



Towards the operational implementation of  
MSP in our common Mediterranean Sea

# **D51**

## **Infographics for basin uses: Aquaculture, Renewable energies, Biodiversity**



Co-funded by the European  
Maritime and Fisheries Fund

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WP 5: Communication and Dissemination  
Grant Agreement N° 887390



### Introduction

This set of infographics provides an overview of the spatial presence and main figures regarding uses and sectors in EU Member States on Mediterranean shores involved in the MSP-MED project.

### Objectives

The aim of the deliverable is to present an overview of three maritime uses in the Mediterranean countries involved in MSP-MED project. The three sectors, mentioned in the MSP Directive, are key to the European Green Deal and sustainable development, they are:

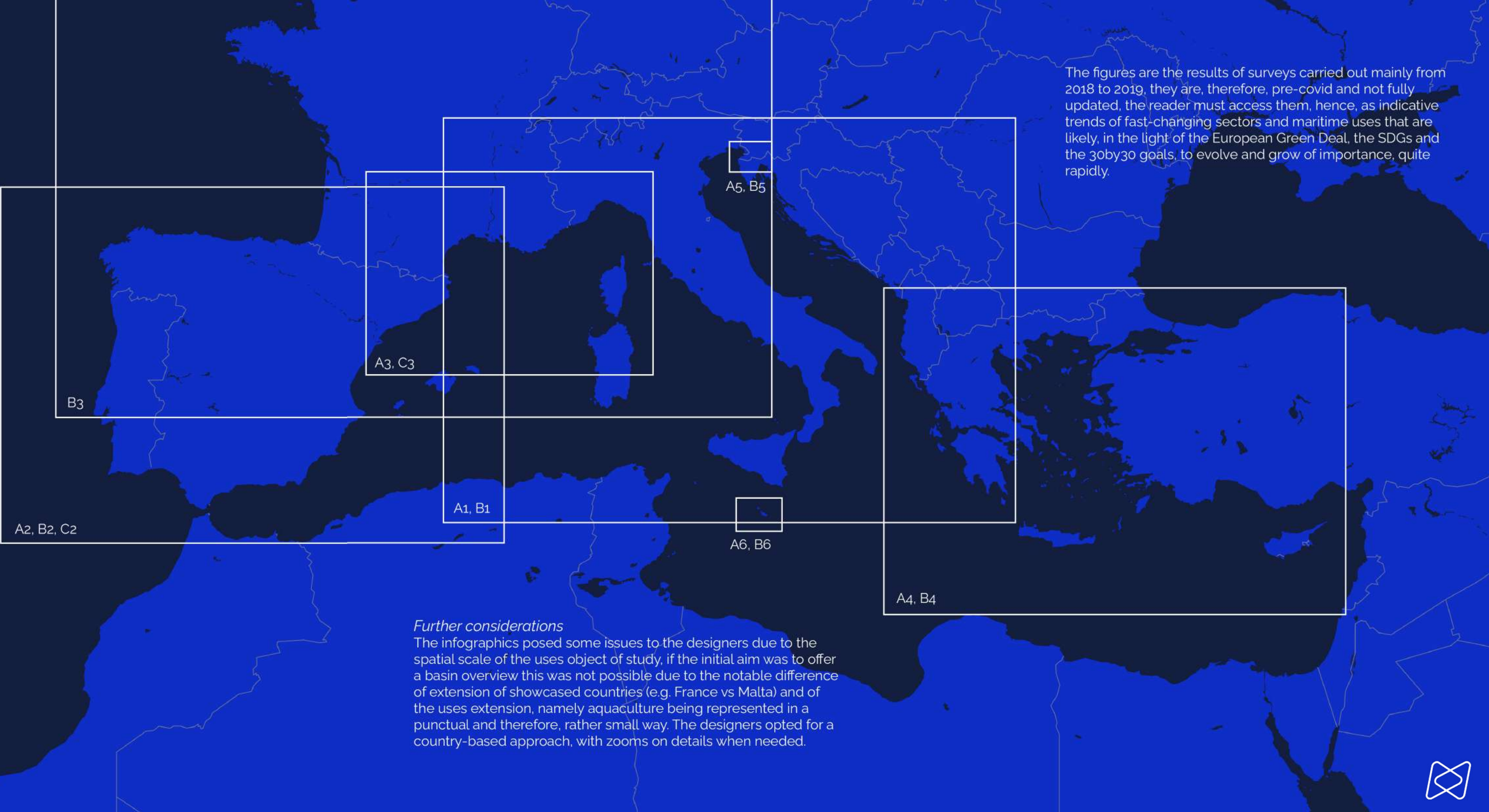
- Biodiversity protection
- Aquaculture
- Offshore renewable energy

This communicative output is part of the *Work Package 5 Communication and Dissemination*, it is composed of an introduction to the sectors in the basin and followed by a set of infographics with spatial data combined with recent figures of the logistics and economic aspects of the sector per country (e.g. total commercial value, harvested species, etc.). The deliverable is conceived to offer policy makers and interested stakeholders a superficial comparative overview of the ongoing development of the sector in the involved countries, namely Italy, France, Spain, Greece, Slovenia and Malta.

### Methodology

The spatial data were provided by competent authorities or official research institutions\*, the different national approaches determined a variety of definitions of the spatial data, i.e. in Biodiversity protection some countries presented only Natura 2000 sites whereas others also included PSSAs and other forms of protection. Therefore the authors were in the need to synthesize the data, expliciting differences in legends, but allowing a certain degree of comparison of the national efforts in each sector. This asset was reinforced by introducing figures, mainly issued from the European Market Observatory for Fisheries and Aquaculture Products, the Biodiversity information system for Europe and documents issued by national authorities. Eventually it shall be noted that offshore renewable energy development shows significant discrepancies between considered countries, in fact only France and Spain, to this day, have identified areas or implemented pilot projects. The infographics regarding this use are, therefore only present for the aforementioned countries, their figures take into consideration the strategies or roadmap for carbon neutrality of 2050.

\*the data is under evaluation, and are subject to MSP plans modifications and approval.



### Further considerations

The infographics posed some issues to the designers due to the spatial scale of the uses object of study, if the initial aim was to offer a basin overview this was not possible due to the notable difference of extension of showcased countries (e.g. France vs Malta) and of the uses extension, namely aquaculture being represented in a punctual and therefore, rather small way. The designers opted for a country-based approach, with zooms on details when needed.





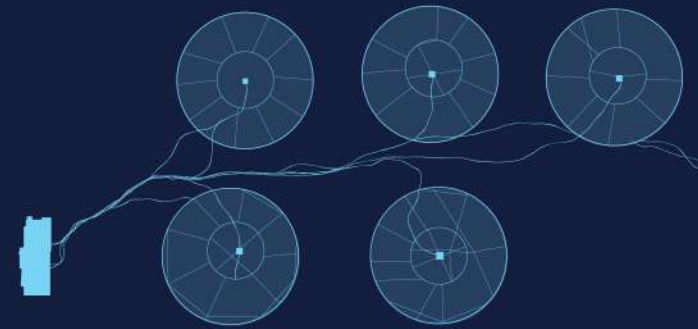
## Aquaculture in the Mediterranean basin

In the Mediterranean basin, according to UNEP and Plan Bleu figures, aquaculture production has almost doubled from 1995 to 2015. The production of Turkey, Italy and Greece represents about 78% of the total Mediterranean production. The sector's value in the region is about US \$2 billion. Four countries account for 82 percent of the total value: Turkey, followed by Greece, Italy and Spain.

In the region, aquaculture plays, therefore, a major role in economic growth, providing food security and reducing dependence from fishing overexploited wild stocks.

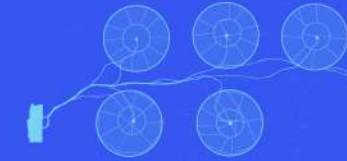
The rapid growth experienced by the sector poses sustainability challenges that the EU intends to tackle and are therefore addressed by several programmes and strategies, including EMFAF and Farm to Fork to ensure food availability while reversing biodiversity loss.

The Mediterranean figures show that the value of the sector is already quite high but its potential has not yet been achieved.



## Italy: Aquaculture spatial location and national figures

Figures source: [eumofa.eu/italy](http://eumofa.eu/italy) (2019)



**437.000.000 €**

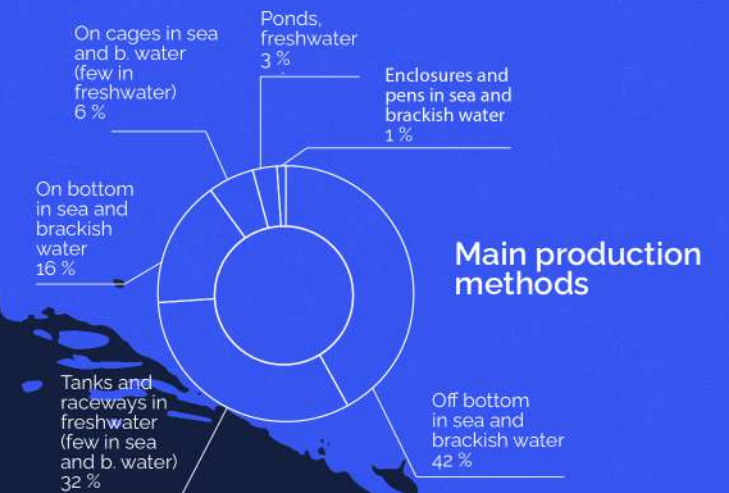
Sector commercial value

**154.000 t**

Total production

**67%**

of production occurs in marine and brackish waters



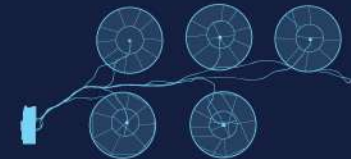
Main commercial species farmed and % of total





Spain: Aquaculture spatial prospect and current figures

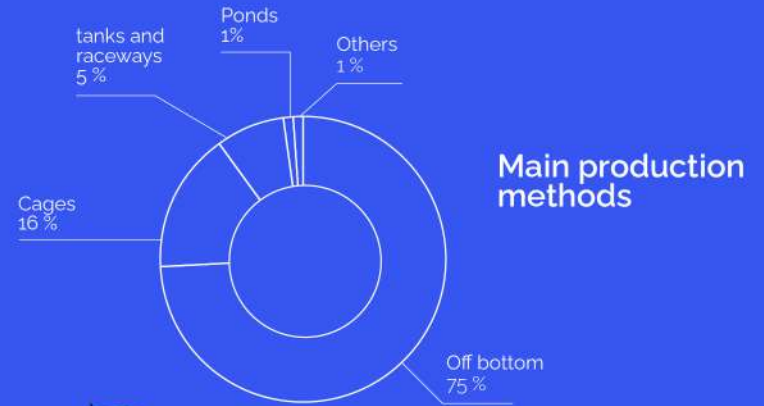
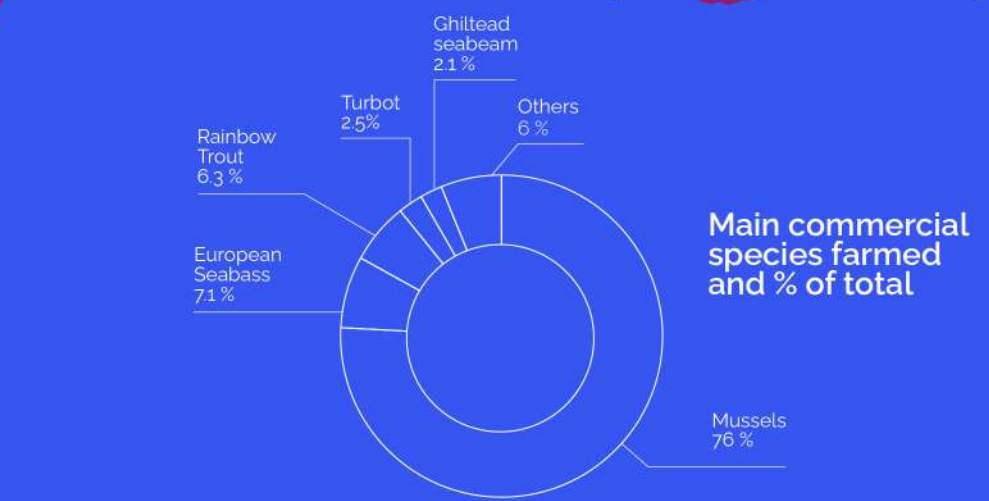
Figures sources: apromar.es (2020), eumofa.eu/spain (2019)



307.168 t  
Total production

95%  
of production occurs  
in marine waters

High potential of  
aquaculture sites



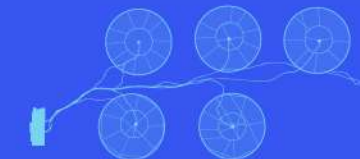
596.700.000 €  
Commercial value

36  
Formally recognized  
producers  
  
1  
Formally recognized  
association of  
producers

A2

France: Aquaculture Mediterranean spatial location and national figures

Figures source: .eumofa.eu/france (2019)

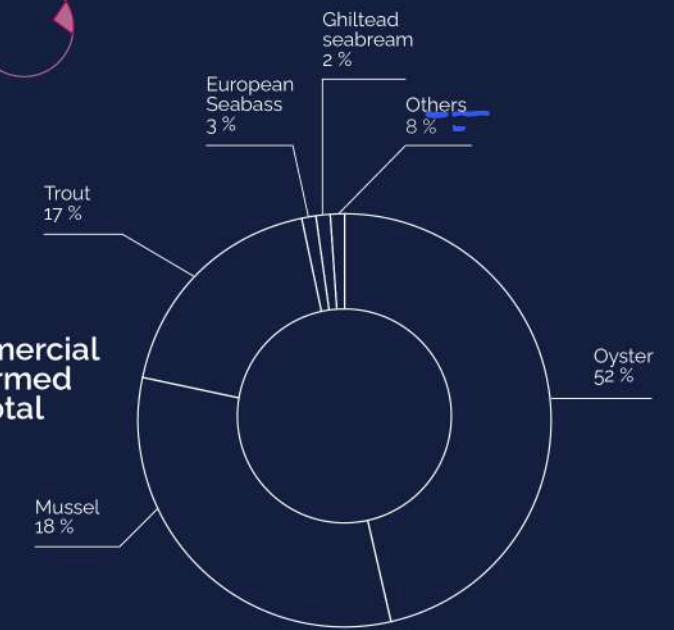


80%  
of production occurs in  
marine and brakish waters

- Shellfish and other cultures farms
- Pisciculture sites
- Zoom details

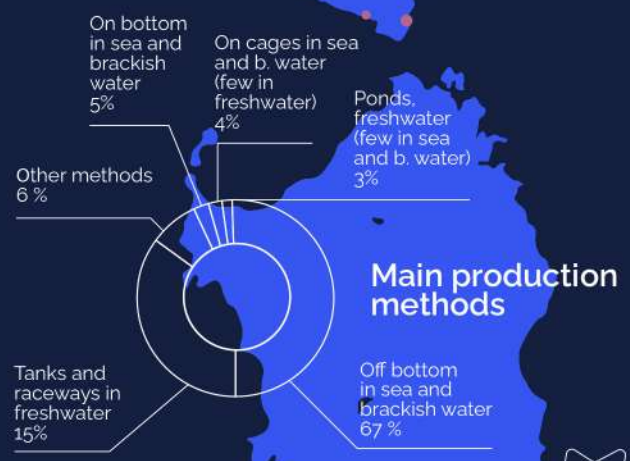


Main commercial  
species farmed  
and % of total



735.000.000 €  
Sector commercial value

194.000 t  
Total production



A3



A4

**129.000.000 €**

Commercial value

**509.000 t**

Total production

**98%**  
of production occurs  
in marine waters
 Aquaculture and  
fishing sites

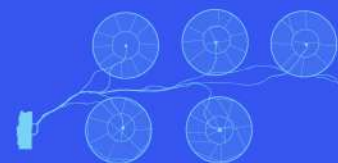
0 100 200 km



\*FAO source, 2012

**Greece: Aquaculture sites and current figures**

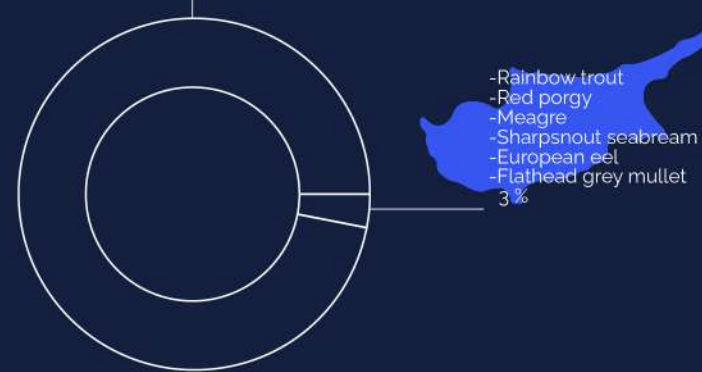
Figures source: eumofa.eu/greece (2019)

**1045\***  
aquaculture  
installationsInland/Other  
7 %Marine fish farms  
36 %Mussels farms  
57 %**595\***

Mussels farms

**336**Marine finfish farms  
for 63 companies

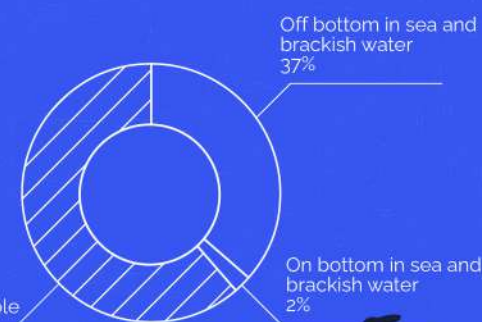
- Gilthead seabream
- European seabass
- Mediterranean mussels

97 %
Main commercial  
species farmed  
and % of total\*

- Rainbow trout
- Red porgy
- Meagre
- Sharpsnout seabream
- European eel
- Flathead grey mullet

3 %


A5

**18 000 m<sup>3</sup>\***Total volume fish farming  
production in mariculture**4 70000 m<sup>2</sup>\***Area of mussel farming  
productionAquaculture  
distinctionMarine production  
42%Freshwater production  
58%Main commercial  
species farmed  
and % of totalProduction  
methods

Data Unavailable

On bottom in sea and  
brackish water  
2%Off bottom in sea and  
brackish water  
37%
 Fish Reserve

 Mariculture

0 10 20 km



\*FAO source, 2015

**Slovenia: Aquaculture current figures**

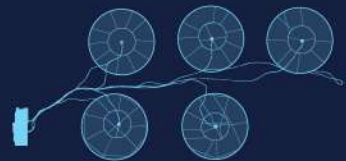
Figures source: eumofa.eu/slovenia (2019)

Main mariculture  
farmed species\**Mediterranean mussel**European seabass**Gilthead seabream*



Malta: Aquaculture spatial location and national figures

Figures source: .eumofa.eu/malta (2019)



14.000 t

Total production



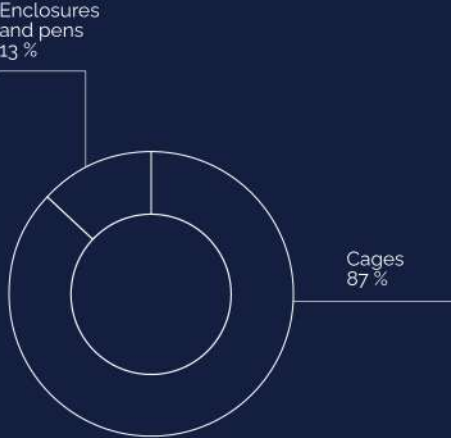
149.000.000 €

Sector's commercial value

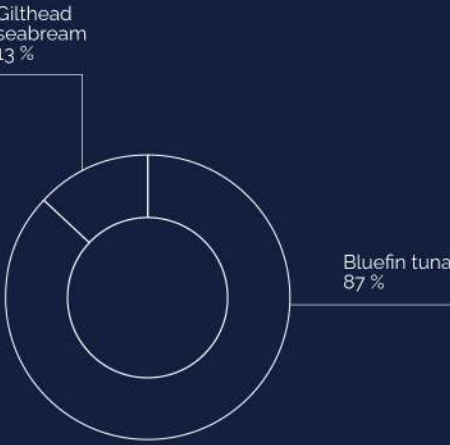


Economic value yearly evolution (Million Euros)

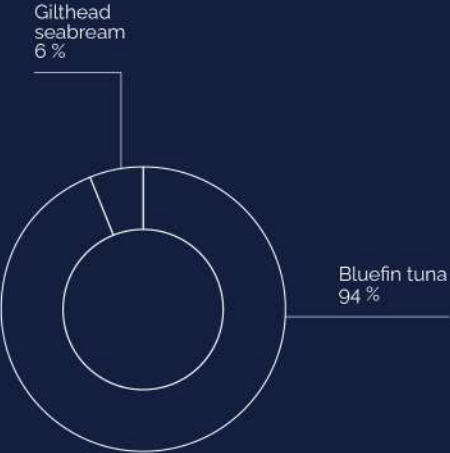
Main production methods



Main commercial species farmed and % of total



Main commercial farmed species economic value



Aquaculture sites



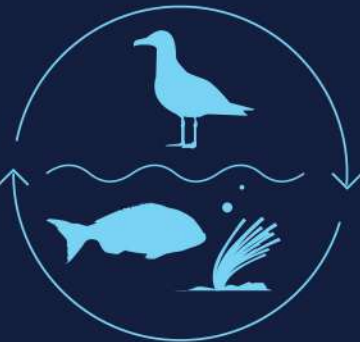
Biodiversity protection in the Mediterranean basin

The Mediterranean is a renowned hotspot for biodiversity, counting more than 17,000 marine species of which 20-30% are endemic.

The EU Member States considered have implemented the Bird Directive (2009) and the Habitat Directive (1992), therefore participating in the Natura 2000 network. Furthermore transboundary protected areas, such as the Pelagos Sanctuary are active in their territorial waters. They are also signatories to the Convention for the Protection of the Marine Environment and the Coastal Region of the Mediterranean (Barcelona Convention) which calls upon countries to establish MPAs.

To this day the basin presents 1,233 Marine Protected Areas and other effective sites implementing conservation measures: overall covering an area around 8.9% of the Mediterranean Sea, but only 10% implementing effective management plans. 0.04% of the surface of the Mediterranean is protected by no-go, no-take or no-fishing zones (UNEP, 2022).

Despite these efforts UNEP reports that a 70% of habitat loss of Posidonia oceanica is projected by 2050 and that from 1950-2011, the Mediterranean lost 41% of top predators and many species are vulnerable to extinction.





B1

## Italy: Biodiversity protection areas



9.8 %

Territorial waters are protected



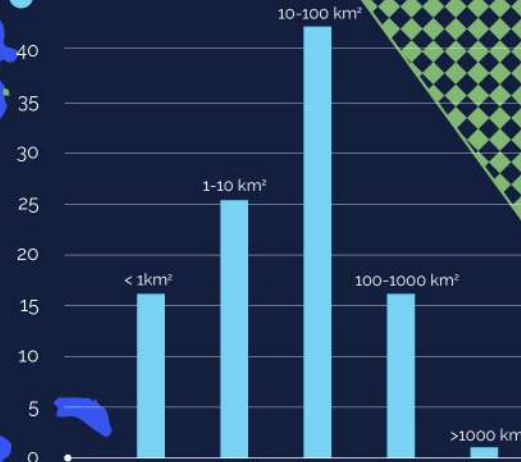
&gt;13 % of Territorial Waters\*

3 Marine/under water parks

27 MPAs

39 Protected sites

## Size distribution of Italy's protected areas network



- Bonifacio Strait International Marine Park<sup>2</sup>
- Pelagos Sanctuary<sup>1</sup>
- Parks
- Natura 2000 sites and MPAs



<sup>1</sup>Shared with France and Monaco, <sup>2</sup>Shared with France  
\*MITE source, 2022

B2

## Spain: Biodiversity protection areas

Figures source: intemares.es  
biodiversity.europa.eu

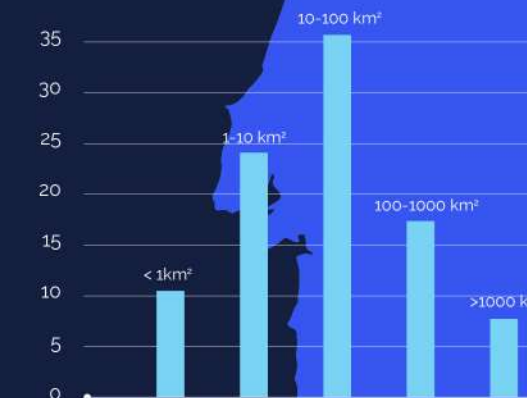


1 Particularly Sensitive Sea Area

272 Marine areas

171 Sites of Community Importance  
Special areas of conservation

101 Special Protection Areas for Birds



## Size distribution of Spain's protected areas network

High potential of biodiversity sites

Biodiversity Priority use



13 %

Territorial waters are protected





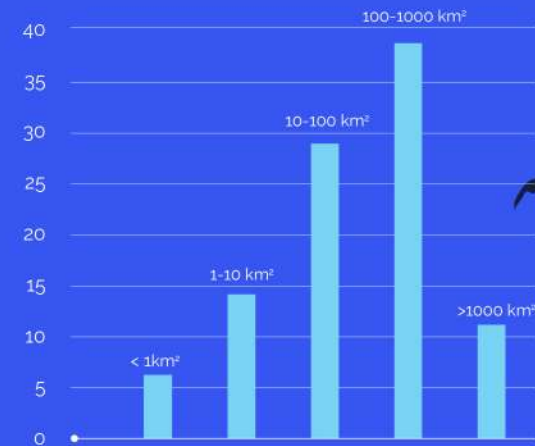
B3

## France: Biodiversity protection areas

Figures source: [ecologie.gouv.fr](http://ecologie.gouv.fr)  
[biodiversity.europa.eu](http://biodiversity.europa.eu)



**>200** Marine areas



Size distribution of France's protected areas network

**33 %**

Territorial waters are protected

- Bonifacio Strait International Marine Park<sup>2</sup>
- Pelagos Sanctuary<sup>1</sup>
- Protected areas

**6** Marine parks in Metropolitan France

0 100 200 km

<sup>1</sup>Shared with Italy and Monaco, <sup>2</sup>Shared with Italy

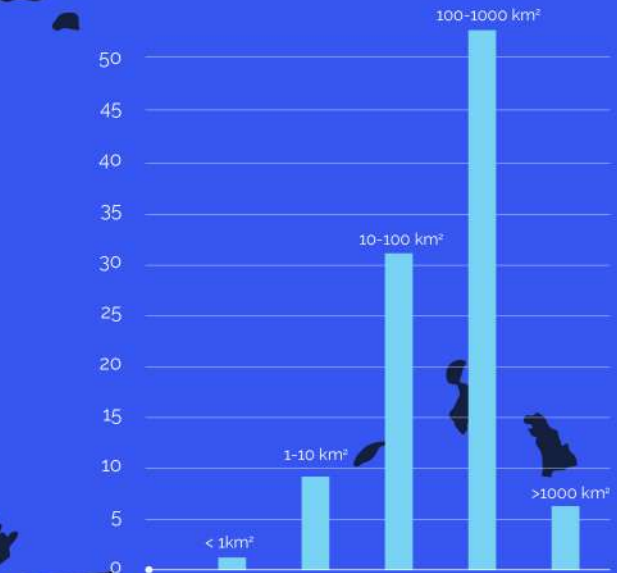
B4

## Greece: Biodiversity protection areas

Figures source: [wwf.gr](http://wwf.gr)  
[biodiversity.europa.eu](http://biodiversity.europa.eu)



**>1000** Marine areas



Size distribution of Greece's protected areas network

**19.41 %**

Territorial waters are protected

- Natura 2000 sites

**6%** of MPAs





Slovenia: Biodiversity protection areas

Figures source: cbd.int  
biodiversity.europa.eu

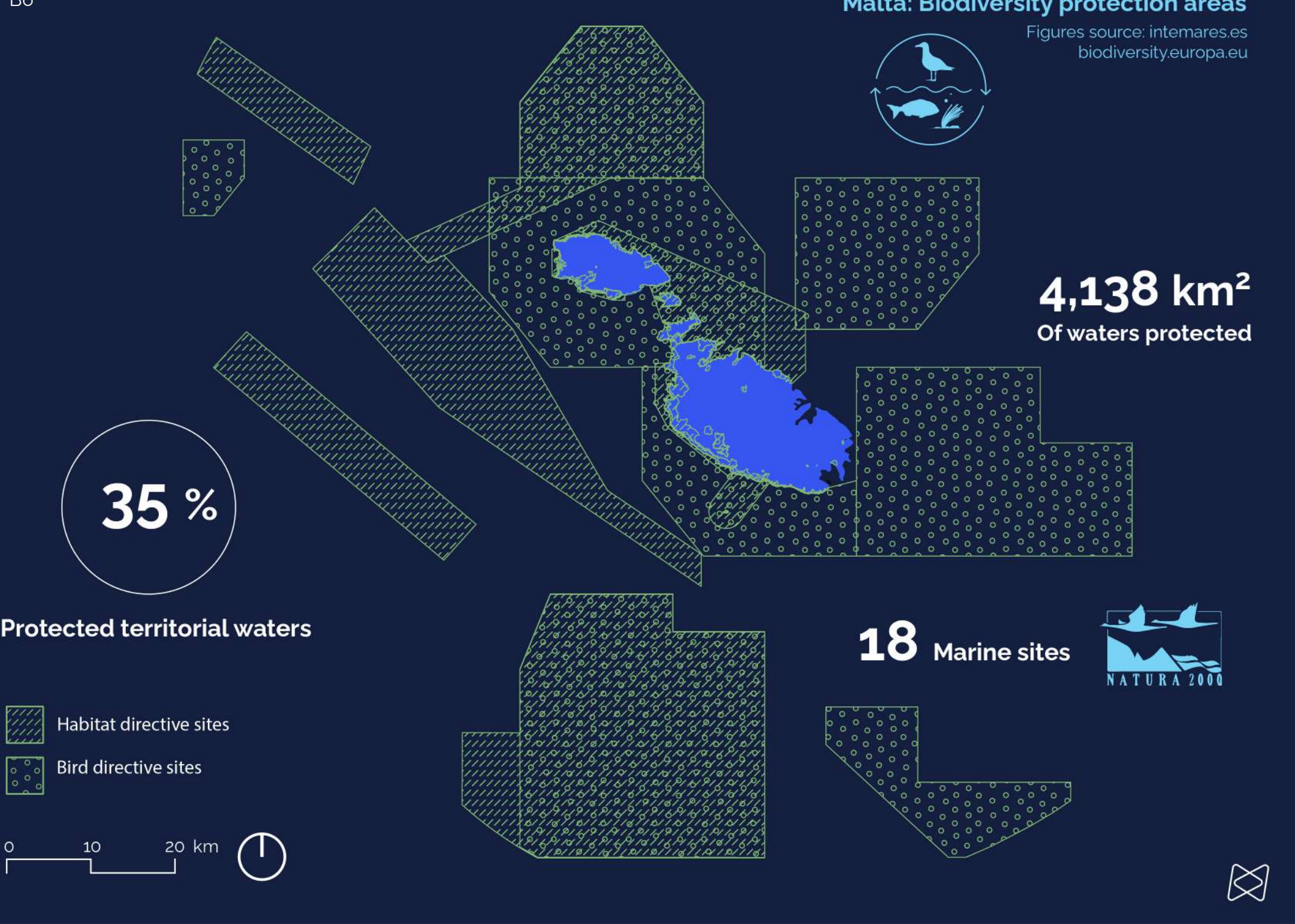


B5

B6

Malta: Biodiversity protection areas

Figures source: intemares.es  
biodiversity.europa.eu





## Offshore renewable energy in the Mediterranean basin

Offshore Renewable Energy (ORE) is still at a very initial state in the Mediterranean, the Offshore Wind Energy (OWE) has been, so far, the source attracting interests and investments. Wave Energy, Tidal/Current Energy and Salinity and Thermal Gradients Energy have been only partially explored, also due to the physical specificities of the basin.

A large number of studies have been carried out (including in the MSP-MED project) on offshore wind opportunities and risks and a few projects are at a concept/early stage while many have been cancelled or postponed.

Currently, in the Mediterranean coasts of France, pilot projects for testing offshore floating turbines are in progress in Leucate and Gruissan (region Languedoc-Roussillon), and Faraman (region Provence-Alpes-Côte d'Azur) (Soukissian et AL. 2017).

Spain has identified a set of areas for the installation of OWE farms and consultations with local stakeholders are undergoing, eased by the MSP process.

Numerous offshore wind projects in Italy (and Malta) have been cancelled or postponed due to lack of funding or opposition of local authorities. The first Italian pilot project in the Gulf of Taranto was effectively active in Spring 2022. Many other projects are on standby.

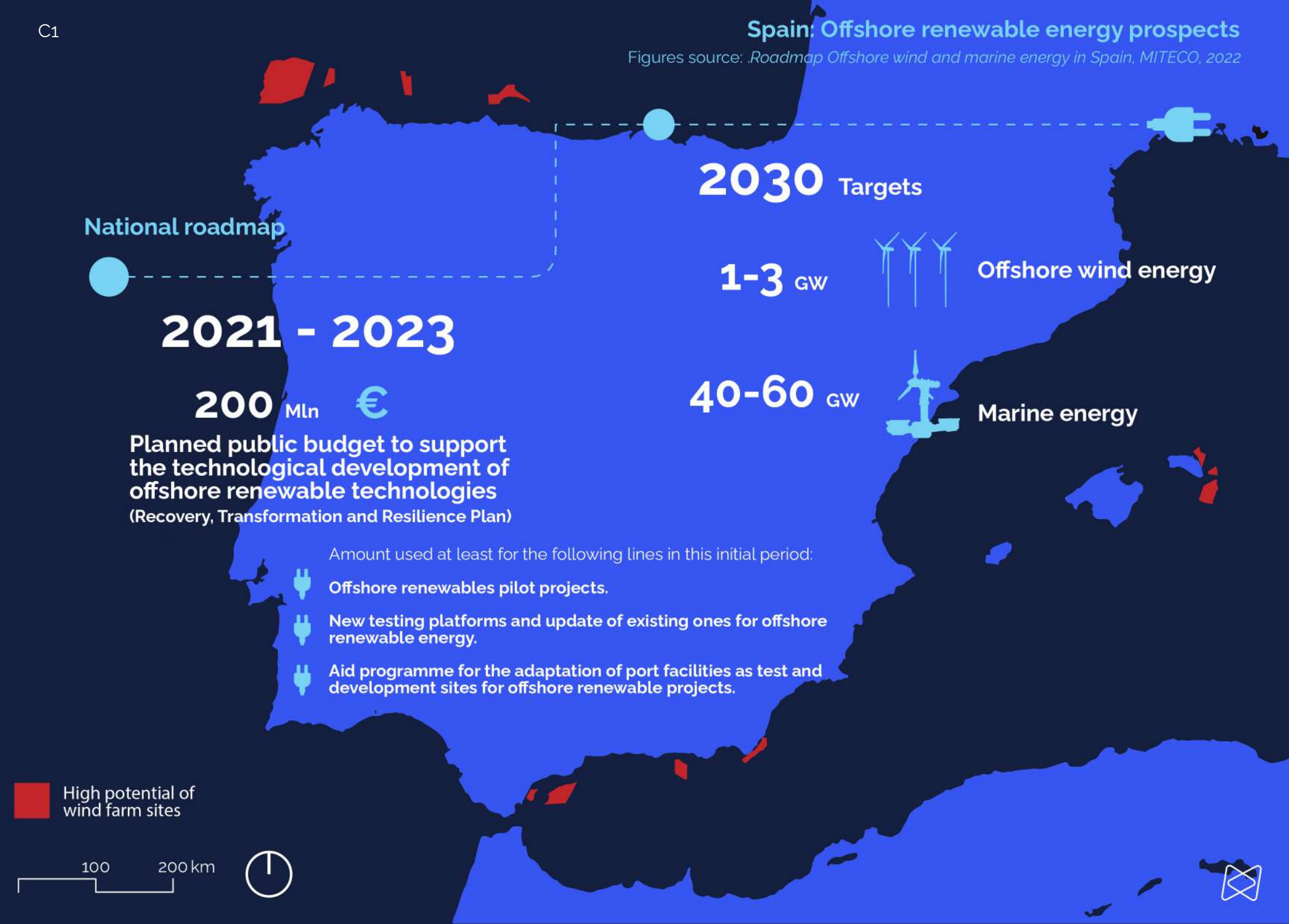
A situation that can be found similarly in Greece where several projects (around 58) have been postponed. The European Green Deal is expected to foster and speed up the transition to ORE.



C1

## Spain: Offshore renewable energy prospects

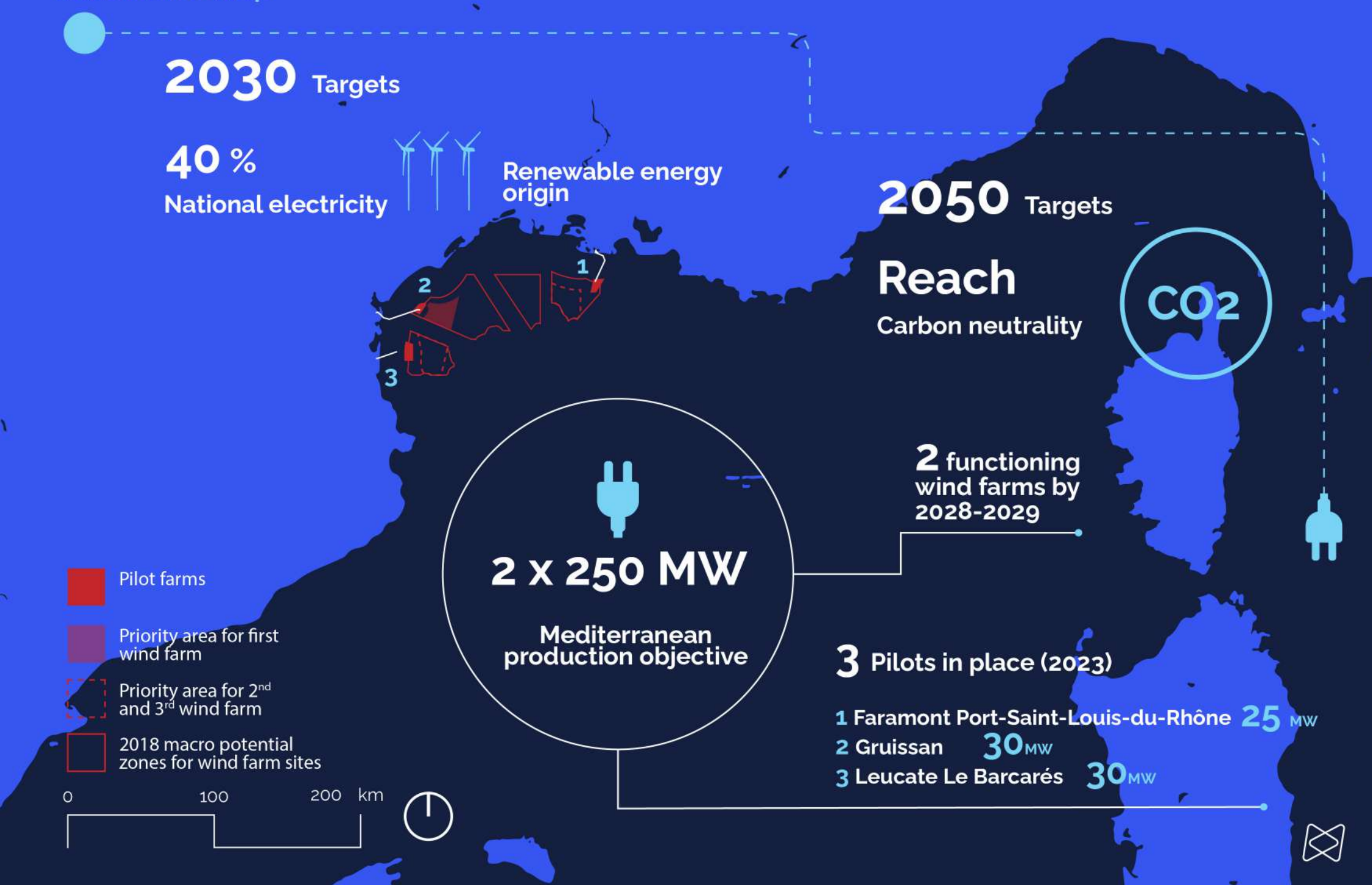
Figures source: *Roadmap Offshore wind and marine energy in Spain*, MITECO, 2022





## National roadmap

## France: Offshore renewable energy

Figures source: [eoliennesenmer.fr](http://eoliennesenmer.fr)

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*Aree Marine Protette* from [www.annuario.isprambiente.it](http://www.annuario.isprambiente.it)

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*Fisheries and aquaculture* from [www.medqsr.org/fisheries-and-aquaculture](http://www.medqsr.org/fisheries-and-aquaculture)

*Fisheries and Aquaculture* from [www.fao.org/fishery/en](http://www.fao.org/fishery/en)

*Farm to Fork Strategy* from [www.food.ec.europa.eu](http://www.food.ec.europa.eu)

*La Aquicultura en Espana* from [www.apromares.es](http://www.apromares.es)

*National Statistics on Aquaculture* from [www.eumofa.eu](http://www.eumofa.eu)

Soukissian, Takvor & Denaxa, Dimitra & Karathanasi, Flora & Prospathopoulos, Aristides & Sarantakos, Konstantinos & Iona, Sissy & Georgantas, Konstantinos & Mavrakos, Spyridon. (2017). *Marine Renewable Energy in the Mediterranean Sea: Status and Perspectives*. *Energies*. 10. 10.3390/en10101512.





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#### **Credits**

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Maps: Alberto Innocenti, Fabio Carella

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