



## EUSAIR Pillar 1 (Blue Growth)

Sustainable Development of Coastal Communities through  
Blue Upskilling of Local Populations

“Blue Economy and Blue Carriers upskilling in  
the framework of Sustainable Development  
Goals and the EU’s Blue-Growth Strategy  
Initiatives”

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# 10<sup>th</sup> EUSAIR Forum

**Georgioupolis, Crete**

**6-7 May 2025**



# Blue Economy Overview

The **Blue Economy** refers to the **sustainable use of ocean resources** for

- **Economic growth**
- **Improved livelihoods, and**
- **Environmental health**

It encompasses a wide range of economic activities linked to oceans, seas, and coastal areas, while emphasizing **conservation and sustainable practices** to ensure long-term benefits.



# Key Sectors of the Blue Economy

## 1. Fisheries & Aquaculture

- Sustainable fishing and seafood production
- Responsible aquaculture practices to reduce environmental impact

## 2. Marine Renewable Energy

- Offshore wind farms
- Wave and tidal energy projects

## 3. Tourism & Recreation

- Eco-tourism and sustainable coastal tourism
- Marine Protected Areas (MPAs) as tourism attractions

## 4. Maritime Transport & Ports

- Green shipping and fuel-efficient vessels
- Sustainable port management and logistics

## 5. Biotechnology & Marine Resources

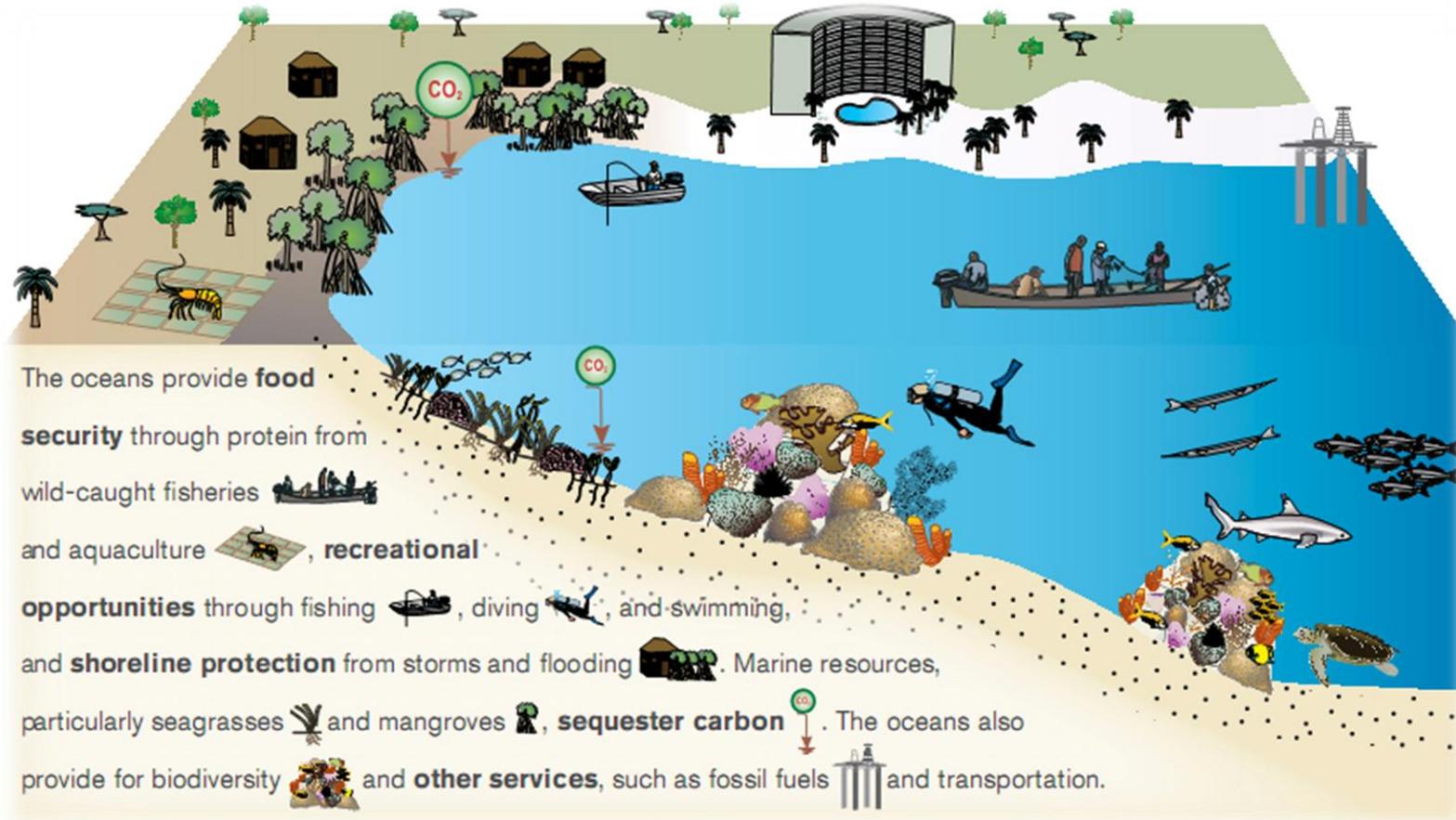
- Marine-based pharmaceuticals and bio-products
- Seaweed farming and algae-based biofuels

## 6. Coastal Protection & Climate Adaptation

- Restoration of mangroves and coral reefs
- Marine spatial planning and disaster risk reduction



# The Importance of the Blue Economy



## Environmental Sustainability

- Focus on reducing **marine pollution** and **overfishing**
- Promotes **carbon sequestration** through ocean-based solutions

## Economic Growth & Job Creation

- The ocean economy is projected to be worth **\$3 trillion by 2030**
- Supports **over 150 million jobs globally**

## Social & Community Well-being

- Supports **coastal communities** and **small-scale fisheries**
- Enhances **food security** and **climate resilience**

# Challenges - What is the impact of human noise to the oceans?

**14 LIFE BELOW WATER**  
Life below water

**Challenges**

Over **THREE BILLION PEOPLE** depend on **MARINE AND COASTAL BIODIVERSITY** for their livelihoods. **POLLUTION THREATENS** the world's largest source of protein

**40% OF WORLD'S OCEANS** suffer from **OVERFISHING, POOR FISHING PRACTICES** and **POOR WASTE MANAGEMENT**

**CORAL REEFS** which provides a home to 25% of all marine life **ARE BEING DESTROYED** at an alarming rate

**Solutions**

Reduce pollution and **PROTECT MARINE AND COASTAL ECOSYSTEMS**

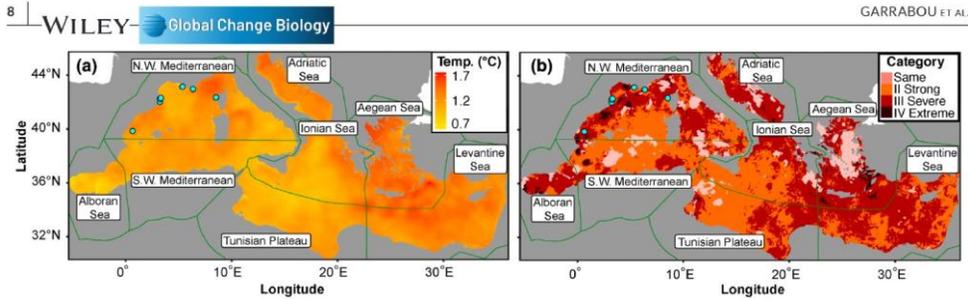
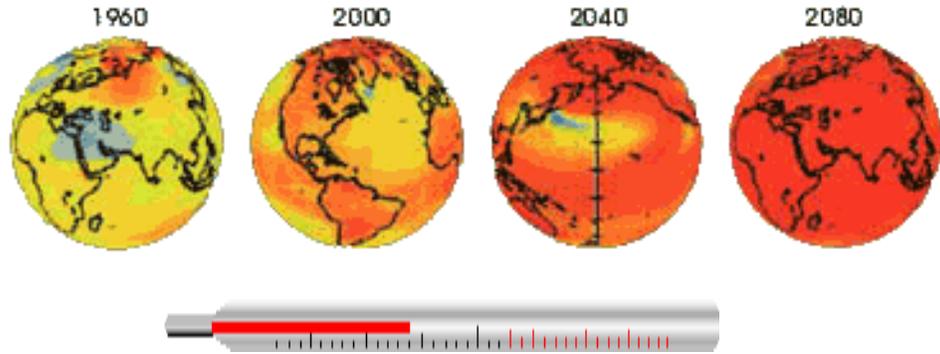
**END HARMFUL FISHING SUBSIDIES** and stop unreported, unregulated and destructive fishing practices

**FIGHT CLIMATE CHANGE**, reduce sedimentation, stop coral mining and promote sustainable tourism

UN environment  
United Nations Environment Programme



# Challenges - What is the impact of human noise to the oceans?



United Nations  
Climate Change

CURRENT LANDSCAPE

## OCEANS AND COASTAL ZONES

Since the **1970**, the oceans have taken up more than **90%** of excess heat in the climate system

Since the **1980**, oceans have absorbed up to **20-30%** of total anthropogenic CO<sub>2</sub> emissions.

Urgent action and investment to protect **marine ecosystems**, communities and economies, in particular on the **183** coastal and island nations.

Oceans and coastal zones provide ecosystem services as well as social and economic services globally including fisheries, transport, tourism and habitat.

The IPCC Special Report confirmed that the ocean is warmer, more acidic and less productive now. Melting glaciers and ice sheet are furthermore contributing to the accelerating sea level rise of **3.6 mm/year**. Current emission trends also put **70%** of near-surface permafrost at risk.

<sup>1</sup> Intergovernmental Panel on Climate Change

Download the Yearbook of Global Climate Action 2019 to learn more!

# Challenges - What is the impact of human noise to the oceans?



## Mediterranean a biodiversity hotspot

**SoED 2020**  
State of the Environment and Development in the Mediterranean

**Rich biodiversity under threat**  
The Mediterranean hosts up to **18%** of the marine species known in the world and 17,000 marine species in just 0.3% of the ocean volume.  
Highest rate of endemism in the world: 20-30% of marine species are endemic

The emblematic *Posidonia oceanica* has experienced a **30%** decline over a period of 50 years and its functional extinction is likely by 2100 (no-action scenario)



At least **78** marine species and **168** coastal endangered species



**1,000**

non-indigenous marine species in the Mediterranean, 10% of which are invasive

**41%**

decrease in marine predators (including mammals)



Only **9%**

of the marine area is officially protected and only 10% of these sites implement management plans

**70%**

of wetland habitats have disappeared since 1970

**78%**

of assessed fish stocks are overexploited



### Loss of biodiversity

means loss of services rendered by ecosystems: protection against erosion, water purification, flood and drought mitigation, food supply, pollination, carbon storage, cultural and recreational services, ...

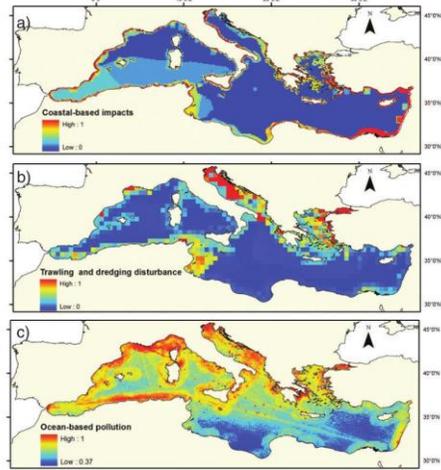


#SustainableMED

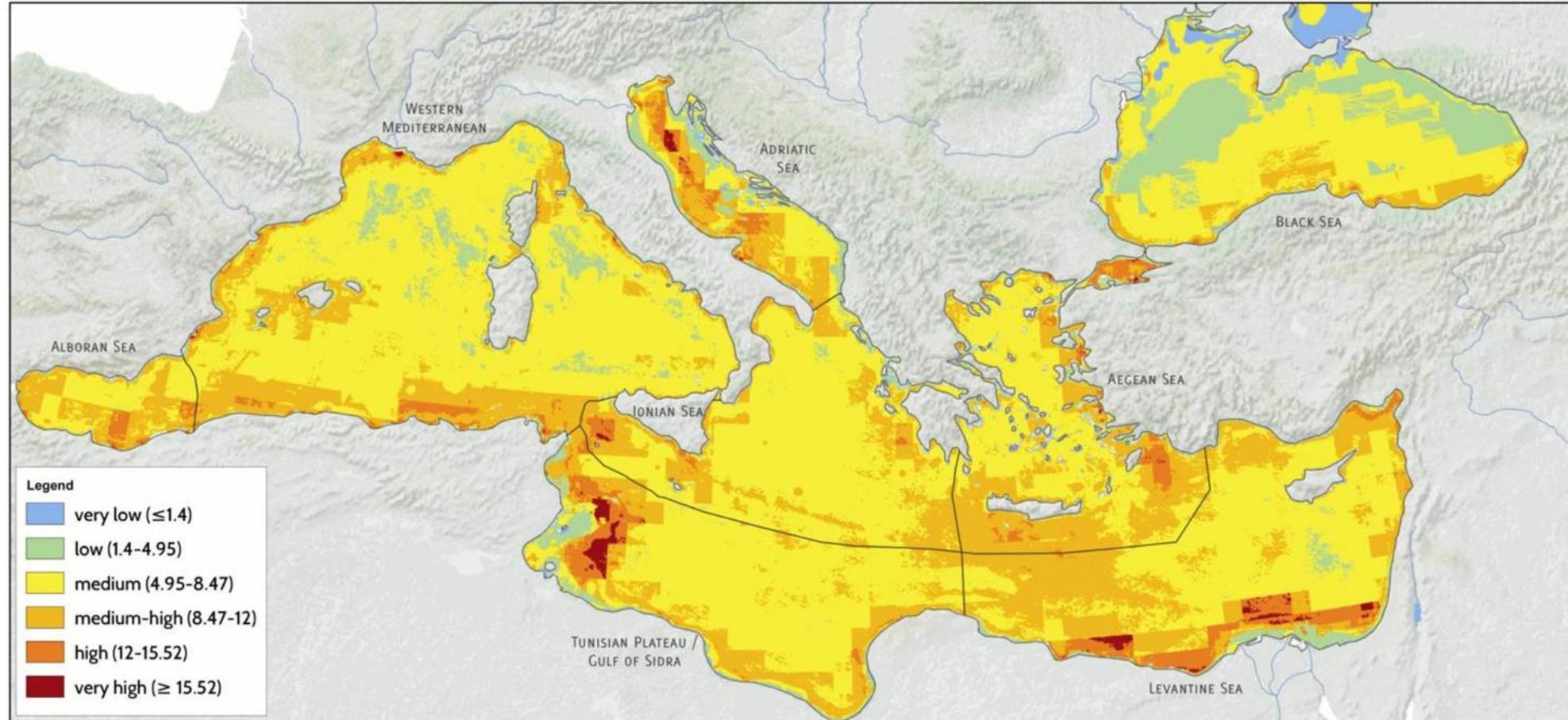
To consult the full report on the State of the Environment and Development in the Mediterranean and its information sources - [www.planbleu.org/soed2020](http://www.planbleu.org/soed2020)



# Challenges - What is the impact of human noise to the oceans?



Coll et al. 2011. The **Mediterranean Sea under siege**: spatial overlap between marine biodiversity, **cumulative threats**



Micheli et al. 2013. **Cumulative human Impacts** on Mediterranean and Black Sea ecosystems



# Challenges – ACTIONS to reverse the Impacts

United Nations –  
**SUSTAINABLE DEVELOPMENT**



**ΣΤΟΧΟΙ** ΒΙΩΣΙΜΗΣ  
ΑΝΑΠΤΥΞΗΣ

17 ΣΤΟΧΟΙ ΓΙΑ ΝΑ ΑΛΛΑΞΟΥΜΕ ΤΟΝ ΚΟΣΜΟ ΜΑΣ

<b>1</b> NO POVERTY 	<b>2</b> NO HUNGER 	<b>3</b> GOOD HEALTH 	<b>4</b> QUALITY EDUCATION 	<b>5</b> GENDER EQUALITY 	<b>6</b> CLEAN WATER AND SANITATION 
<b>7</b> RENEWABLE ENERGY 	<b>8</b> GOOD JOBS AND ECONOMIC GROWTH 	<b>9</b> INNOVATION AND INFRASTRUCTURE 	<b>10</b> REDUCED INEQUALITIES 	<b>11</b> SUSTAINABLE CITIES AND COMMUNITIES 	<b>12</b> RESPONSIBLE CONSUMPTION 
<b>13</b> CLIMATE ACTION 	<b>14</b> LIFE BELOW WATER 	<b>15</b> LIFE ON LAND 	<b>16</b> PEACE AND JUSTICE 	<b>17</b> PARTNERSHIPS FOR THE GOALS 	

**THE GLOBAL GOALS**  
For Sustainable Development



UNIVERSITY OF THE  
**AEGEAN**

SCHOOL OF THE ENVIRONMENT  
DEPARTMENT OF MARINE SCIENCES



**10<sup>th</sup> EUSAIR Forum**  
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## Future Outlook – BLUE ECONOMY/ACTIONS to reverse the Impacts

- The **Blue Economy** sectors face challenges in aligning with Global Sustainability Goals, including the SDGs and the EU’s Blue-Growth strategy. The **Blue Economy industries** require **skilled professionals trained in an international and interdisciplinary context**.
- The **European institutions** have yet to fully integrate **skills development** that **meets industry needs**, limiting growth, competitiveness, and opportunities within these sectors. Addressing these gaps requires a **coordinated approach** that **enhances curriculum development, fosters innovation, and ensures graduates are equipped with relevant expertise** to support sustainable economic development in blue economy industries.



## Future Opportunities – BLUE ECONOMY/ACTIONS to reverse the Impacts

The Blue Careers in Europe initiative highlights the shortage of skilled professionals in maritime industries; urgent need for educational programs to support employability.

### OPPORTUNITIES (indicative)

- The Expansion of **marine renewable energy** projects
- Development of **blue carbon initiatives** to combat climate change
- Innovation in **circular economy solutions** for plastic waste and **ocean conservation**
- Strengthening **international cooperation and governance** for sustainable ocean biological resources management



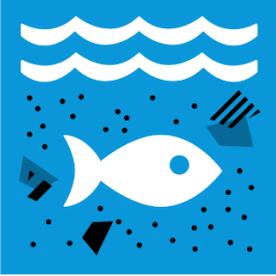
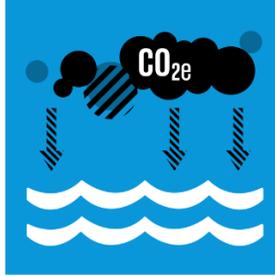
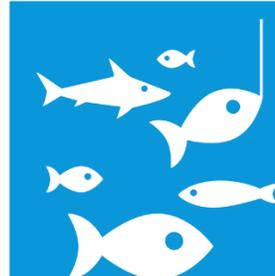
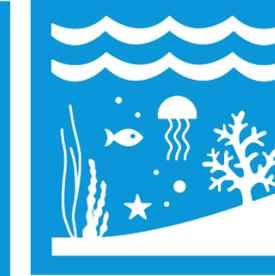
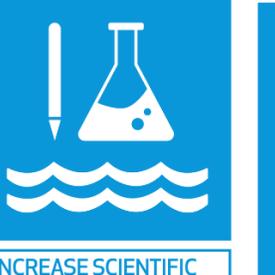
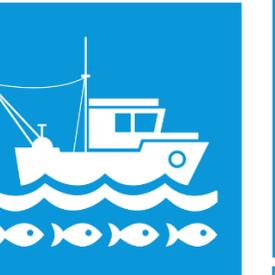
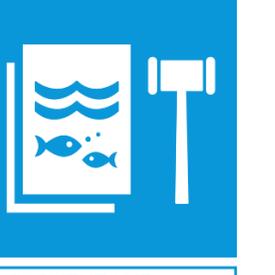
# Challenges – ACTIONS to reverse the Impacts

United Nations –  
SUSTAINABLE DEVELOPMENT



ΣΤΟΧΟΙ ΒΙΩΣΙΜΗΣ  
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17 ΣΤΟΧΟΙ ΓΙΑ ΝΑ ΑΛΛΑΞΟΥΜΕ ΤΟΝ ΚΟΣΜΟ ΜΑΣ

<b>TARGET 14-1</b>  REDUCE MARINE POLLUTION	<b>TARGET 14-2</b>  PROTECT AND RESTORE ECOSYSTEMS	<b>TARGET 14-3</b>  REDUCE OCEAN ACIDIFICATION	<b>TARGET 14-4</b>  SUSTAINABLE FISHING	<b>TARGET 14-5</b>  CONSERVE COASTAL AND MARINE AREAS
<b>TARGET 14-6</b>  END SUBSIDIES CONTRIBUTING TO OVERFISHING	<b>TARGET 14-7</b>  INCREASE THE ECONOMIC BENEFITS FROM SUSTAINABLE USE OF MARINE RESOURCES	<b>TARGET 14-A</b>  INCREASE SCIENTIFIC KNOWLEDGE, RESEARCH AND TECHNOLOGY FOR OCEAN HEALTH	<b>TARGET 14-B</b>  SUPPORT SMALL SCALE FISHERS	<b>TARGET 14-C</b>  IMPLEMENT AND ENFORCE INTERNATIONAL SEA LAW



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# Future Opportunities – BLUE Careers

## 1. Fisheries & Aquaculture

- Sustainable fishing and seafood production

- Fisheries bycatch

### Overexploitation of fish stocks / over-fishing – Direct



### Overexploitation of fish stocks / over-fishing – Indirect

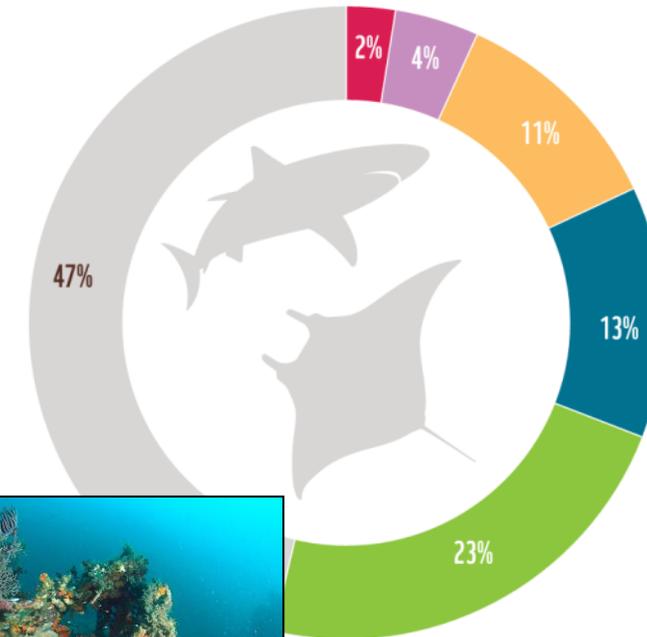


Figure 6: Shark and ray species at risk of extinction: an additional 7 per cent of the data deficient species are estimated to be threatened (Dulvy et al. 2014).

Key

- Critically endangered 25 species
- Endangered 43 species
- Vulnerable 113 species
- Near threatened 129 species
- Least concern 229 species
- Data deficient 465 species

- Ghost fishing

# Future Opportunities – BLUE Careers

## 1. Fisheries & Aquaculture 🐟

- **Responsible aquaculture practices to reduce environmental impact**

### Aquaculture

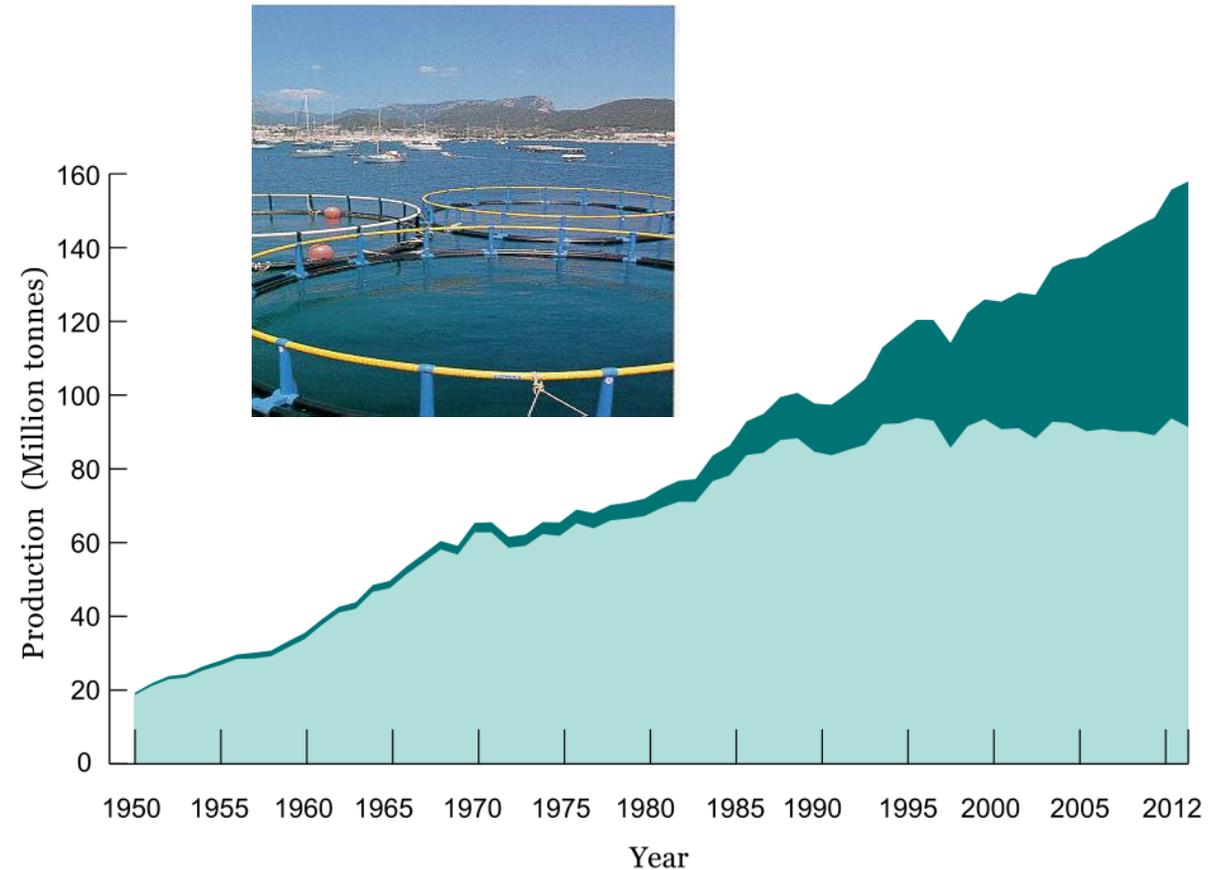
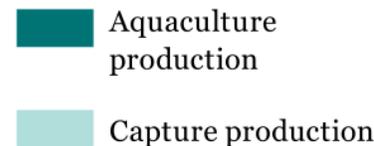
- **Increase of 8.6% per year** over the last 30 years.
- Provides **58% of fish** we eat.

BUT:

- Common cause for: **habitat destruction**
- **Pollution & Eutrophication** - e.g. through fish-feed, fish excreted, fish, drugs, and debris - spreading of disease & pathogens, spreading of invasive species

*Figure 21: The continued increase in seafood production in the last 30 years is almost entirely due to aquaculture (FAO, 2014b).*

Key



# Future Opportunities – BLUE Careers

## Renewable sources of Energy

BUT:

- Problems

**AVIFAUNA** (Migrating species)  
**CETACEANS** – sea corridors



## 2. Marine Renewable Energy ⚡

- Offshore wind farms
- Wave and tidal energy projects



# Future Opportunities – BLUE Careers

## 3. Tourism & Recreation 🌴

- Eco-tourism and sustainable coastal tourism
- Marine Protected Areas (MPAs) as tourism attractions

### MARINE PROTECTED AREAS

SMART INVESTMENTS IN OCEAN HEALTH

MPAs ARE AN ESSENTIAL TOOL FOR THE RECOVERY AND PROTECTION OF OUR OCEAN AND THE VITAL SERVICES IT PROVIDES. BUT DO THEY MAKE ECONOMIC SENSE?



#### THE STUDY

A NEW STUDY EXPLORES THE BENEFITS OF MARINE PROTECTED AREA (MPA) EXPANSION BASED ON 6 EXPLORATORY SCENARIOS AND EXAMINES WHETHER AN ECONOMIC CASE CAN BE MADE GLOBALLY FOR EXPANSION OF MPAs.

#### 6 EXPLORATORY SCENARIOS

EXPANDING MPAs TO COVER:

**10% & 30%**

INTO AREAS OF:

- LOW BIODIVERSITY & LOW HUMAN IMPACT
- HIGH BIODIVERSITY & LOW HUMAN IMPACT
- HIGH BIODIVERSITY & HIGH HUMAN IMPACT

#### HABITATS

THE HABITATS INCLUDED IN THIS STUDY ARE LIMITED TO:



#### BENEFITS

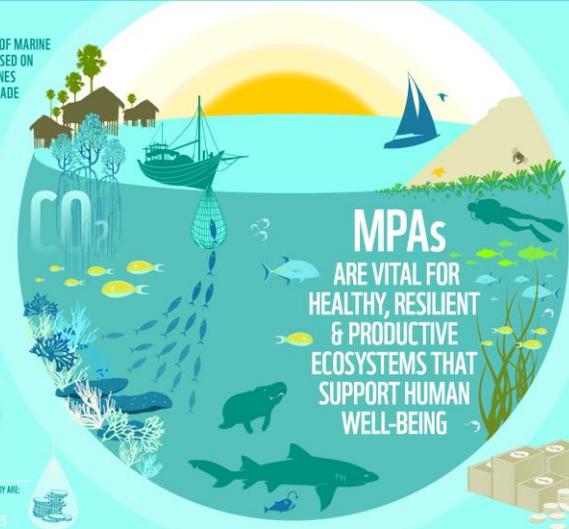
THE BENEFITS OF ECOSYSTEMS ARE LIMITED TO INCLUDE:



#### COSTS

THE COSTS OF EXPANDING MPAs THAT WERE INCLUDED IN THE STUDY ARE:

SET UP COSTS + OPERATING COSTS + OPPORTUNITY COSTS TO FISHERIES



**MPAs ARE VITAL FOR HEALTHY, RESILIENT & PRODUCTIVE ECOSYSTEMS THAT SUPPORT HUMAN WELL-BEING**

#### THE RESULTS

THIS STUDY OF THE ECONOMIC IMPACT OF EXTENDING MPAs GLOBALLY SUGGESTS ECONOMIC BENEFITS OUTWEIGH THE COSTS

**BENEFIT: COST RATIO**

ACROSS ALL SIX SCENARIOS, BENEFITS OUTWEIGH THE COSTS RANGING BETWEEN

**3:1 & 20:1**

#### ECONOMIC BENEFITS

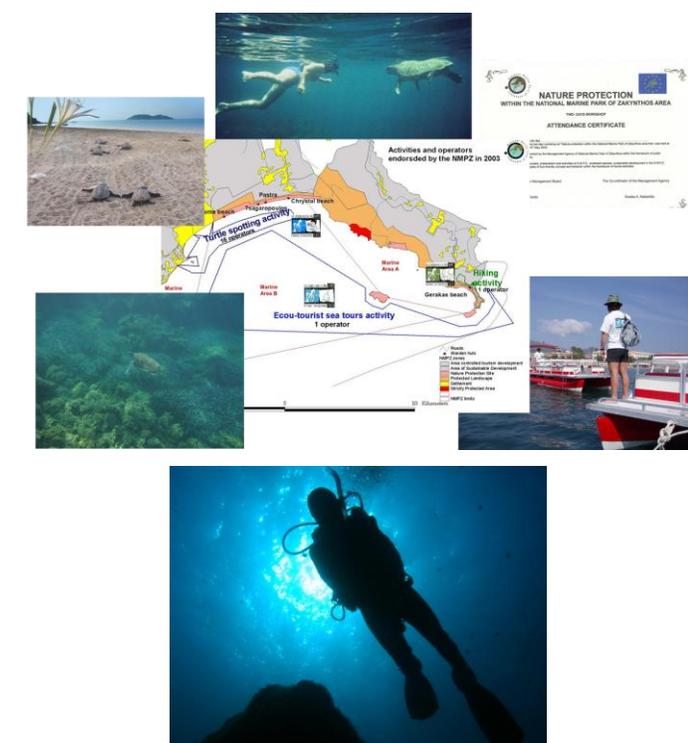
THE NET ECONOMIC BENEFIT OF EACH SCENARIO IS ESTIMATED TO BE IN THE RANGE OF USD 490-920 BILLION OVER THE PERIOD 2015-2050

THIS ADDS AN IMPORTANT REASON FOR GOVERNMENTS, BUSINESS, COMMUNITIES AND FINANCIAL INSTITUTIONS TO INCREASE INVESTMENT IN MPA IMPLEMENTATION

#### TOTAL NET BENEFITS

SCENARIO OF EXPANDING MPAs	THE SCENARIO OF EXPANDING MPAs
<b>10%</b> US\$622-923 BILLION	<b>30%</b> US\$791-1,145 BILLION
<b>MINUS COSTS:</b> US\$445-47 BILLION	<b>MINUS COSTS:</b> US\$223-228 BILLION
<b>GLOBAL TOTAL NET BENEFITS FROM 2015 TO 2050</b> <b>US\$490-920 BILLION</b>	

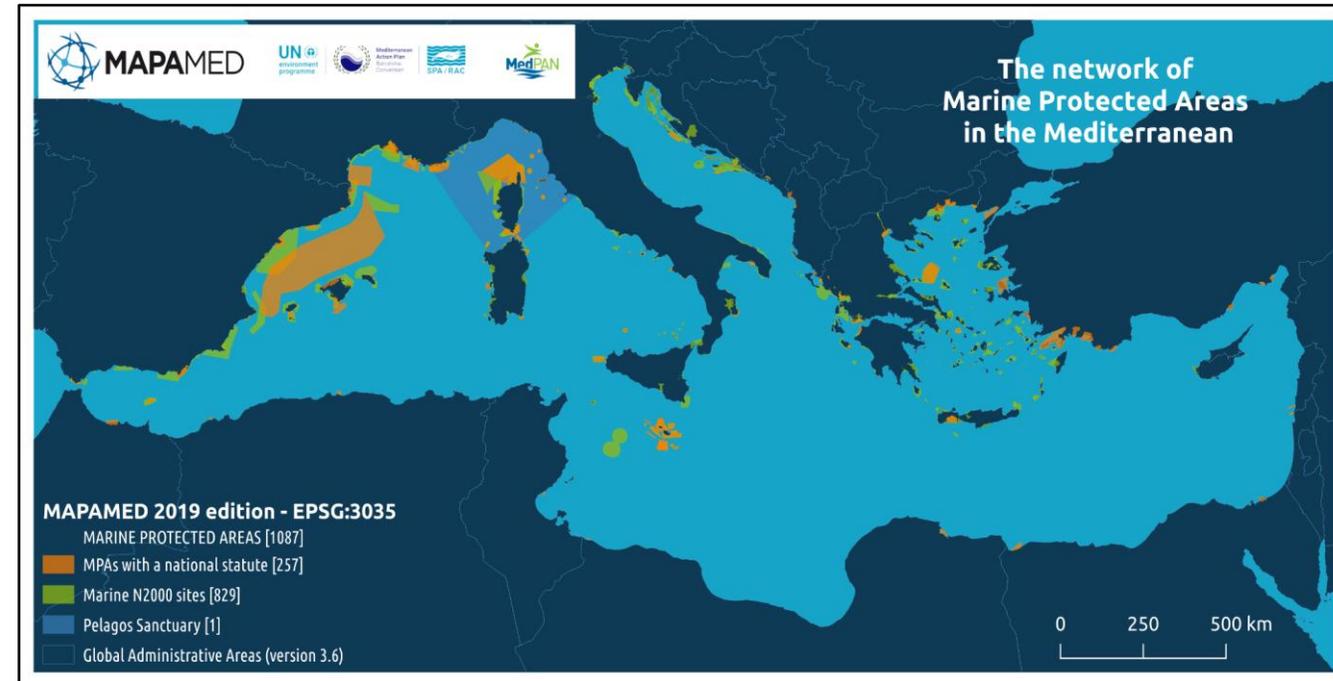
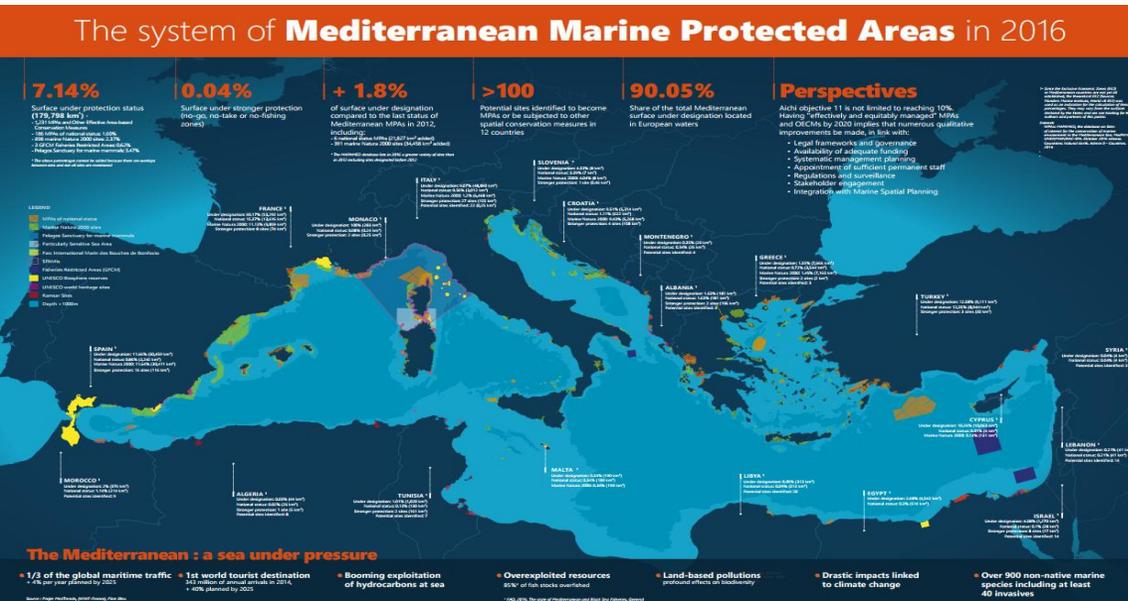
NET IMPROVEMENT ACROSS THE SCENARIOS AS MEASURED BY THE BENEFITS MINUS THE COSTS



# Future Opportunities – BLUE Careers

## 3. Tourism & Recreation 🌴

- Marine Protected Areas (MPAs) as tourism attractions



Since the end of 2016, 163 new MPAs have been designated in the Mediterranean and contribute to a 2 points overall net gain in the percentage of surface under designation. A total of 23 nationally designated MPAs have been declared in 9 Mediterranean countries covering 48,764 km<sup>2</sup>, or 1.9 % of the Mediterranean and a total of 140 new marine Natura 2000 sites have been created in 3 Mediterranean countries, covering about 17,782 km<sup>2</sup>, or 0.7 % of the Mediterranean.

# Future Opportunities – BLUE Careers

## 3. Tourism & Recreation 🌴

### The Ocean Dimension of the 2030 Agenda

- **Marine Protected Areas (MPAs) as tourism attractions**

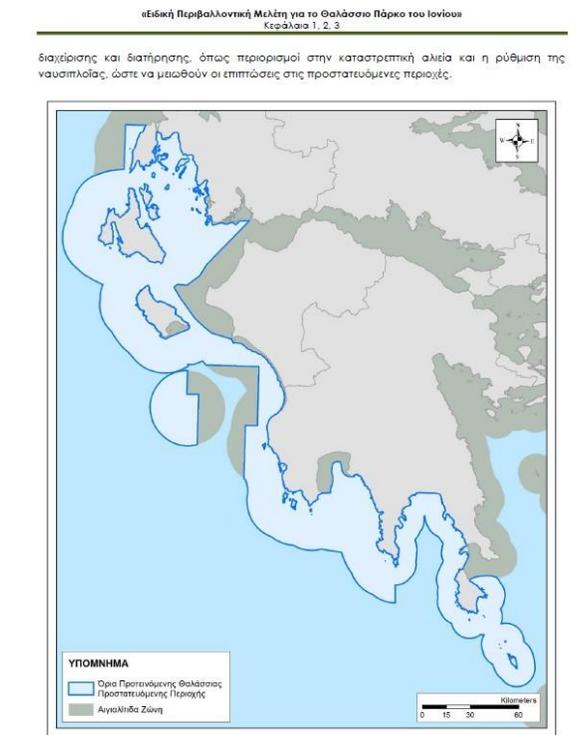
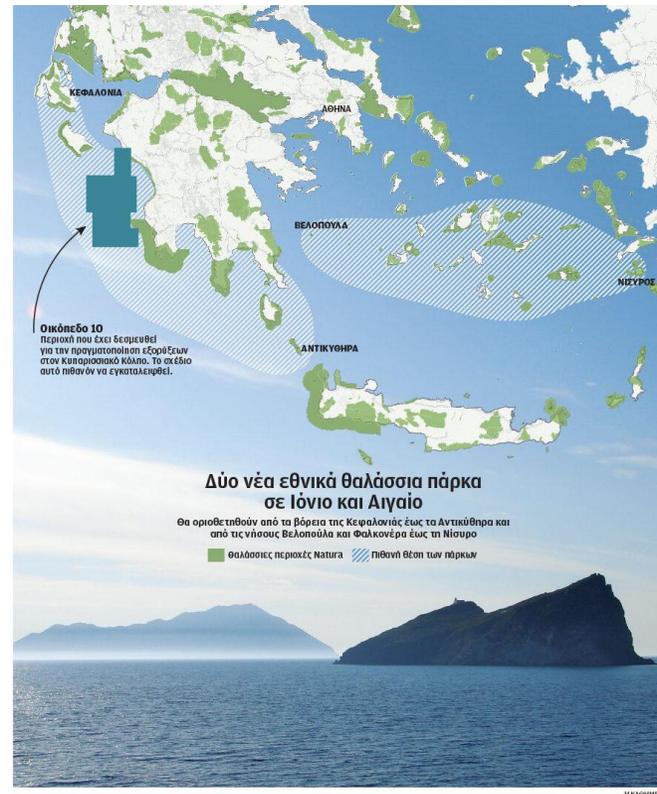
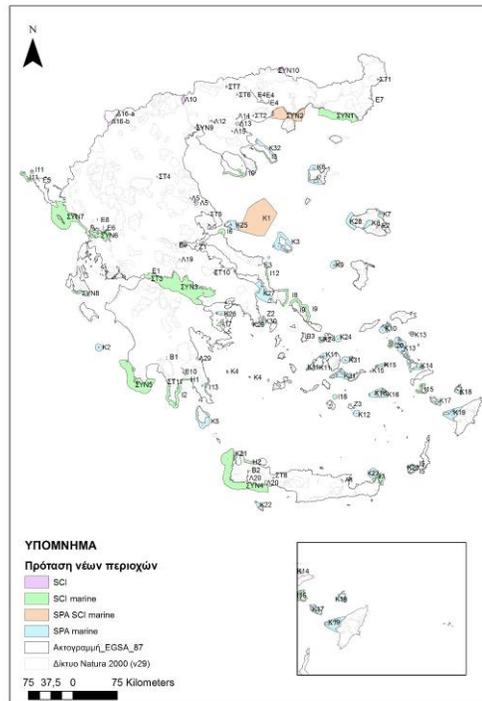
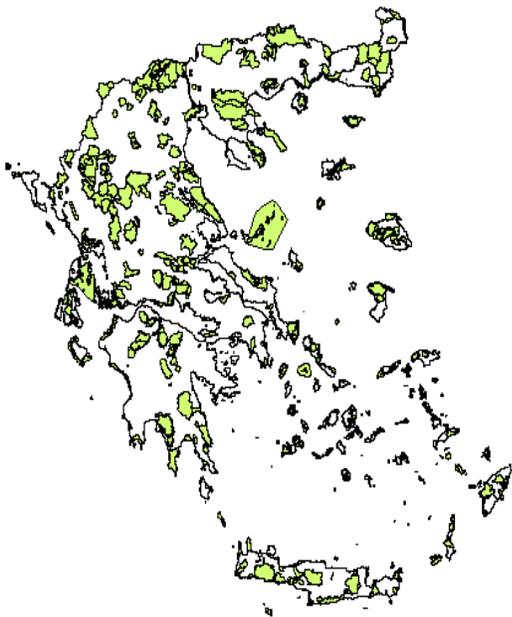
**NETWORK OF PROTECTED AREAS IN GREECE - 1996**

**NETWORK OF PROTECTED AREAS . 2017**

- 100 NEAreas
- MPAs from 6% σε > 20%)

**NATIONAL MARINE PARK – S AEGEAN SEA**

**NATIONAL MARINE PARK – IONIAN SEA**



Εικόνα 1.2.1-1. Προγράμ. μελέτης (Θαλάσσιο Πάρκο Ιονίου)

## Future Opportunities – BLUE Careers

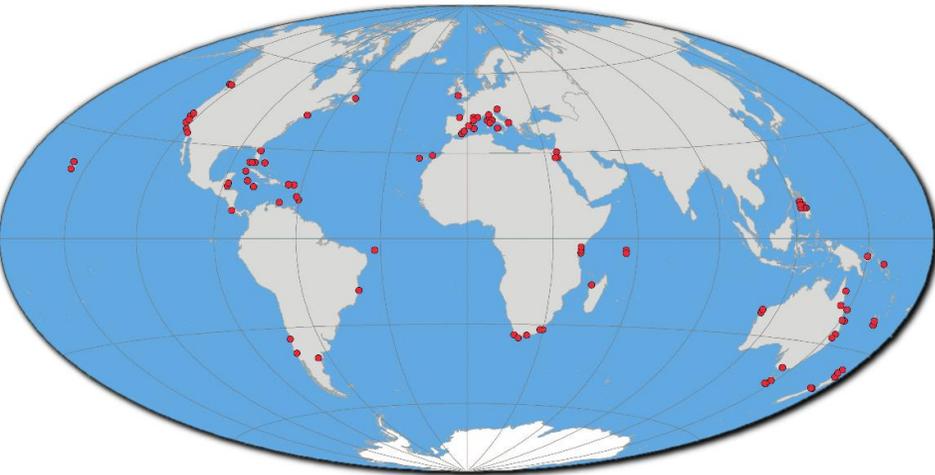
### 3. Tourism & Recreation 🌴

- **Marine Protected Areas (MPAs)**

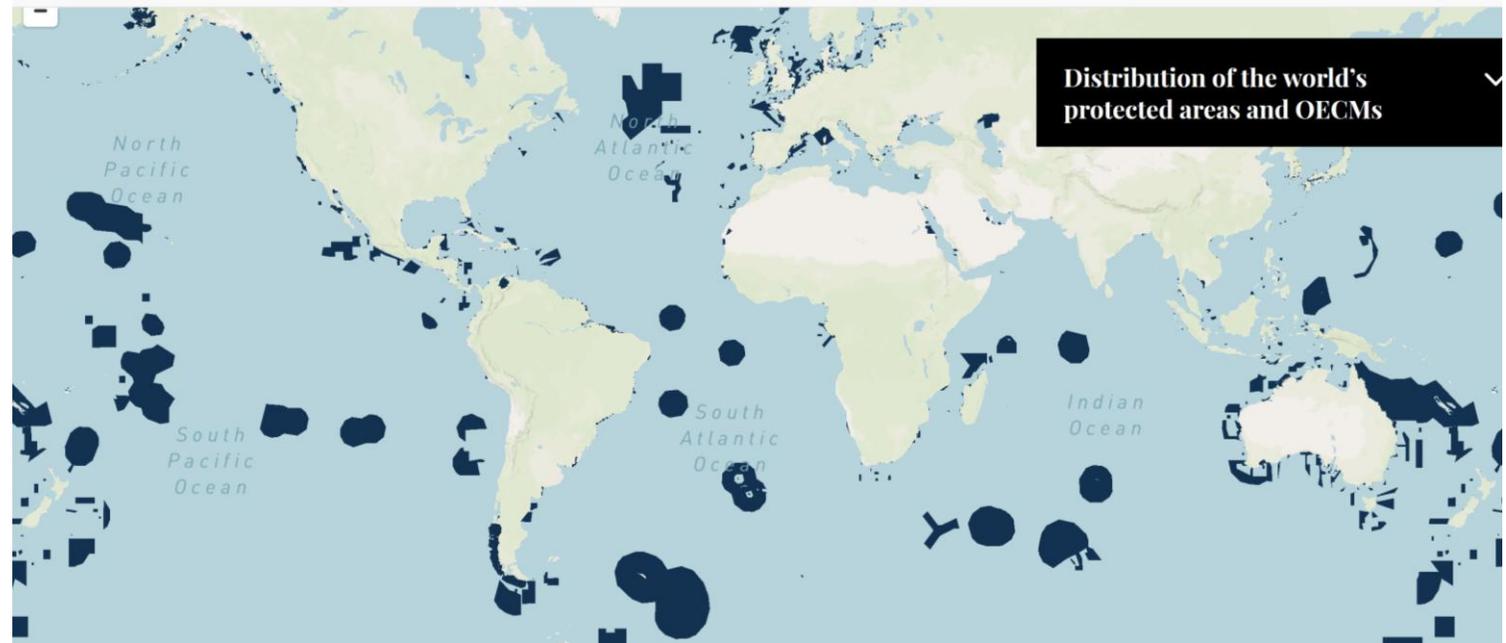
- In **2015** at least 11.300 MPAs existed worldwide, covering **3.7% of the ocean**, in **2021 7.7%** of the ocean (But only a **small number** of them were Marine Reserves = 1.4% of the global seas receive complete and permanent)

**Goal = protect at least 10% of the oceans and seas** through the establishment of MPAs by 2020! (*Convention on Biological Diversity - IUCN*) **not achieved**

### The Ocean Dimension of the 2030 Agenda



- **Next Goal = From 7.7% now-days to 30% in 2030 (The Ocean Dimension of the 2030 Agenda: Conservation and Sustainable Use of the Ocean, Seas, and Marine Resources for Sustainable Development)**



# Future Opportunities – BLUE Careers



## 4. Maritime Transport & Ports

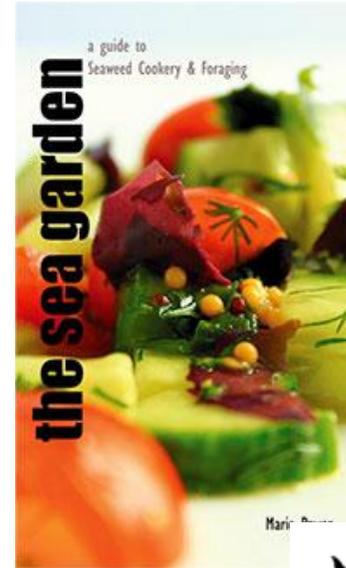
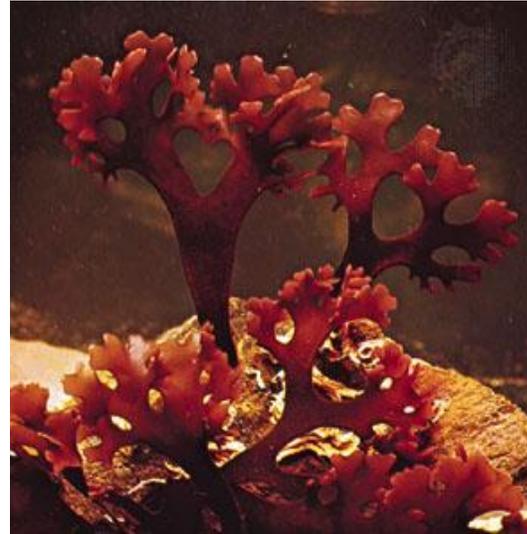
- Green shipping and fuel-efficient vessels
- Sustainable port management & logistics



# Future Opportunities – BLUE Careers

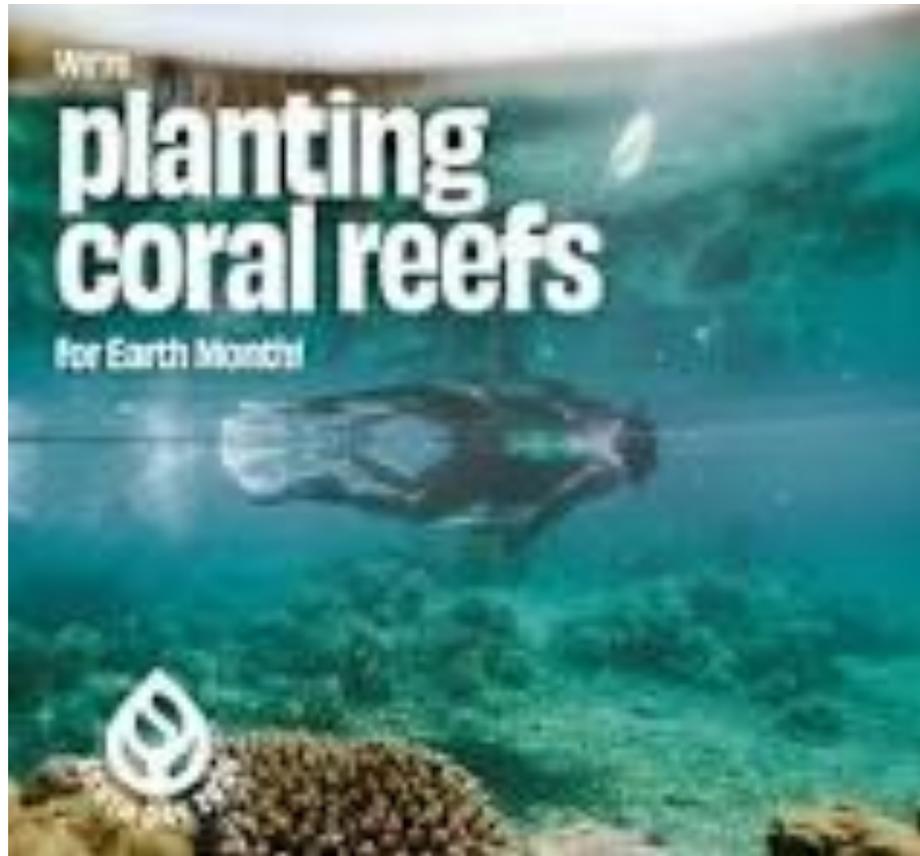
## 5. Biotechnology & Marine Resources

- Marine-based pharmaceuticals and bio-products
- **Seaweed farming and algae-based biofuels**



6. Coastal Protection & Climate Adaptation 

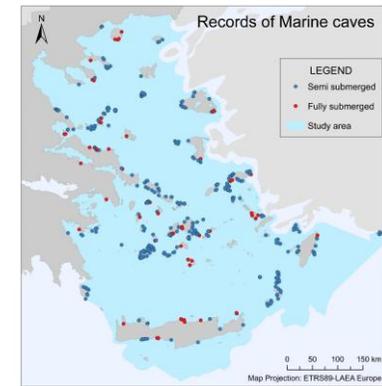
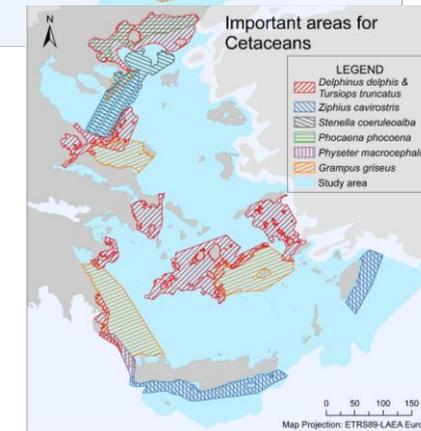
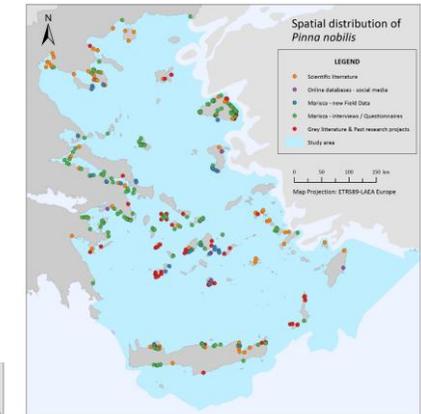
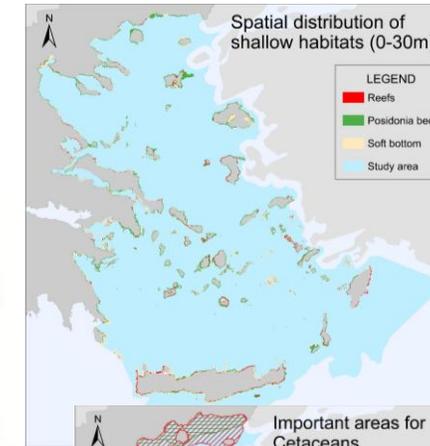
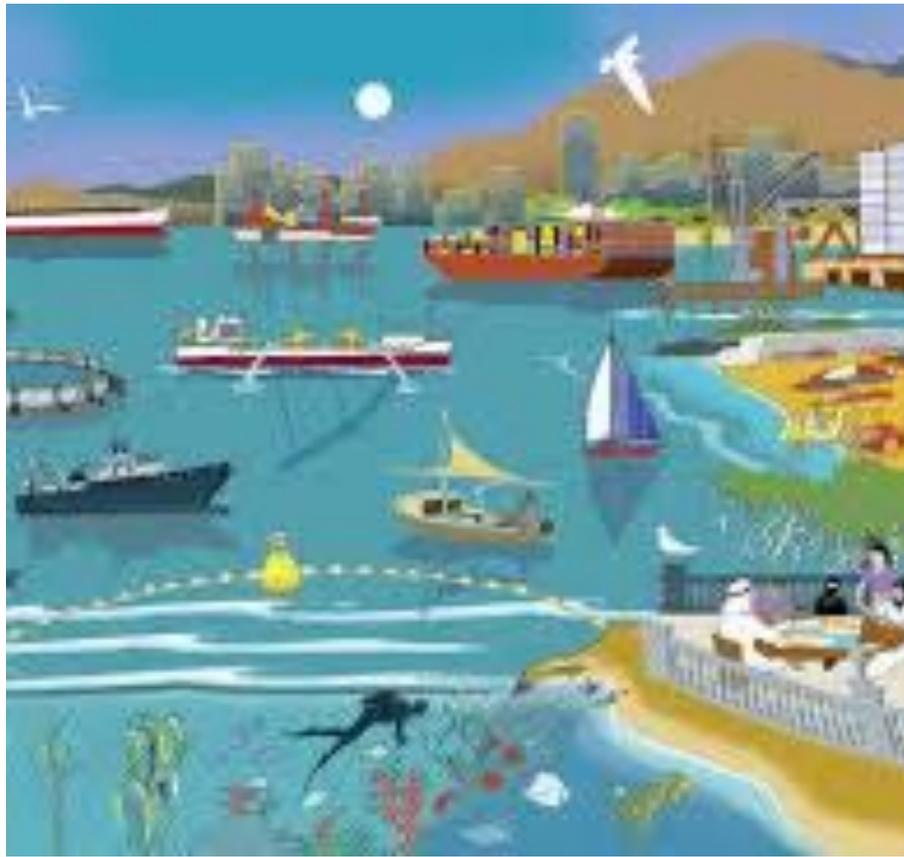
**Future Opportunities – BLUE Careers** • Restoration of Mangroves and Coral Reefs



# Future Opportunities – BLUE Careers

## 6. Coastal Protection & Climate Adaptation

- Marine Spatial Planning and disaster risk reduction



## BLUE ECONOMY ..... In conclusion

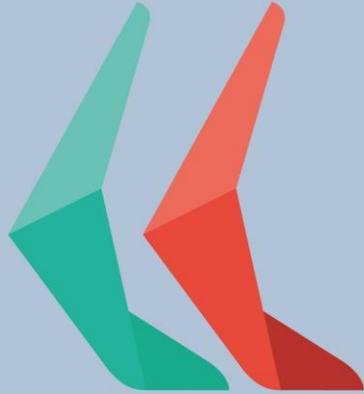
- The **Blue Economy** presents a **transformative approach** to managing ocean resources **sustainably**, balancing **economic development** with **environmental protection**.
- By **investing in sustainable ocean industries**, implementing **strong policies**, and fostering **global cooperation**, we can ensure a **prosperous and healthy future for our oceans and communities**.



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Thank you