that the company applies for the license before the Regional Government, and the Regional Government would get all the necessary authorizations, concessions, permits, etc.
Conclusion and way forward
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Species of interest

✓ We find investment opportunities in Andalucía, Cataluña, Galicia and Murcia, by participating in existing projects that want to increase the scale, or by investing in new projects and new installations.

✓ Most of the companies we met consider that the development of the aquaculture will depend on the solution of the Administrative “bottlenecks and challenges”. The solutions is on the way.

✓ “I still see a huge potential in aquaculture species that are conducive to our environment, as sea bream, sea bass, turbot, sole, meagre and Spanish bream”, says Mr. Gustavo Larrazabal, Chairman of Tinamenor.

✓ “Species of interest and potential are meagre, tuna, and yellowtail” says Mr. Emilio María Dolores, Head of the Fisheries and Aquaculture Service of the Regional Government of Murcia.

✓ The “Multi-year Strategic Plan of the Spanish Aquaculture 2014 – 2020”, the new Common Fisheries Policy, the availability of funds in the new MFF 2014-20, together with the high demand of seafood in Spain and the EU will facilitate the expansion of the aquaculture production in Spain.
Technologies of interest

✓ We also foresee opportunities in technology. Norway has a good and high reputation in this field. “We need technology and we are not going to develop it. We will always be customers in technology” says Mr. Gustavo Larrazabal.

✓ “Technologies of interest are cages, tanks, water recirculation, feeding systems, feed, water quality control and monitoring systems, cleaning systems, protocols, fish handling” says Mr. Jan-Helge Dahl, CEO of Fortuna Mare, S.L.

✓ Norwegian companies having interest in some of the opportunities given in this report may contact directly with the Spanish companies.

IN Madrid is at your disposal if you need further research or information. We can also assist in your contacts with the companies, setting up meetings, assisting during the initial contacts or follow up.
Appendix 1: Regional map of Spain

Galicia

Cataluña

Andalucia

Murcia

Canary Islands