



TÉCNICO
LISBOA



ORDEM
DOS
ENGENHEIROS

14^{as} Jornadas de Engenharia e Tecnologia Marítima

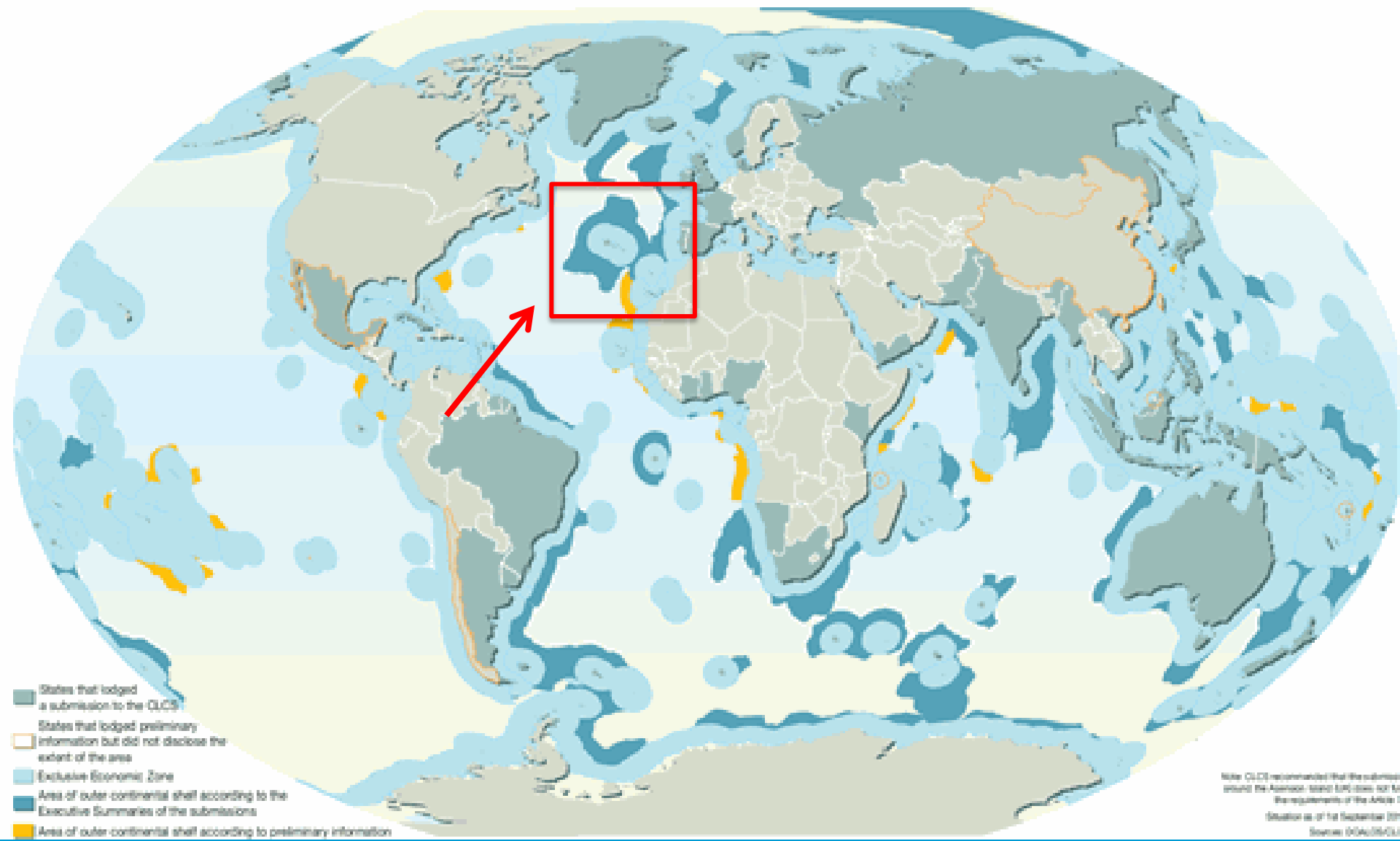
SESSÃO: A Tecnologia como Pilar da Economia do Mar
Helena Vieira, Executive Director BBA

THE WORLD MAP WE LEARNED



A NEW WORLD MAP

Global distribution of outer continental shelf



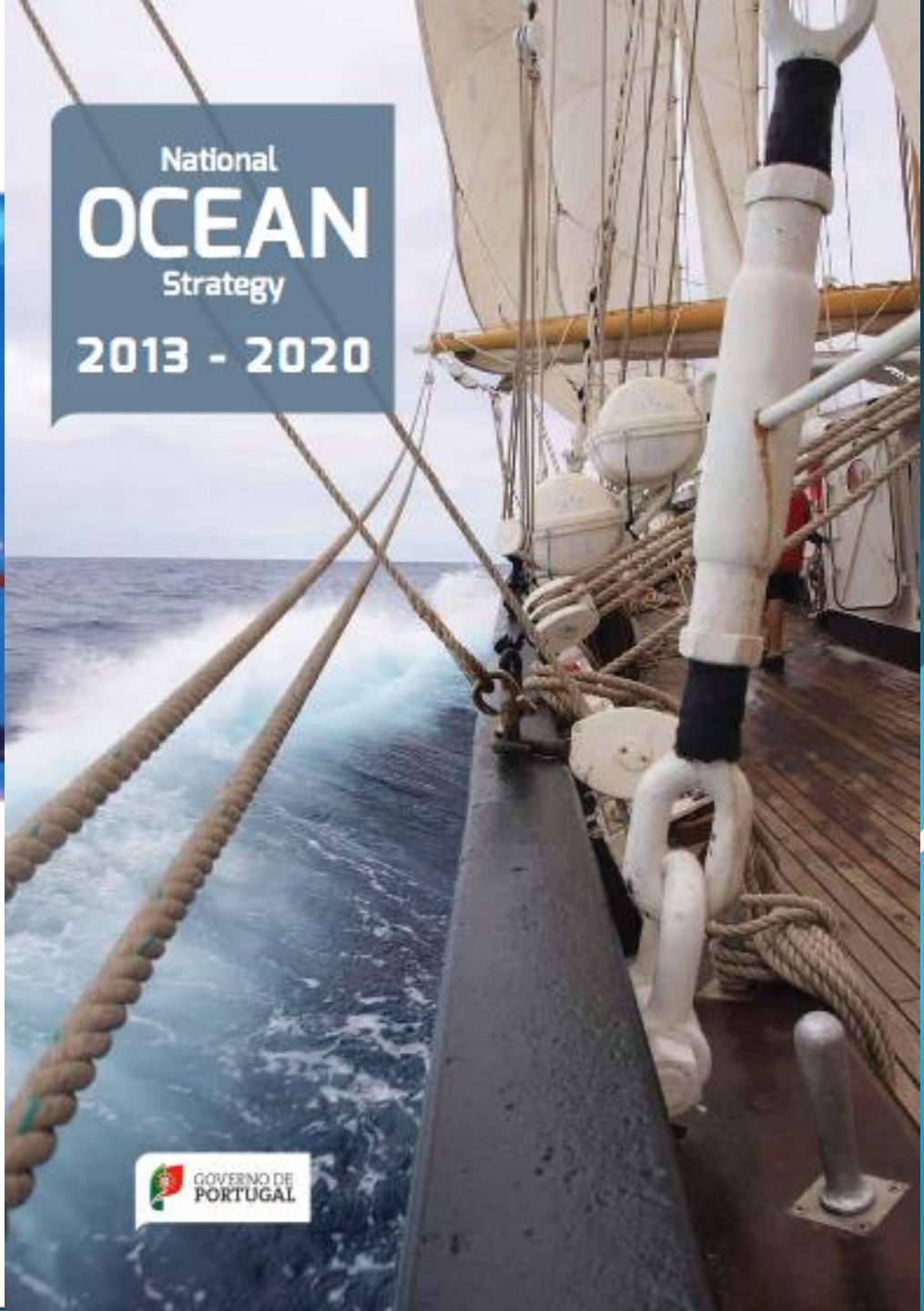


Blue Growth

Unlocking the potential
of Europe's oceans,
seas and coasts

Maritime
Affairs and
Fisheries

National
OCEAN
Strategy
2013 - 2020



The European Blue Economy

All economic activities that depend on the sea

5.4 million jobs

€500 billion/year Gross Value Added

75% external trade is seaborne

37% internal trade is seaborne

80% of European oil and gas is offshore

95% internet traffic by submarine cables



BLUE GROWTH

71%
of the Earth surface
is WATER

Why?

Blue Growth is the European Commission's initiative to further harness the potential of Europe's oceans, seas and coasts for:



Focus Area

Five sectors with high potential for sustainable Blue Growth are to be further developed:



other sectors of the blue economy crucial for value & jobs



Focus Area

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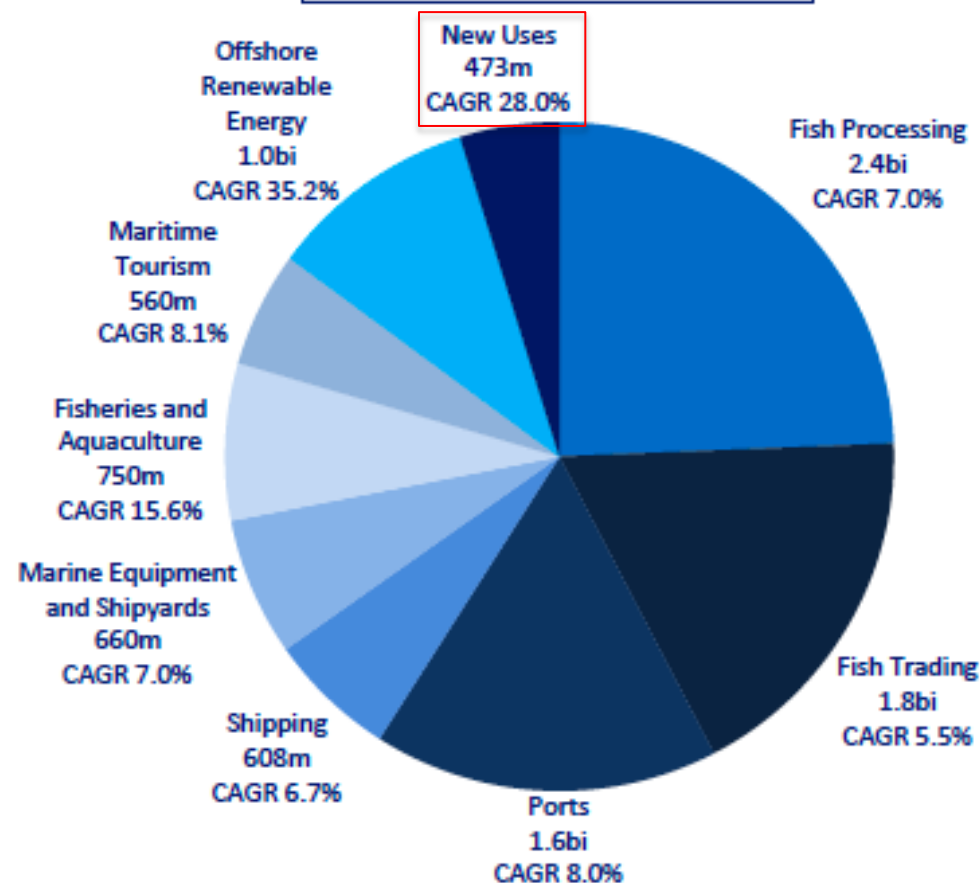
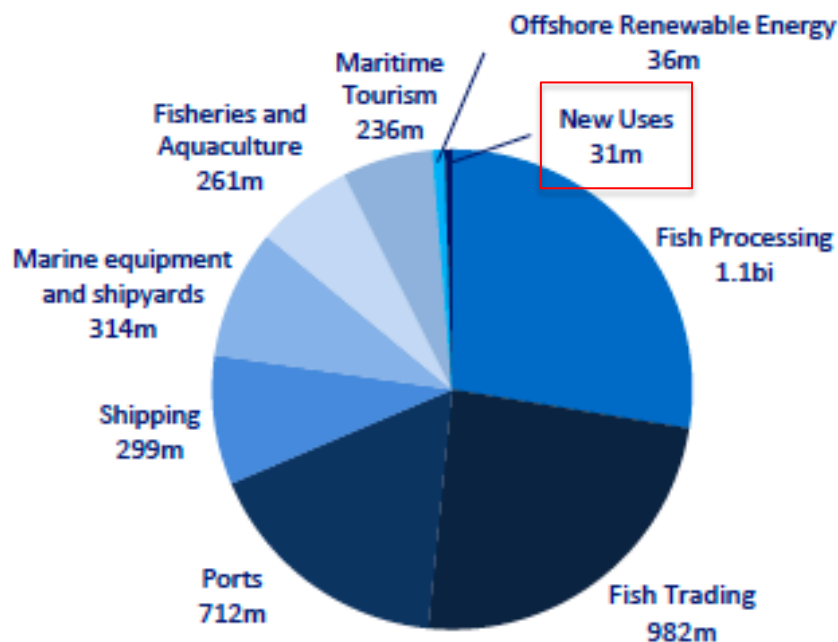


The case for Portugal: Blue growth

Turnover 2014: € 4.0bn

CAGR: 8.5%

Turnover 2025: € 9.9bn



A conservative analysis forecasts that the Portuguese Blue Economy will grow by a CAGR of 8.5% in the period 2014/2025 representing 5% of GDP by 2025. These estimates are aligned with Government forecasts*.

Source: All values are estimated by Ocean Vision, a business and investment advisory firm specialized in Blue Economy

Note: Not including education and research nor maritime surveillance and defense | Turnover distributions | *In Estratégia Nacional para o Mar

Listing the 7 largest maritime economic activities in Portugal at country level

Rank	Maritime economic activities	GVA (mln €)	Employment	Score
1.	Fisheries for human consumption	834	47 050	27.70
2.	Coastal tourism (accommodation)	955	44 155	26.85
3.	Agriculture on saline soils	120	24 604	12.90
4.	Short-sea shipping	190	2 739	2.32
5.	Shipbuilding and repair	83	3 472	2.15
6.	Deep-sea shipping	122	1 758	1.49
7.	Construction of water projects	84	1 520	1.18

The 7 promising maritime economic activities

Rank	Most innovative maritime economic activities
1.	Blue Biotechnology
2.	Ocean renewable energy
3.	Environmental monitoring
4.	Offshore wind

¹⁰⁰ The overall rank for the other indicators has been established by adding the + and deducting the -.

Political aspects

- Adoption of public policies focused on Blue Growth
- Government support and incentives
- Local authorities full support for Blue Growth
- New legislation facilitating the access to maritime spaces and the exploration of marine natural resources
- Significant public support to foreign and domestic investment in the Blue Economy, including marine bioresources industries
- EU Structural Funds 2014/2020

Dimension

- Biggest maritime area (EEZ) in the EU and one of the 12 largest continental shelves in the World
- Extensive coast line and 2 Atlantic archipelagos

Biodiversity

- Seamounts with rich marine biodiversity, deep sea coral reefs and hydrothermal vents hosting biota for biotech industries

COMPETITIVE ADVANTAGES

R&D

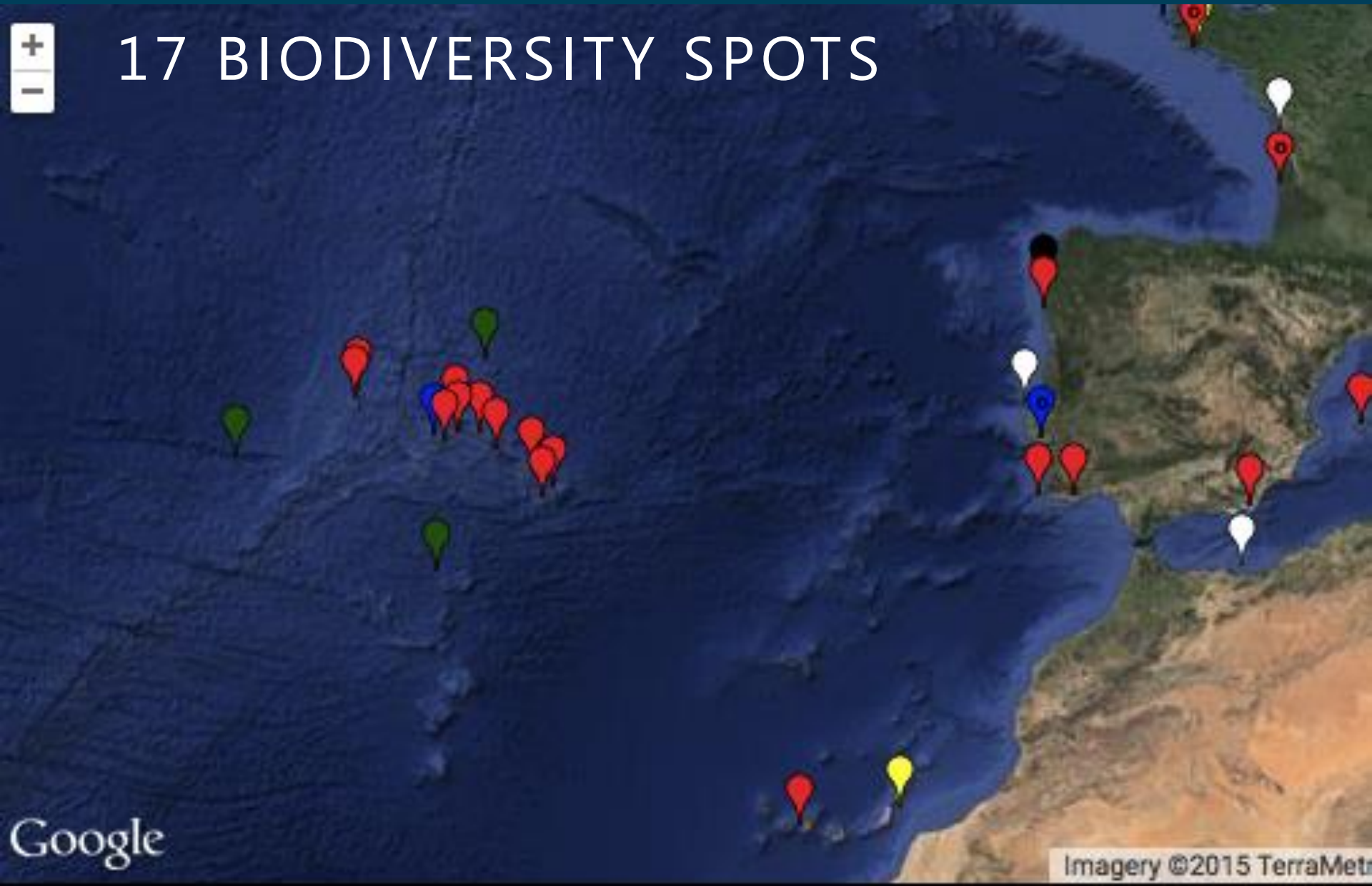
- More than 50 scientific centres of marine knowledge and research
- Considerable experience in marine biotechnology

Abundance of raw materials

- World's third largest consumer of seafood per capita
- Developed fish processing industry

MARINE R&D BIODIVERSITY SPOTS

17 BIODIVERSITY SPOTS



NATIONAL MARINE RESOURCES

- One of the largests world continental shelves
- Deep & with extreme habitats
- < 5% deep sea biodiversity known
- < 1% of this biodiversity is explored
- Know-how & national resources in marine & industrial biotech (bacteria & marine fungi)
- Enormous potential for new Aquaculture types (shellfish, micro & macroalgae, MTIA...)
- Enormous Potential for BLUE BIOTECH!

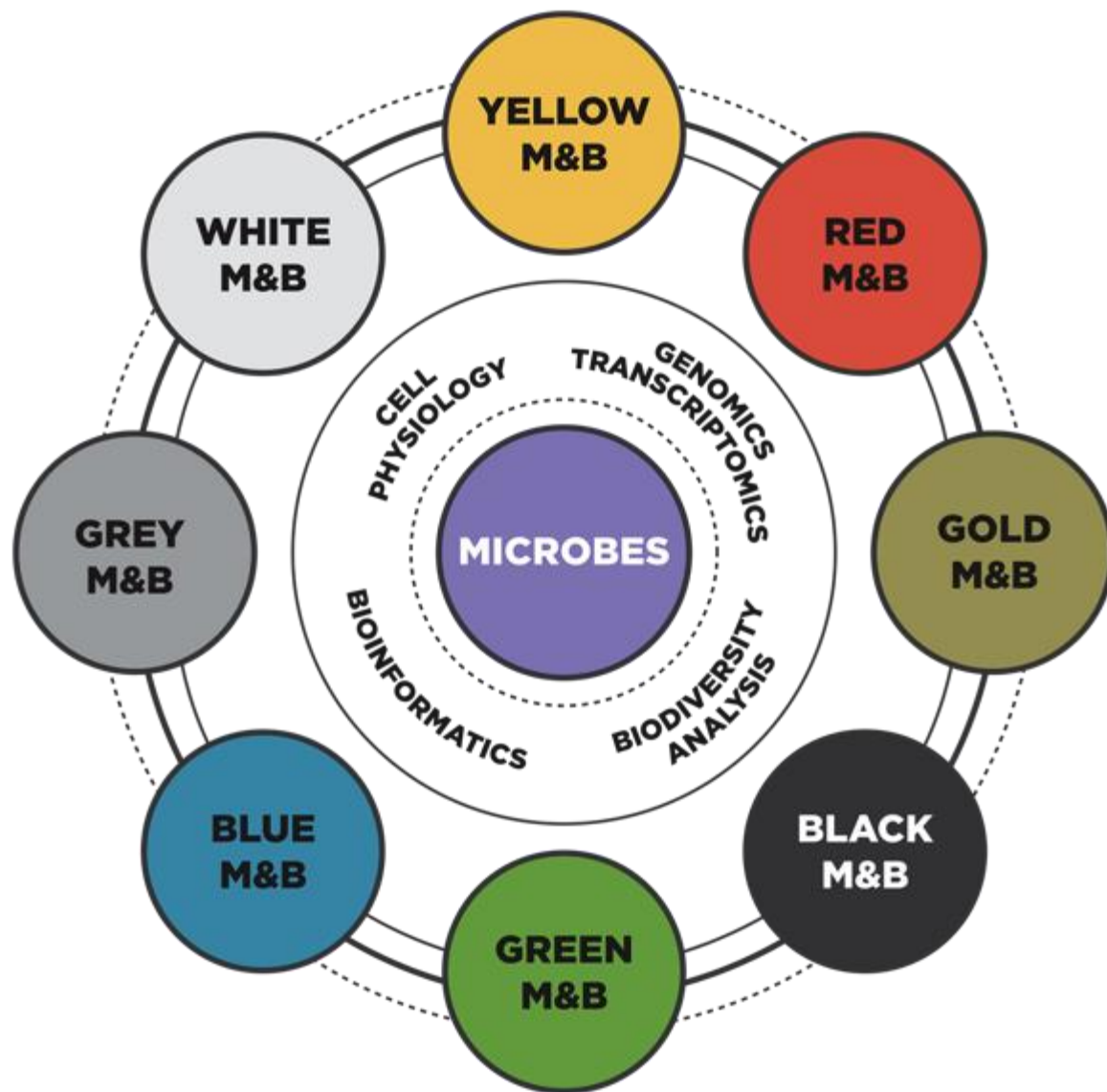


FROM OCEAN TO MARKET BIOTECHNOLOGY CAN BE THE ROAD TO SUCESS?

BLUE BIOTECH

The use of marine organisms as the source or the “factory” of useful and needed products and solutions to society.





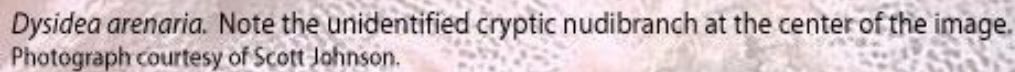
**BASED ON THE "RAINBOW CODE OF BIOTECHNOLOGY" BY PAWEŁ KAFARSKI
CHEMIK 2012, 66, 8, 811-816, WHICH DIVIDES BIOTECHNOLOGY INTO:**

- **YELLOW** NUTRITION ● **RED** MEDICINE AND HUMAN HEALTH
- **GOLD** BIOINFORMATICS, COMPUTER SCIENCE AND CHIP TECHNOLOGY
- **BLACK** BIOTERRORISM AND BIOLOGICAL WEAPON ● **GREEN** AGRICULTURE
- **BLUE** MARINE ● **GREY** ENVIRONMENTAL PROTECTION ● **WHITE** INDUSTRIAL

An aerial photograph of a body of water. The water is dark blue, and there are numerous irregular, orange-brown patches scattered across the surface, resembling oil spills or algal blooms. A small, white boat is visible in the lower right quadrant, moving through the water and leaving a white wake.

**GREY
M&B**

**Companies and projects that work in
ENVIRONMENTAL PROTECTION**



ANTI-FÚNGICO



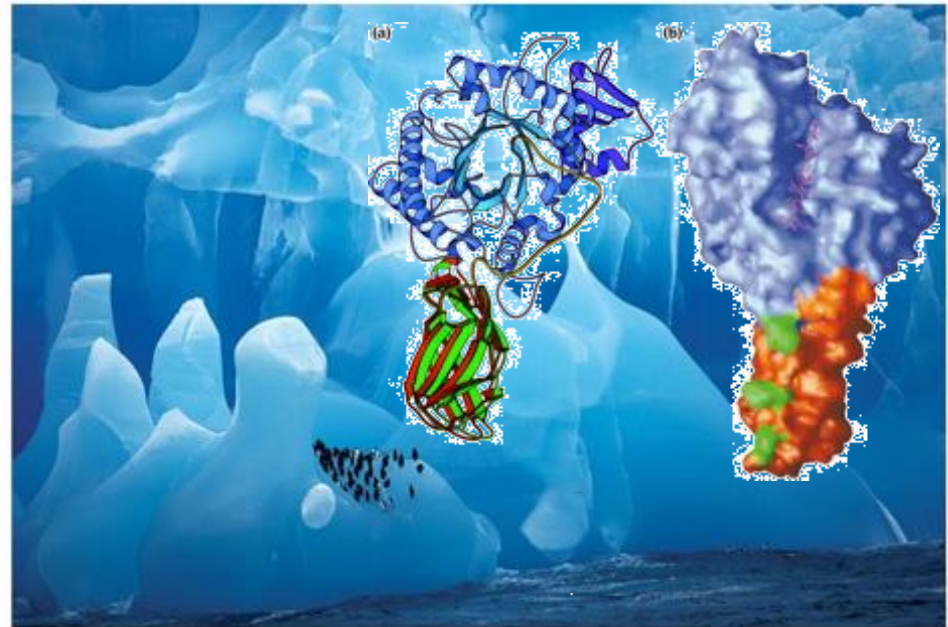
WHITE
M&B

BIOLUMINESCENCE LIGHT FROM MARINE BACTERIA



MARINE ENZYMES FOR REALLY COLD WASHING

WHITE
M&B



MARINE COMPOUNDS FOR CLEANER INDUSTRIES



BLUE
M&B

MARINE YOUTH ELIXIR?



MARINE SUPERFOODS

**YELLOW
M&B**

ANTIOXIDANT

IMUNOSTIMULANT

VITAMINS SOURCE

MINERALS SOURCE

DETOXIFYING AGENT

PROTEIN SOURCE



PORTUGAL BIOTECH

- Over 70 biotech active companies
- Specifically Marine Biotech <30
- Much larger number of potential innovators and users
- Large value chain expertise
- But disperse...

BIORESOURCES VALUE CHAIN



BLUEBIO

ALLIANCE



CASCAIS

Tudo começa nas pessoas

BLUEBIO ALLIANCE – THE LAUNCH



BLUEBIO ALLIANCE – WHAT WE ARE

- ✓ **National Network** for **collective organization** and networking
- ✓ **Accelerate** the development of the **value chain & market**



BLUEBIO ALLIANCE – WHAT WE WISH TO BE

MAJOR ACTION PILLARS

1. Scale & Cooperation
 - Creation of partnerships, alliances and of a cooperation culture
2. Focus on Companies
 - The main generators of value in marketable goods
3. Path to Internationalization
 - Integration with international networks of excellence
4. Promote financing and access to funds
 - diffuse access to competitive funding and help investors to invest.

OUR FOUNDING MEMBERS

MAIN FOUNDERS AND SPONSORS

CASCAIS



BPI



OCEANVISION

96 members across the whole value chain

BLUEBIO
ALLIANCE

DISTRIBUIÇÃO DOS MEMBROS AO LONGO DA CADEIA DE VALOR

Top centros de
I&D &
Universidades

PME's
&
Start-ups

Industria

Instituições
do Oceano
& Ciência

Associações
sectoriais

BA & VC
Fundos
Banca

Incubadoras
&
Aceleradora

Governo
&
Administração
Local

Firmas
jurídicas e
de IP

Consultoras

PMEs de
Branding e
Design

FCT

Fundação para a Ciência e a Tecnologia
MINISTÉRIO DA CIÊNCIA, TECNOLOGIA E ENSINO SUPERIOR





VIEIRA DE ALMEIDA
& Associados Sociedade de Advogados, R.L.

Campos Ferreira
Sá Carneiro
& Associados

Manuel Cavaleiro Ferreira
Advogado



BUSYANGELS
VENTURE CAPITAL INVESTORS

Shift
thinkers[®] growing brands

eupportunity
european affairs consulting

MIRANDA
Miranda Correia Amendoeira & Associados
Sociedade de Advogados R.L. / Attorneys at Law



Portugal's Biotechnology Industry Organization
Associação Portuguesa de BioIndústria



Sociedade Portuguesa de Inovação



ANICP
ASSOCIAÇÃO NACIONAL DOS INDUSTRIAIS
DE CONSERVAS DE PEIXE



SOFIA GALVÃO
Advogados



CONSULTORES DE SEGUROS E RISCO



DOCAPESCA
PORTOS E LOTAS, S.A.



JORNAL DA
Economia
DO **Mar**



CENTRO PARA
A VALORIZAÇÃO
DE RESÍDUOS

BLUEBIO
ALLIANCE



SYSTEMICSPHERE
Research and Intelligence on the New Systemic Economy



We Value



LEADING THE WAY FOR PORTUGUESE MARINE BIORESOURCES & BLUE BIOTECH

CONTACTS

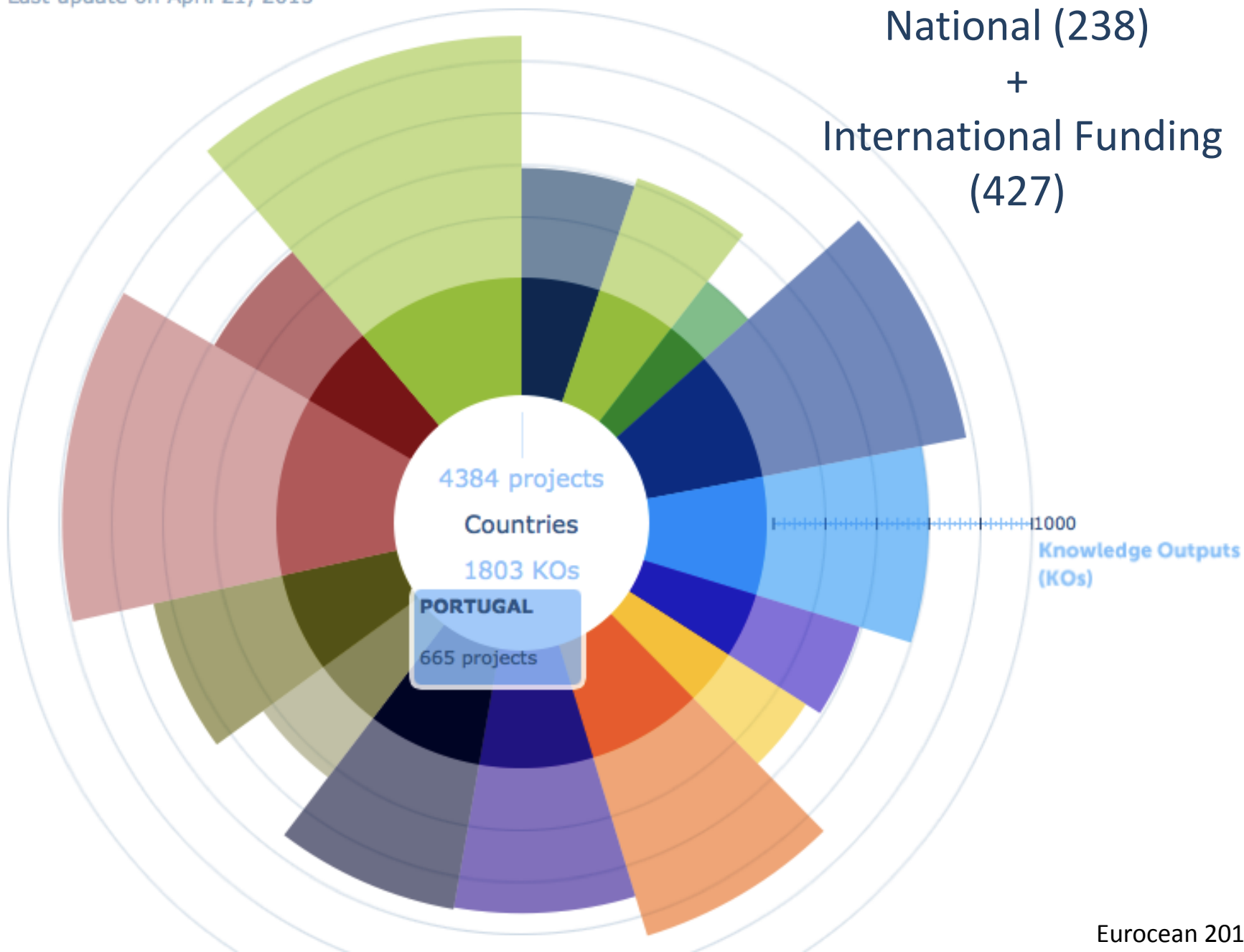
Att Helena Vieira, Executive Director
Email: bluebioalliance@gmail.com
Web: www.bluebioalliance.com

MARINE R&D Infrastructure

- ✓ 21 Research Vessels/boats (Inventory of Specialist Portuguese Marine R&D Infrastructures , FCT)
- ✓ 7 Observatory & monitoring systems
- ✓ >50 R&D centers with well equipped laboratories
- ✓ Offshore windfloat & other wave/wind platforms
- ✓ Pilot Scale Bioprocess Units & Private Large Scale Unit
- ✓ Large Microalgae photobioreactors private facilities
- ✓ Large Macroalgae/aquaculture cultivation facilities
- ✓ Large number of national marine collections

MARINE R&D
Funding attraction

National (238)
+
International Funding
(427)



- 23 are >14M €
- 98 are 4.2M-14M€

