

# Cooperative Management in Clam Farming in Emilia Romagna region in Italy

Capacity building collaboration

# Fisheries and aquaculture in Italy...

Although Italy is one of the primary aquaculture producers of the continent:

- It is also one of the largest markets for fisheries and aquaculture products in Europe and the country covers its domestic consumer demand through imports.
- It is the sixth largest market for imported fish and seafood in the world, and the third largest among the European Union (EU) countries behind France and Spain.
- The total imports of fisheries and aquaculture products in 2015 reached 1.102 million tonnes with a value of €5.034 billion, while exports totalled around 193,000 tonnes with a value of €744 million.
- Italy has one of the highest seafood consumption per capita in Europe an average of about 29 kg per year compared to the EU average of some 25 Kg per year (BlueEdu report).

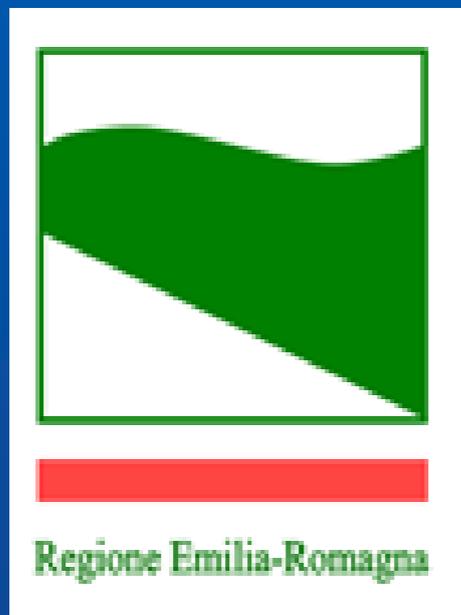
The national aquaculture sector is dominated by small and medium enterprises (SMEs), mostly small family owned businesses or larger enterprises run on a constrained scale with a limited number of staff:

- Total employment in the aquaculture sector comprises 5,164 persons, of whom 1,937 hold full time positions (around 38%, highlighting the importance of seasonal work, particularly for the shellfish sector).
- The shellfish sector is the most significant in terms of labour, accounting for 3,774 persons employed (some 74 % of the total work force). Male employment is predominant in the national aquaculture sector with about 84 % male employees (Eurofish report).

*‘Knowledge is based on tradition which is passed down’*

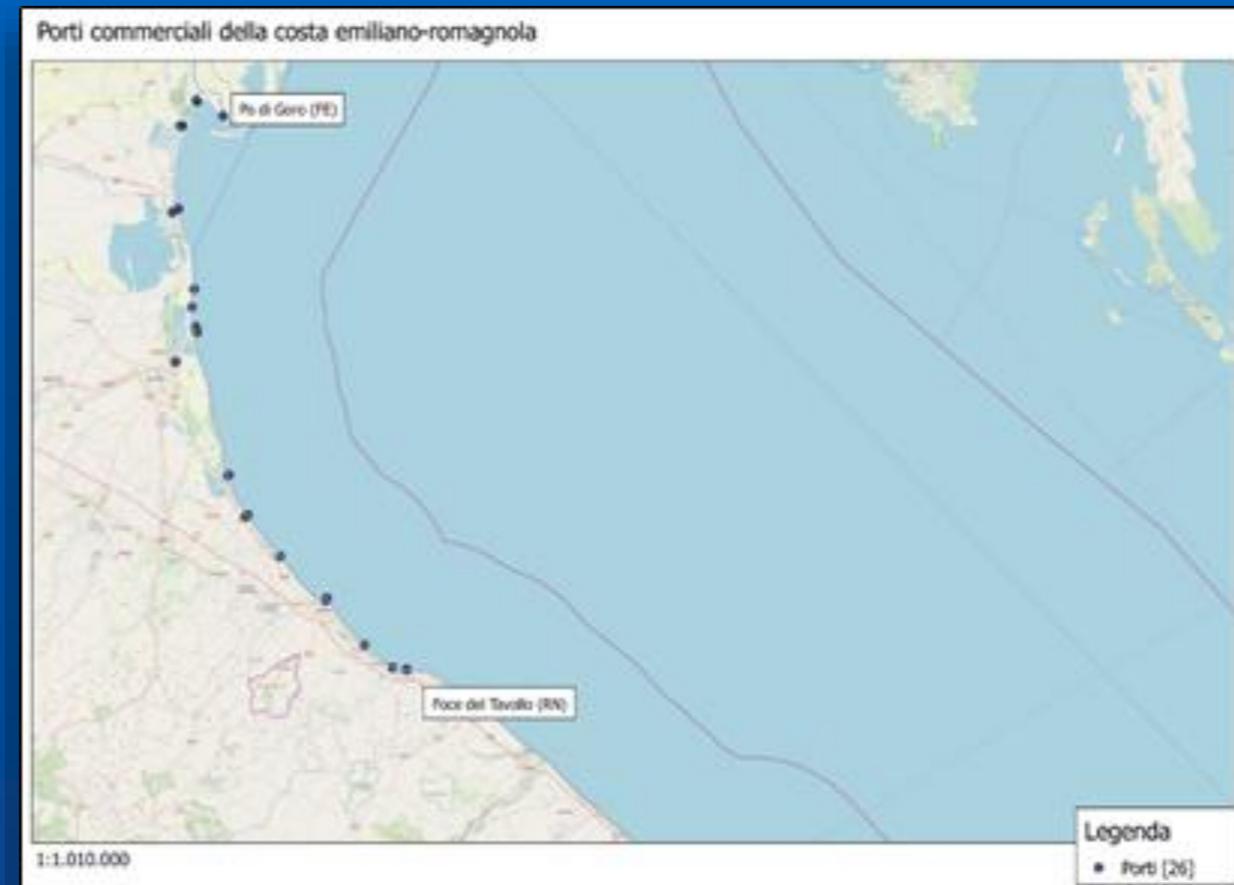
# Emilia Romagna

One of most progressive  
regions in Italy



# Emilia-Romagna

This region is in the north-eastern zone of the Italian peninsula facing the Adriatic Sea. The coastline goes from Foce del Tavollo (RN), the estuary of Tavollo river in the south, to the estuary of Po river in Goro (FE), in the north, being therefore part of the geographical fisheries sub-areas 17 established by the UNFAO GFCM (United Nation Food and Agricultural Organization General Fisheries and Aquaculture Commission for the Mediterranean and Black Sea).



# Emilia-Romagna

Urbanisation has led to the rapid development and conversion of its natural beaches and coastline to meet the needs of a growing tourist economy. These developments within the infrastructure, extends along much of the coastline, a length of 120 km and include 26 commercial ports where the sea depths are shallow and reach a maximum of 50 meters in depth. It is a place with a very long history of fisheries and aquaculture: currently there are around 600 fishing vessels and 250 of them practicing seasonal or all year-round activity of small-scale fisheries with traps and nets deployed at sea.

# Emilia-Romagna

## Traditional aquaculture

Regarding aquaculture, one of the most ancient practice around the globe was born in nothern Italy in the regions of Veneto and Emilia Romagna, this practice is call *Valli* culture translatable as «lagoon culture» still practiced nowadays to specific target species.

*Valli* culture is an improved extensive coastal lagoon system based on the use of special dams called «*lavoriero*» in order to exploit the migration of the fish in and out targeting migratory species, especially European ell (*Anguilla anguilla*) a gourmet product of the Comacchio lagoons.



Source: TourismER (<https://www.travelemiliaromagna.it/>)

# Professional aquaculture

Thanks to the example provided by the well established Valli aquaculture practice, two main and well-developed activities have found a great framework to grow in the region:

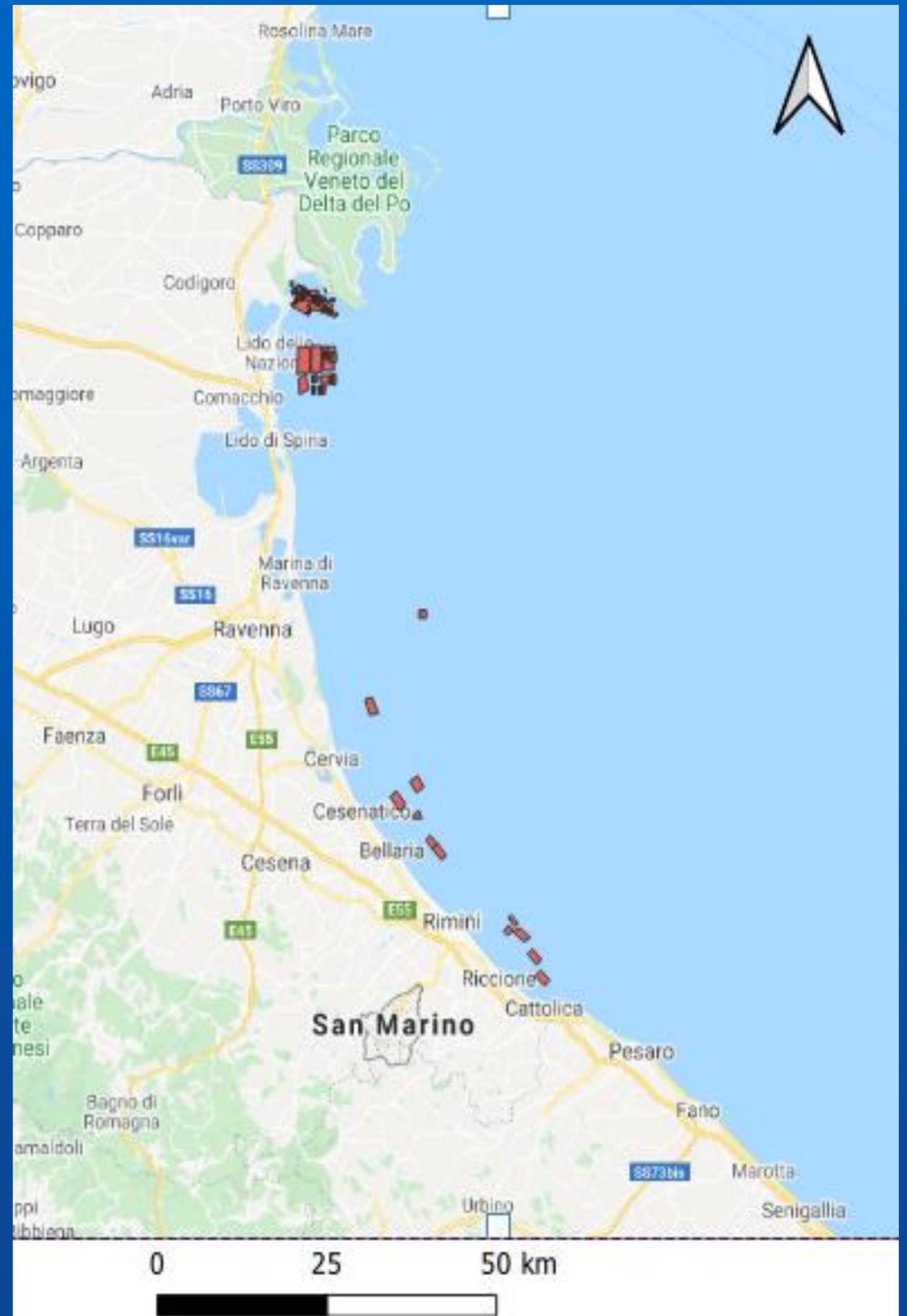
1. suspended long-line farming of mussel (*Mytilus galloprovincialis*) producing around 25'000 tons per year, an activity started late in the nineties but with a great success all along the coast
2. seabed farming of Manila clam (*Ruditapes philippinarum*), an non-native species which was introduced in 1983 by farmers to diversify their product as the native species (*Ruditapes decussatus*) production was in decline.

# Shellfish production

1. Suspended long-line farming of mussel (*Mytilus galloprovincialis*), a practice in which suspended nets on a floating rope filled with mussels can arrive to market size in 8-10 months by exploiting the high presence of phytoplankton in the Upper Adriatic.

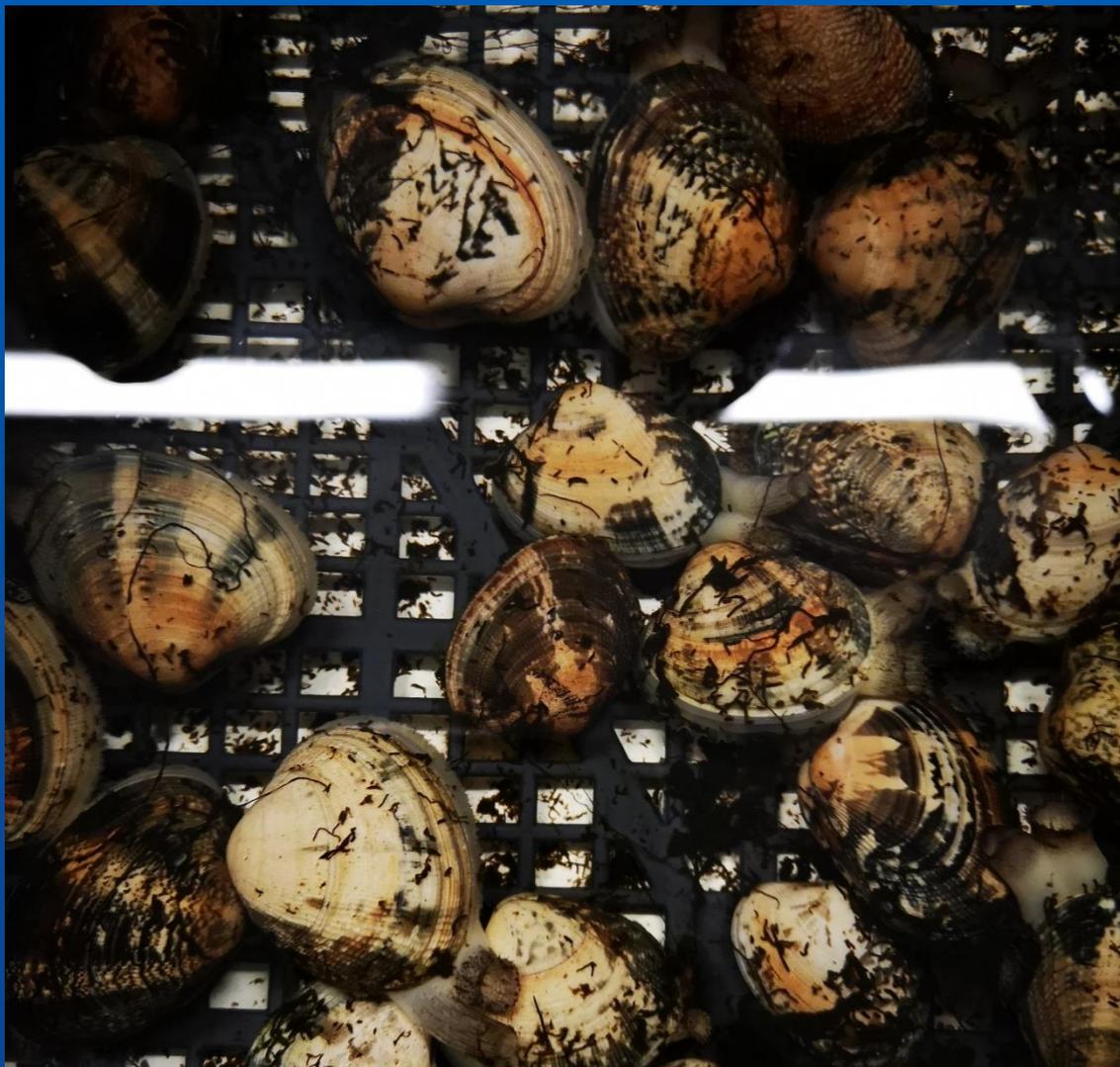


Mussel nets at sea



Shellfish farms localization along the ER coast

2. seabed farming of Manila clam (*Ruditapes philippinarum*, *Ruditapes decussatus*), consisting in two main parts: i) areas management and ii) harvesting. The area of Goro is the most productive Manila clam farming site in Italy with more than 40 cooperatives of clams farmers and about 1500 workers.



Broodstock unit of Manila Clams (*Ruditapes Philippinarum*)



Boat for clams seabed culture, farmers checking the harvested product.

# Shellfish industry

Although the industry has been growing steadily in Italy at the national level, companies still rely on the recruitment of local staff, including unqualified entrants in particular, and for seasonal employment. As very often happens the work is passed from father to son and very few receive a proper education and leave school to enter the company and «learn by doing» the job since a very young age.

Even with some limits marine aquaculture achieved to produce more than 20,000 tonnes of mussels on long lines and 14,000 tonnes of Manila clams, from seabed farming in 2018 with promising trials of diversification regarding oyster culture.



*Pacific oyster juveniles produced in ER (Crassostrea gigas)*

Alternative options have been put in place especially in regions where there's an acknowledged need to develop the sector.

This is also an effort to stimulate the local economy through the involvement of EU initiatives, which has been tapped into by regional focused groups and supporting organizations.

These initiatives have targeted in particular individuals who have been working in the sector for many years, as well as others that may have been unemployed for more than six months and need some sort of incentive through targeted training. These initiatives are intended to provide the industry with better-prepared workers.



*European mussel juveniles collected in open sea (Mytilus galloprovincialis)*

# Current initiatives in Emilia-Romagna

The local economy along the 130km coastline of Emilia-Romagna, is dependent largely on fishing, aquaculture, mariculture and summer coastal tourism.

Emilia-Romagna region is Under the 2007-2013 programming period (EFF – Axis IV). This area has two separate FLAGs (GAC Distretto Mare Adriatico and GAC Marinerie della Romagna), focusing on the revival of the local fishing community (modernising the sector and making it more sustainable), wholesale, processing and retail, youth employment and fishing tourism (BlueEDU report 2019).

# FLAGs in Emilia-Romagna

FLAG groups consist of private associations of the fisheries and aquaculture sectors (COOPs), as well as other stakeholders, such as, local SME craftsmanship, commerce, tourism, and associations that represent civil society.

The FLAG costa dell'Emilia Romagna has its own programme for the area development.

Its strategic priorities are:

- Productions quality
- Added value
- Capacity building



# Cooperative organization

Here, as in several other parts of Italy, Cooperatives are an ongoing system which is part of the region's development. Societies have been created generally by the fishermen and fishfarmers in order to guarantee a stronger equity among the associates as well as a higher power when facing the market of agricultural products. It is a non profit society that shares among the associates the revenues of the market.

Some example of Cooperative Society are:

- Fishermen cooperative: Coop. Casa del Pescatore di Cattolica e Gabicce ([www.pescatori.it/](http://www.pescatori.it/))
- Mollusk farmers cooperative: CO.PE.GO. ([www.copego.it/](http://www.copego.it/))
- Marine applied research cooperative: M.A.R.E. Soc. Coop. a r.l. (<http://www.coopmare.com/>)

# COOP. *Casa del Pescatore di Cattolica e Gabicce*

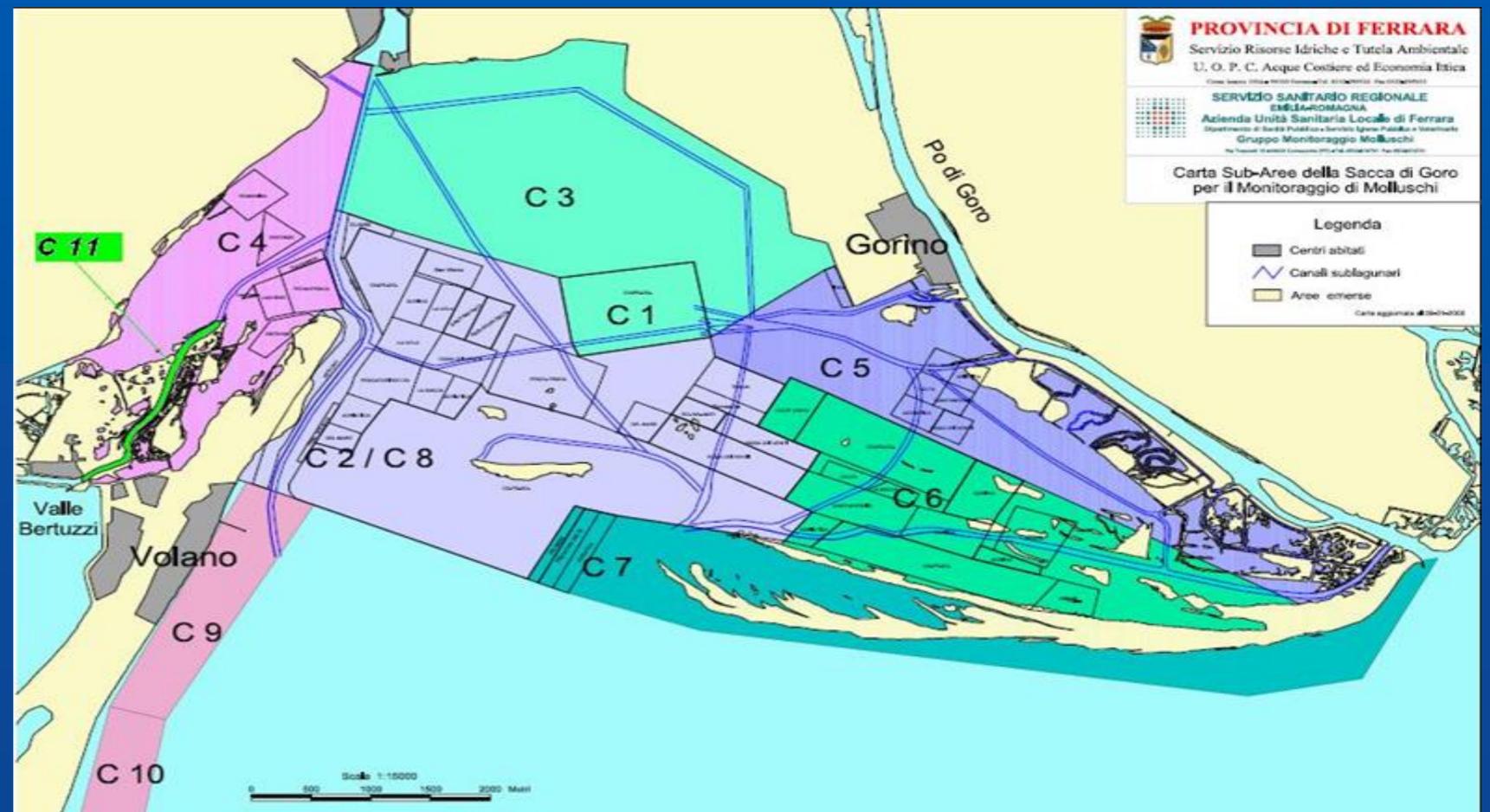
COOP. Casa del Pescatore was established in Cattolica 90 years ago and supports the management and the market and other activities related to the fishery and aquaculture sector in Cattolica and Gabicce. Here is it possible to find around 100 vessels supported by the COOP. Fishermen involved in pelagic fishing targeting *pesce azzuro*, such as sardines. Several small scale fisheries boat and mussel farming boat and a bottom trawler.



# CO.PE.GO.

The Cooperative Society CO.PE.GO, Fishermen Consortium of Goro, is a leader producer in Italian shellfish farming sector, with an internal structure composed by 581 associates divided in several fishing, harvesting and processing activities. The aquaculture production with a focus on intensive Manila clam lagoon farming, is carried out in the Upper Adriatic, in zones provided by the public administration inside the “Sacca di Goro”, near Ferrara.

The company is able, thanks to continuous development and investments from the revenue to take care of every step of the production chain from primary production to the market.



*Goro farming zones division, the bay is the most productive Italian area regarding Manila Clam farming*

COPEGO alone has almost 600 associates; almost half of the workers in the region. Through the election of a president and 11 councillors the cooperative is able not only to manage the harvesting practices in the “Sacca di Goro” but to manage the farming areas themselves and addressing the most appropriate ways of solving the issues faced by the market and the environment in a democratic way. This system was the basis that allowed the cooperative to reach more than 50 millions euros of revenue in 2018.

Through the years the shared revenue was used not only to improve the geography of the area as creating new channels to enhance the new water entrance in the bay but also to create a whole processing, packing and marketing facility able to handle more than 10.000 tons a year of products, not only from the associate fish farmers but also from other producers in the area.

Up to now the species marketed are Manila clam (*Ruditapes philippinarum*), mussel (*Mytilus galloprovincialis*), cross-cut carpet shell (*Ruditapes decussatus*), venus clam (*Chamelea gallina*), smooth clam (*Callista chione*), spiny murex (*Bolinus brandaris*), sea snail (*Nassarius mutabilis*) and more.

# M.A.R.E. Soc. Coop. a r.l.

M.A.R.E. Soc. Coop. a r.l. (M.A.R.E.) is a cooperative created in 1995 from a biologists' group initiative with the aim of supporting the sustainable development and facing the needs of evolution in fishery and aquaculture sector along the Upper Adriatic coast. Along the years M.A.R.E and its team's skills and competences have developed to cover broader necessities in the technological and scientific field, allowing to address all the steps of the aquatic products value chain as well as the environmental themes associated with it.

M.A.R.E is today an officially recognized Research Institute for Fisheries and Aquaculture and a technical assistance centre of national relevance that strive to assess and address assistance, research and innovation necessities in fisheries and aquaculture sector and while relating professionally to public institutions, other cooperatives and research centres on a local, national and international scale.



# Benefits

The cooperative movement has supported the launch and growth of this structure, which is vital for sustainable economic development in the region.

Up to now the cooperative has a team composed by 7 fixed workers: 1 chairperson, 1 director, 1 supporting the administration, 4 field and laboratory technicians. Not all of them are associates, the board of associates is composed by a bigger group, among them it's possible to find the founders of the cooperative itself as well as people who have collaborated during many years with the cooperative and deserved to be included as associates of the structure.

Thanks to M.A.R.E. and its connection to the local producers framework, it was possible to evolve and share local expertise through national and international projects regarding fisheries and aquaculture

# Benefits in producers cooperatives

- Ecosystems Management approach- better managed catches and landings (maintain quotas)
- Enhanced economic resilience (cooperative management of problems, lower competition among small producers, shared technologies)
- Higher degree of monitoring (producers controlling each others)
- Ecological-environmental management (producers reporting areas ecological issue on a day to day basis)
- Enterprise-local economy development (revenue used to finance tools and technologies to be shared among producers and enhance production quantity, safety and quality)
- Strengthens community involvement and collaboration

# Challenges

- **Is there a balance between the fishermen and fish farmers through this coop network?** No, usually fish farmers have more small coops while fishermen has less coop but way bigger and old (thats just my perspective) and there's no balance
- **Is the price fixed for seafood products under the coop, or is this something each fisherman/fish farmer can decide?** I don't know about fishermen but in mussels coop in the same area usually sell to a very similar price
- At national level right now the challenge is to enhance collaboration among different cooperatives pf farmers, fishermen, marketers and processors in order to create a multi-stakeholder strategy able to tackle the whole local value chain of aquatic products.

# Clam industry

The clam industry in Emilia Romagna is divided in two sections: the clam fishermen and the clam farmers: the fishermen use a specific tool to target a specific clam naturally abundant in the region (*Chamelea gallina*) and is considered as a type of fishing practice, while when it comes to Manila clam and specific productive zones it is considered a farming activity.

All of those producers are part of different cooperatives even if every cooperative might have a different degree of freedom in which the associates can operate.

In the region there are 54 boats involved in clam fishing and around 1500 clam farmers divided in about 45 cooperatives able to produce more than half of the total Italian production of *Tapes philippinarum*.



Venus clam (*Chamelea gallina*)

# Regulations in clam fishing

- Quota: EU regulation regarding each region
- 100 kg/boat/day with a fixed amount of day/year and 2 months of halt in production usually corresponding to the reproductive season.
- Min size 22mm as exception to the EU regulation that allows as minimum size 25mm. Due to unknown events along the Adriatic coast a very small percentage of clams grow to that size and the quantities are not enough while there is a regular presence of clams from 22 to 24 mm.
- In Adriatic 15,000 tonnes of clams are fished and this can be very competitive under these regulations.

# E.coli levels in living bivalves market

- Tight regulations on the health standards of aquaculture clam products, monitored by COPEGO.
- Microbiological and ecotoxicological analysis to determine the category and health status of crop:

Class	Microbiological standard <sup>(1,2)</sup>	Treatment
Class A	$\leq 230$ E. coli in 100 g*	none
Class B	$\leq 4600$ E. coli in 100 g* of 90% of the samples while 10% can't exceed $\leq 46000$ E. coli in 100 g*	Purification, relaying or processing with certified methods
Class C	$\leq 46000$ E. coli in 100 g*	relaying or processing with certified methods

\*Sample must include meat and intervalvular liquid

<sup>1</sup>Standard method: ISO 16649-3

<sup>2</sup>Limits: Reg. CE 854/2004, Reg. CE 853/2004 Reg.CE 1021/2008 Reg.CE 2073/2005



COPEGO Depuration System



Packaging machine



Live cockles ready for market

# At company level

- One of the companies in the region is Naturedulis located in Goro.
- Naturedulis consists of a small team of professionals in the field of aquaculture, biology, food safety and international trading, offering services to other companies.
- They are highly recognised in best management practices of the supply chain and certification process of organic products.



- On visiting the company, it is evident that staff are highly skilled in field of R&D
- Their main product is clam species which they grow from seed to adult stage
- Recirculating Systems are in place to run the operation
- Micro algae are also grown on site to feed the young clams



Microalgae feed  
for juvenile stages



On-growing recirculation  
systems



Baby clams-smaller  
than a grain of sand!

# Case Study Question

Capacity building: The contribution of cooperatives, producer organisations and other forms of collective action to the achievement of food security and poverty reduction is being increasingly recognised (FAO)

## **Value chain analysis**

1. What factors would need to be taken into account to see the overall effectiveness of cooperative system across the seafood sector in the region? (consider a SWOT analysis)
1. How can the impacts of climate change be implemented in a cooperative plan for best practices and increase capacity building?

# Thanks

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[fcaruso@coopmare.com](mailto:fcaruso@coopmare.com)
- AQUAVIEW- Future proofing a common and transparent Vital European learning and Workforce platform for sustainable AQUAculture practices, EU funded project

References:

[BlueEDU European aquaculture VET description in Italy WPD5.1](#)