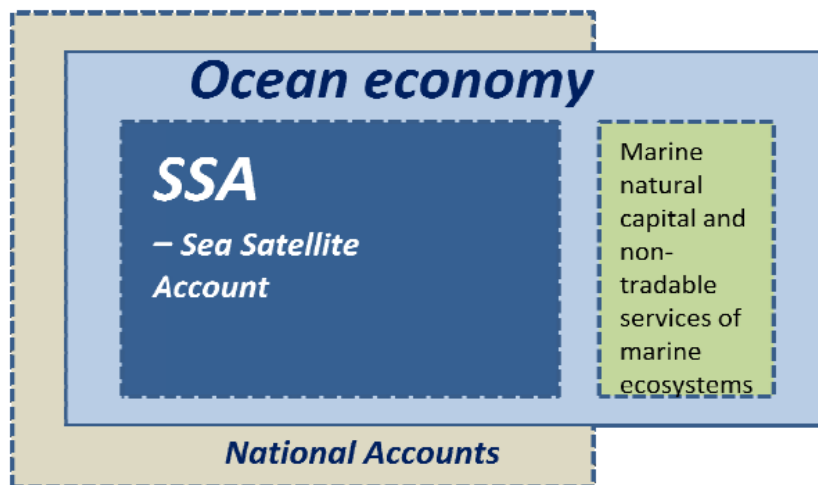


Ocean Ecosystems Accounts

The Portuguese experience

Ocean Pavillion, COP 30 UNFCCC, Belém, Brazil, 18 Nov 2025

Portugal's approach to ocean accounting – Ocean Accounts so far



“Ocean Economy: economic activities that take place at sea and others that do not take place at sea but depend on it, including marine natural capital and non-tradable services of marine ecosystems ”



What is missing?
Why is it incomplete?



Provisioning

(food, genetic resources, ...)



Cultural

(leisure, tourism, scientific research, ...)



Regulation/maintenance

(C sequestration, biogeochemical cycles, ...)

Marine Ecosystems Accounts in Portugal - A challenge!

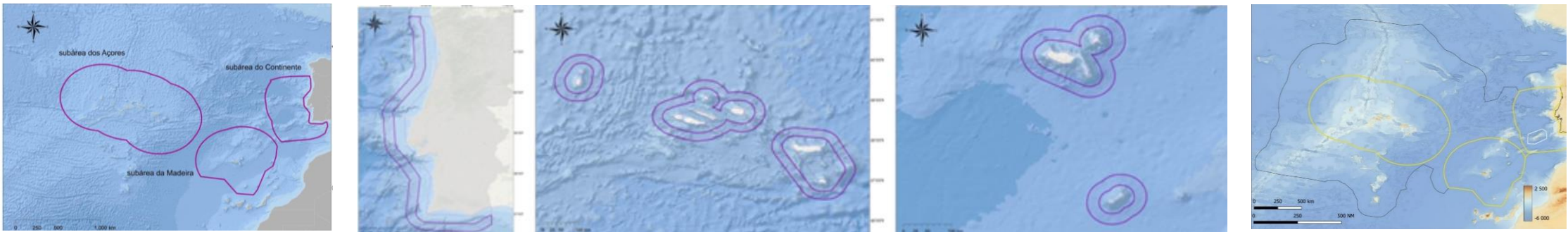


The National Maritime Space (NMS) - 4 million km²
and an average depth higher than 3500 m



The PT NMS is equivalent to the terrestrial area of the
European Union

Portugal's approach to Marine Ecosystems Accounts



Ecosystem
extent

Ecosystem
condition

Ecosystem
service
(flow)

Ecosystem
service
(use)

Ecosystem
asset
account

Ecosystems?
How healthy?
How large?

Physical
account

Monetary
account



Which ecosystems?

Which condition criteria?

What ecosystem services?

How to quantify them?



Portugal's approach to Marine Ecosystem Accounts

Main methodological references

UN SEEA-EA

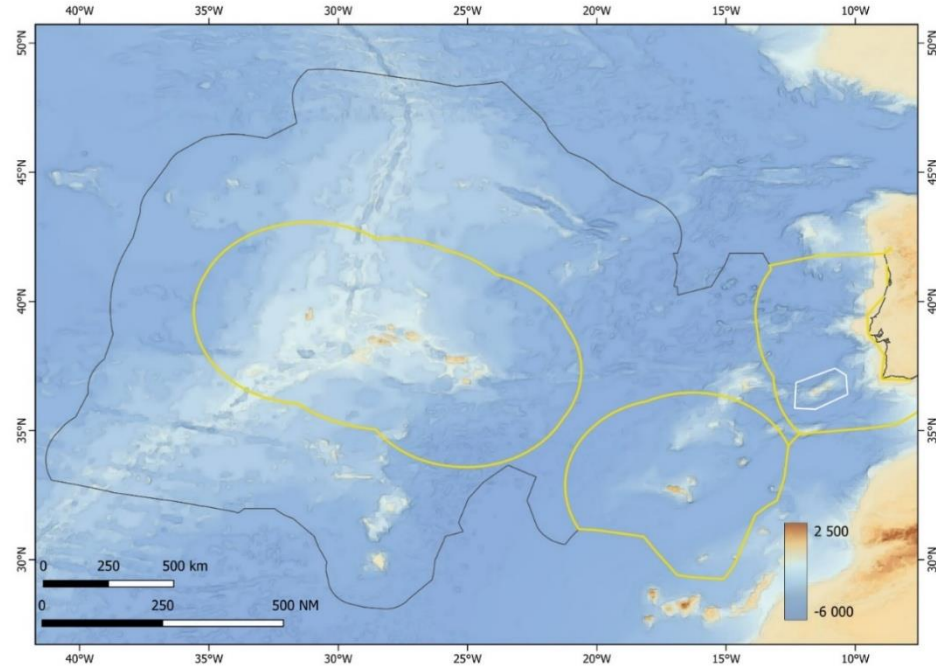
Regulation (EU) 2024/3024 of 27 Nov

Eurostat guidelines

Develop a methodology to implement
Marine Ecosystems Accounts as a
statistical instrument

Scientific support to the Portuguese
National Statistical Office

Define the ecosystem accounting area:



National Maritime Space

Marine Ecosystem Extent Account

Portuguese methodological approach

European Typology of Ecosystems: 3 levels

Only Level 1 is mandatory for report under the EU regulation

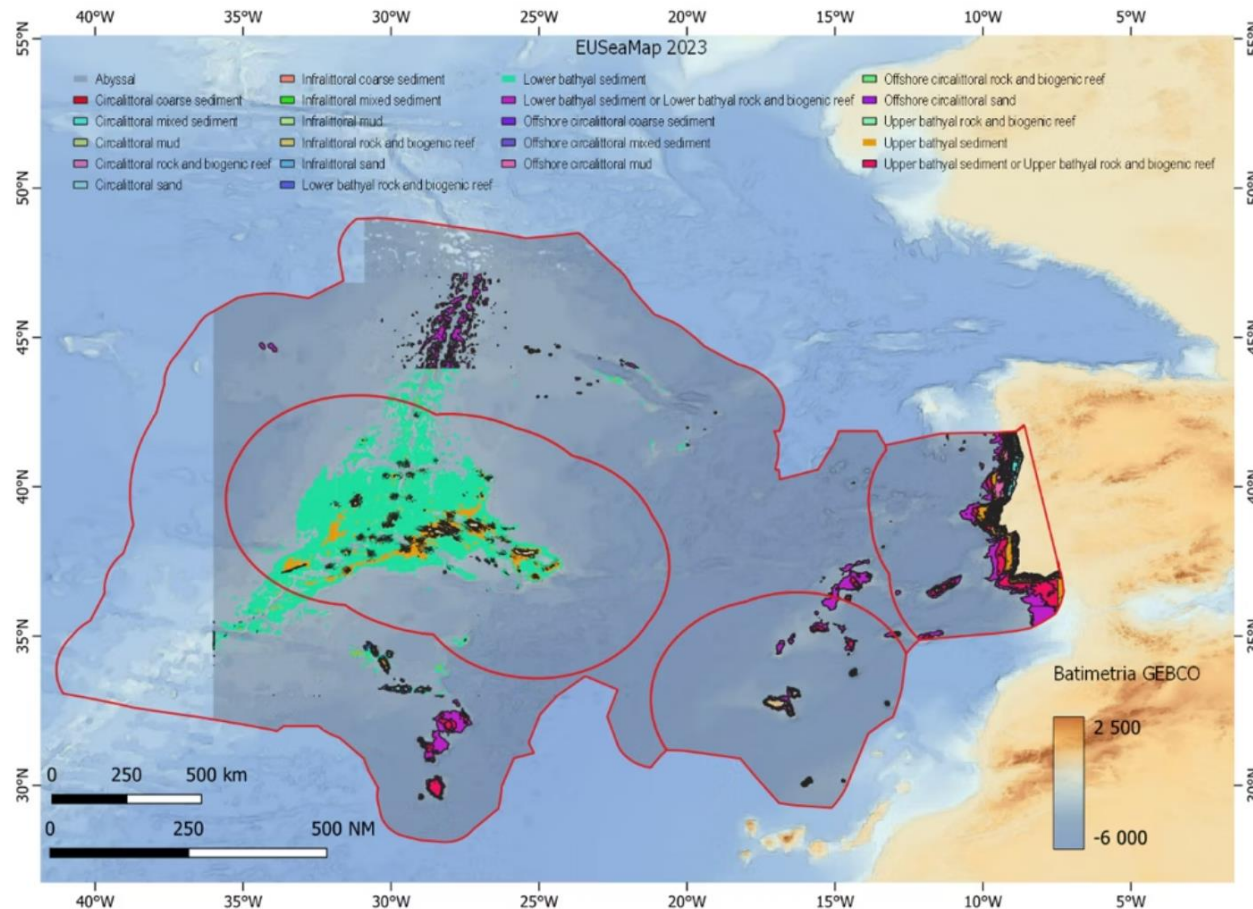
EU ET level 1	EU ET level 2	EU ET level 3
12. Marine ecosystems	12.1 Marine macrophyte habitats	12.1.1 Kelp forests 12.1.2 Coastal macrophyte beds 12.1.3 Seagrass meadows
	12.2 Coral reefs	12.2.1 Coral reefs
	12.3 Worm reefs	12.3.1 Worm reefs
	12.4 Shellfish beds and reefs	12.4.1 Shellfish beds and reefs
	12.5 Subtidal sand beds and mud plains	12.5.1 Subtidal sand beds and mud plains
	12.6 Subtidal rocky substrates	12.6.1 Subtidal rocky substrates
	12.7 Continental and island slopes	12.7.1. Continental and island slopes
	12.8 Deepwater benthic and pelagic ecosystems	12.8.1 Deepwater benthic and pelagic ecosystems
	12.9 Deepwater coastal inlets (fjords)	12.9.1 Deepwater coastal inlets (fjords)
	12.10 Sea ice	12.10.1 Sea ice

EUNIS - European Nature Information System

EU Ecosystem Typology Level 2/3	Correspondence with EUNIS classes
12.5 Subtidal sand beds and mud plains	Infralittoral coarse sediment
	Infralittoral mixed sediment
	Infralittoral mud sediment
	Infralittoral sand
	Circalittoral coarse sediment
	Circalittoral mixed sediment
	Circalittoral mud sediment
	Circalittoral sand
	Offshore Circalittoral coarse sediment
	Offshore Circalittoral mixed sediment
12.6 Subtidal rocky substrates	Offshore Circalittoral mud sediment
	Offshore Circalittoral sand
	Infralittoral rock & biogenic reefs
	Circalittoral rock & biogenic reefs
12.7 Continental and Island slopes	Offshore circalittoral rock & biogenic reefs
	Upper bathyal sediment
	Upper bathyal rock and biogenic reefs
	Upper bathyal sediment or Upper bathyal rock and biogenic reefs
	Lower bathyal sediment
	Lower bathyal rock & biogenic reefs
	Lower bathyal sediment or Lower bathyal rock & biogenic reef
12.8 Deepwater benthic and pelagic ecosystems	Abyssal

Marine Ecosystem Extent Account

Portuguese methodological approach

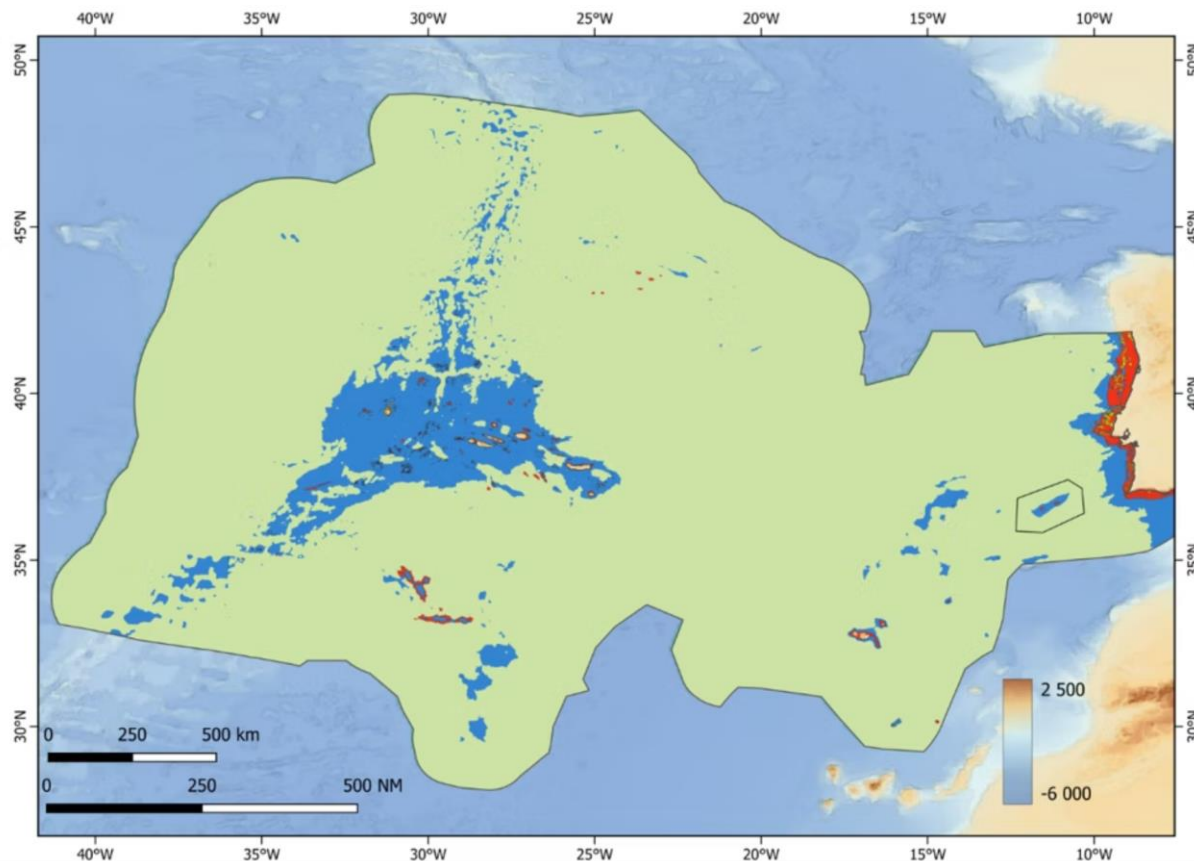


Habitats Map from EUSeaMap/ EMODnet
+
Bathimetric Map from GEBCO

Translation of EUNIS classes to Eurostat ecosystem typology
+
Gaps filled with bathymetric data

Marine Ecosystem Extent Account

Preliminary results for the Portuguese Maritime Space



Ca. 4,000,000 km²

Almost equivalent to land area of the EU

> 3.5 km average depth

> 99% is deep sea

EUSeaMap data (EMODnet), reclassified into
4 Eurostat level three ecosystem classes

Eurostat Ecosystem Typology level 3		Area (km ²)
12.5	Subtidal sand beds and mud plains	26665.6
12.6	Subtidal rocky substrates	4740.5
12.7	Continental and Island slopes	422896.9
12.8	Deepwater benthic and pelagic ecosystems	3621686.3

Marine Ecosystem Condition Account

EUROSTAT methodological reference

No mandatory indicators

Facultative indicators in relation with EU
Marine Strategy Framework Directive (MSFD)

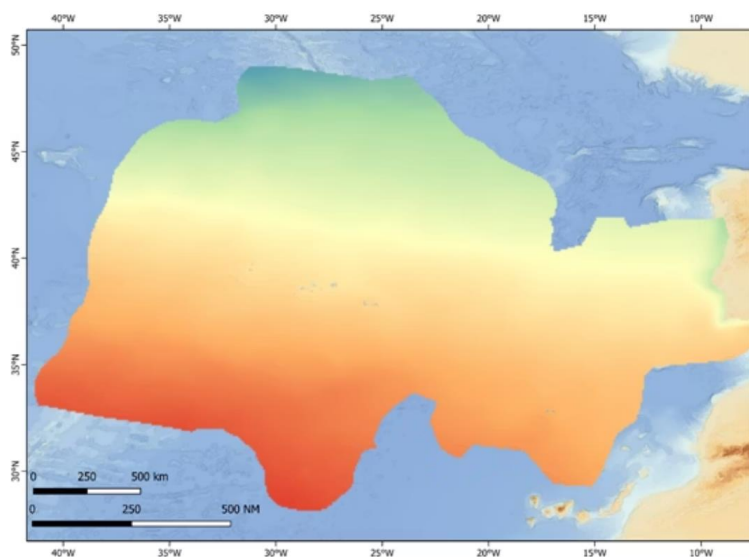


MSFD Descriptors

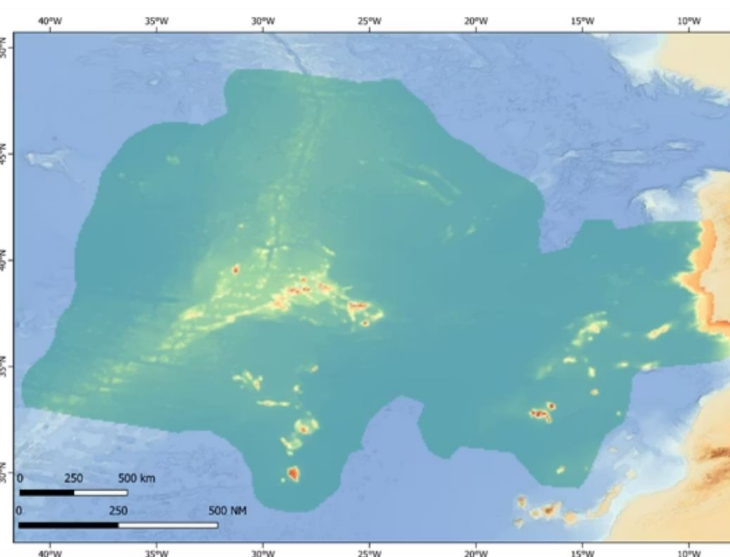
Marine Ecosystem Condition Account

Portuguese exploratory approach

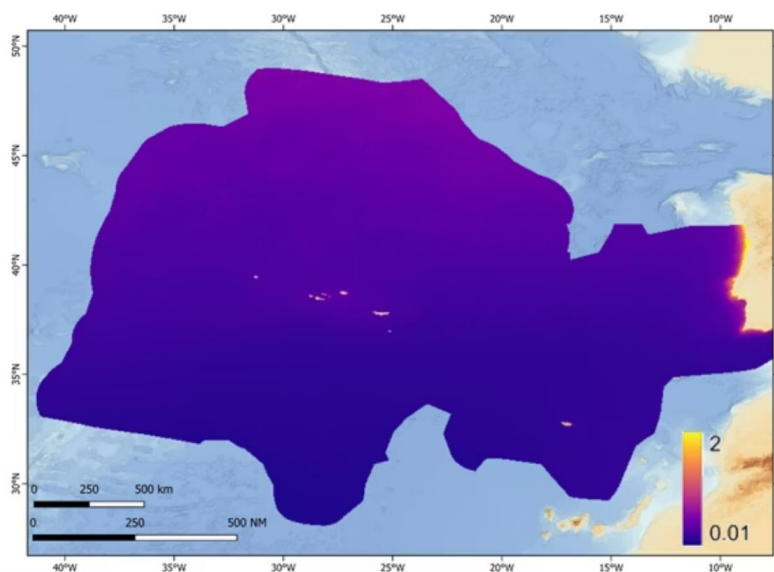
Analysis of decadal averages of surface and bottom temperatures and of chlorophyll a concentrations



Decadal average (2014-2023) surface temperature



Decadal average (2014-2023) bottom temperature



Decadal average (2014-2023) concentration of Cl. a

Marine Ecosystem Service Account (flow and use)

1

Identify the ecosystem services (ES)

2

Quantify the flow of ecosystem service

3

Quantify the monetary value of the ecosystem service

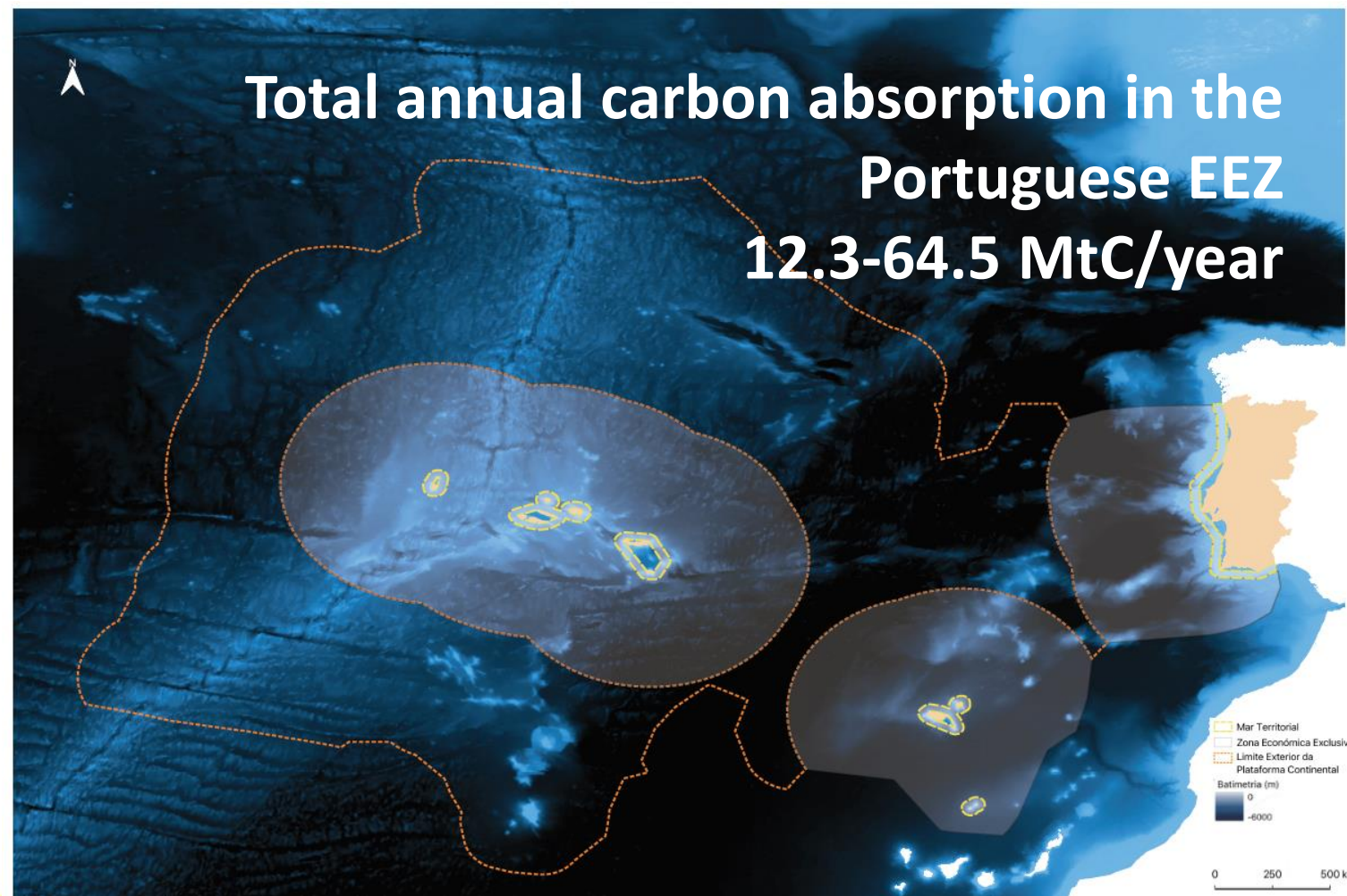


Marine Ecosystem Service Account (flow)

Contribution of the Portuguese EEZ to the global climate regulation

Area of the Portuguese
Sea up to the outer
limit of the EEZ
1,711,413.00 km²

Annual carbon
absorption in the
Portuguese EEZ
7.17-37.7 tC/km²/year



Marine Ecosystem Service Account (monetary value)

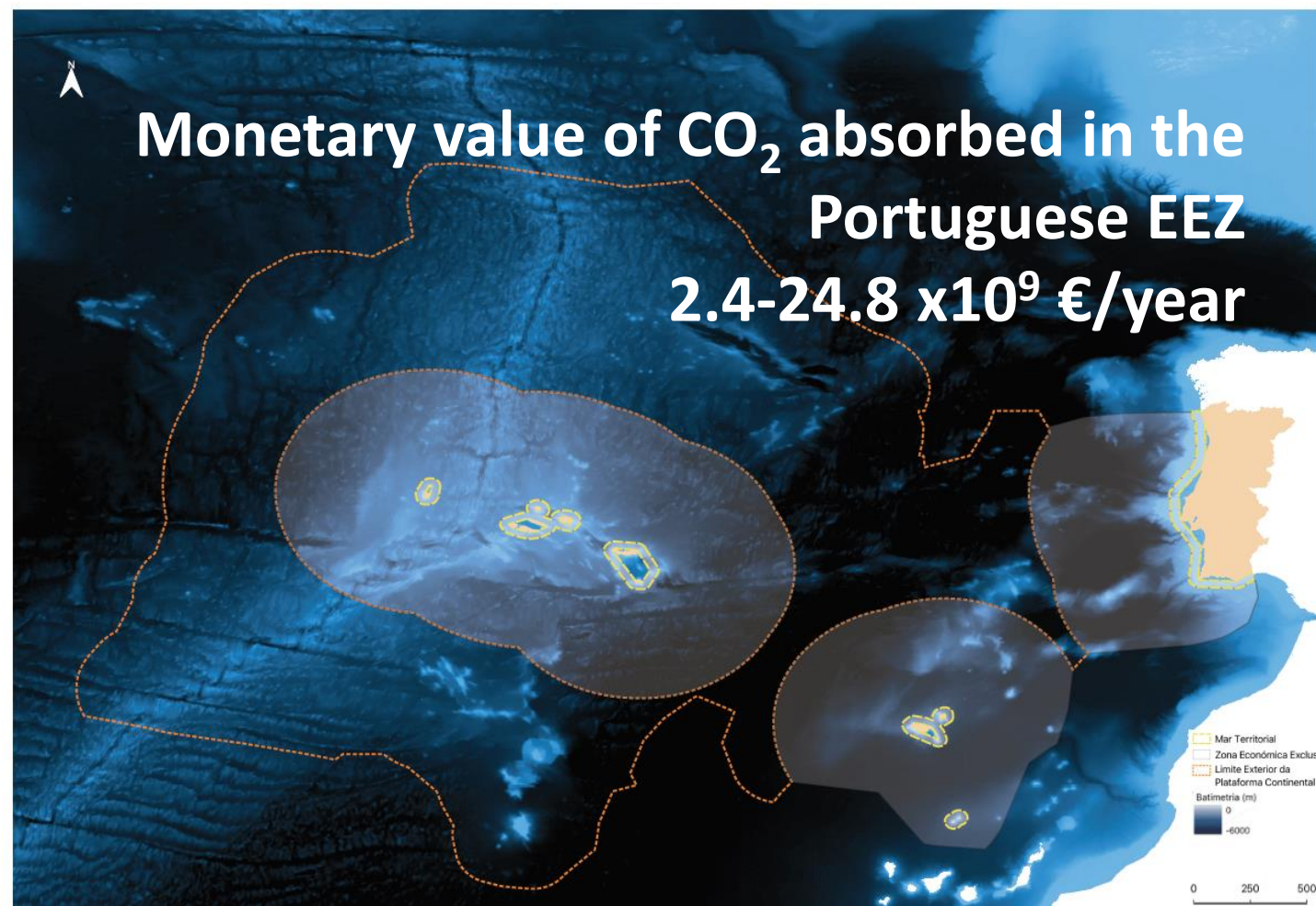
Contribution of the Portuguese EEZ to the global climate regulation

CO₂ market values

79 €/ton CO₂
5 y forward value

104.81 €/ton CO₂
Max. Mar 23

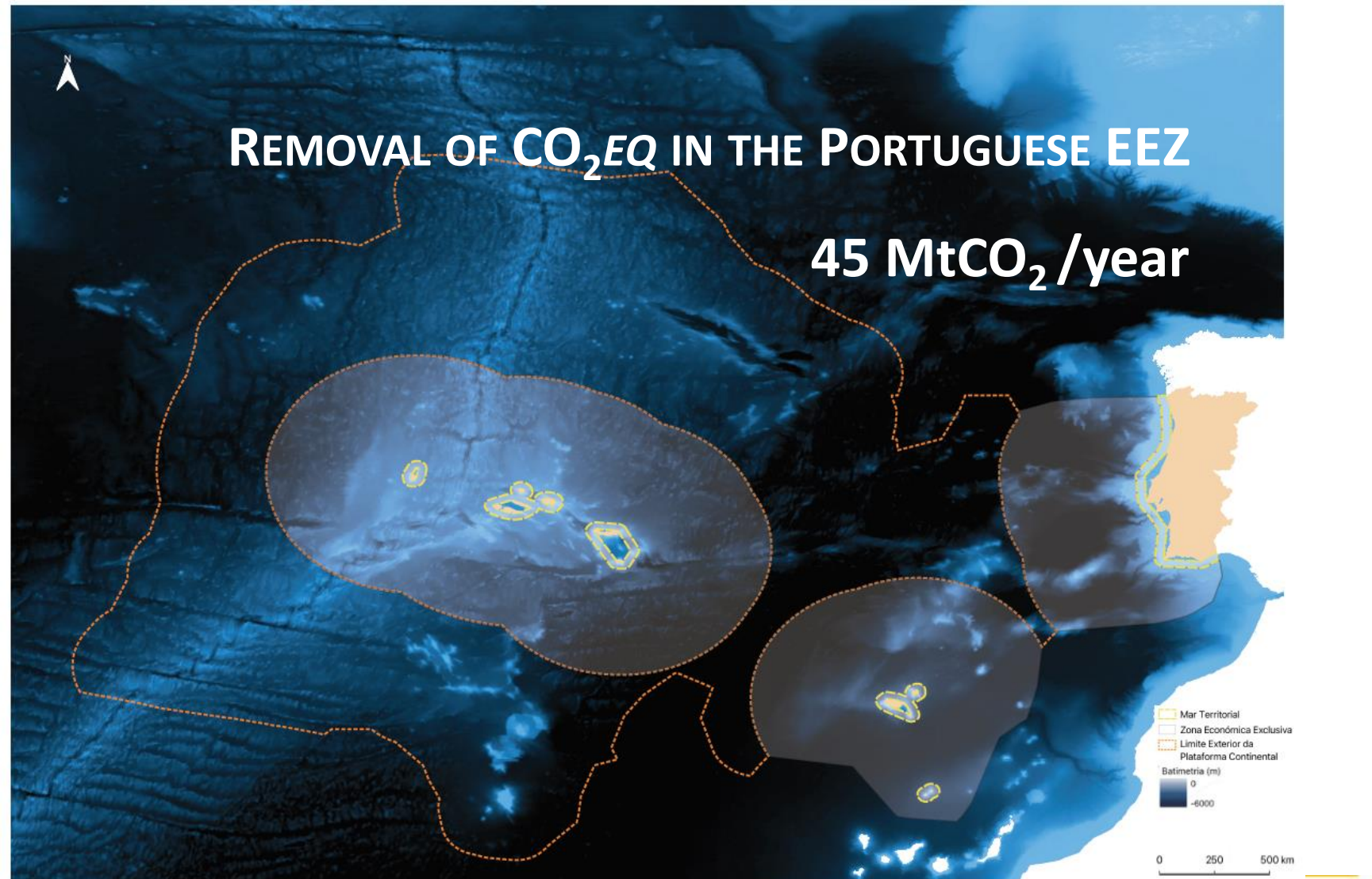
54.2 €/ton CO₂
Min. Feb 24



IN FACT, WHAT IS THE VALUE OF THE PORTUGUESE SEA'S GLOBAL CLIMATE REGULATION SERVICE?

In Portuguese law, one of the national mitigation goals is the removal, on average, of **13 MtCO₂eq** between 2045 and 2050, having in consideration forestry and soil use.

EEZ (42% of the NMS) absorbs annually 3.5 times the CO₂ removal target set for 2045.



WHAT MAIN MESSAGES ARISE FROM THIS EXPLORATORY EXERCISE?

1 Ecosystems service accounts

It seems to be a powerful instrument to support decision-making, but additional work is needed at international level to harmonize methodologies and data gathering – a fundamental task

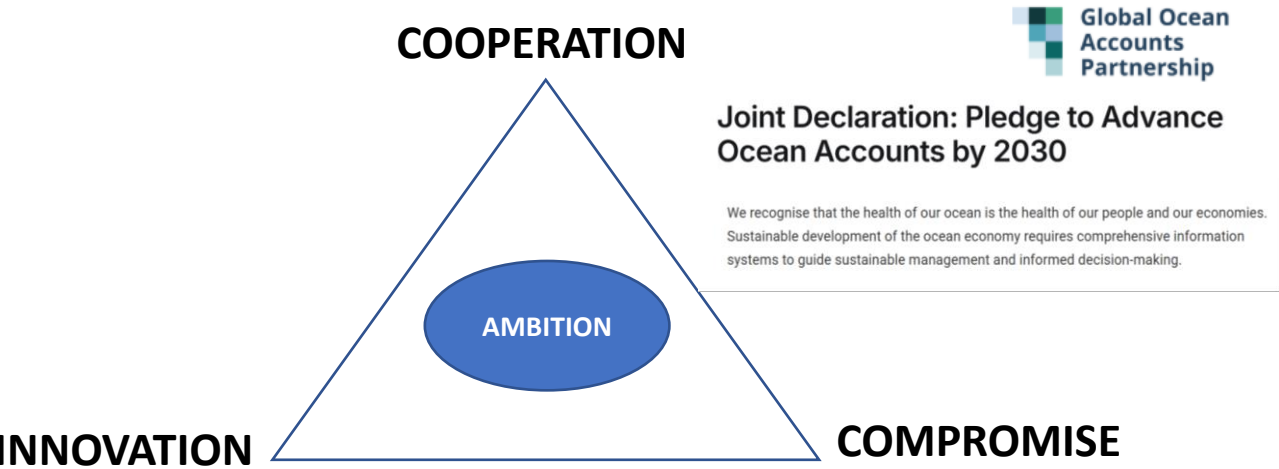
2 Nexus ocean – climate

The ocean provides carbon absorption services of a magnitude that needs to be taken into account in climate policy decisions

3 Ocean conservation

Carbon absorption is increasing ocean acidification, which, in turn is decreasing the ocean's ability to absorb carbon
Investment in ocean conservation is a priority that could make use of different approaches like blue bonds

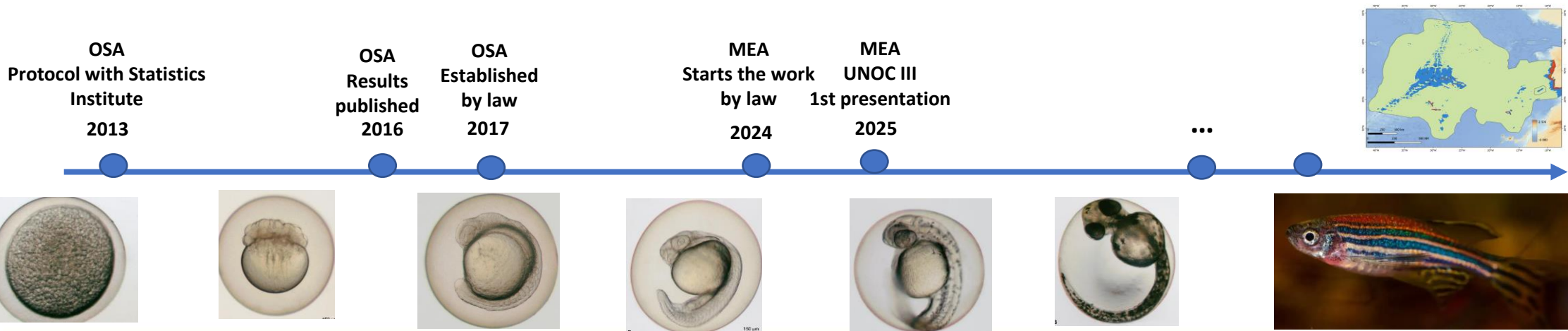
Portugal's approach to ocean accounting – Ocean Accounts ahead



COP30 Belém Ocean Declaration

*Catalyze innovative finance mechanisms grounded in **transparent and reliable accounting systems**, engaging the private sector and philanthropy, to scale marine conservation, blue carbon markets, and ocean solutions.*

ocean PAVILION



For more information

Microsite and *briefing document*



IPMA's team and network



Secretaria Regional de Mar e Pescas
Direção Regional do Mar



GOVERNO
DOS AÇORES



Thank you

Ocean Ecosystems Accounts
The Portuguese experience

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