

# ***Ocean observations, data and science in support of policy and society***

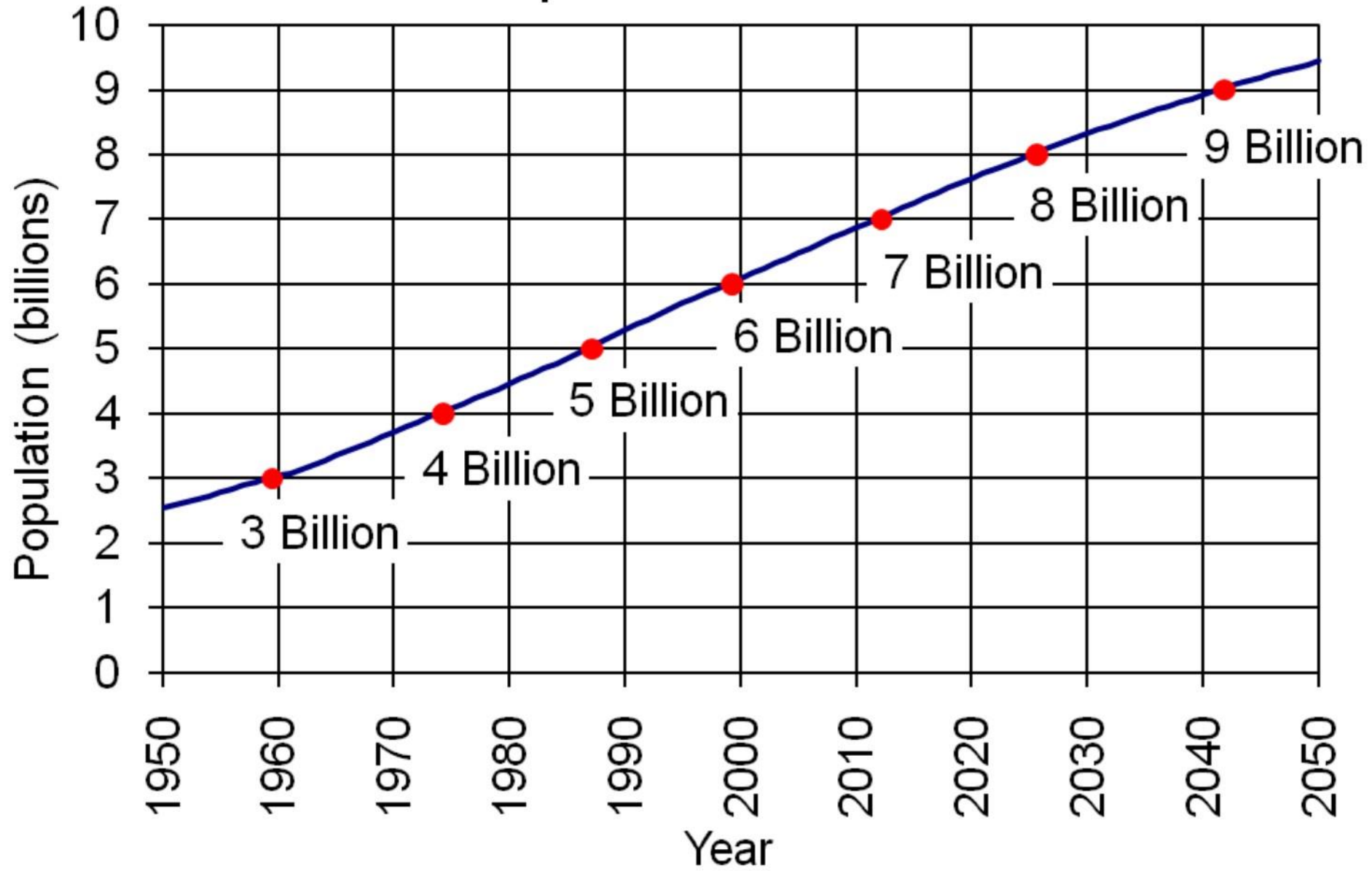
***EU's Marine Knowledge 2020 strategy in the context of its Integrated  
Maritime Policy***

**Jan-Bart Calewaert**

EMODnet Secretariat – [janbart.Calewaert@emodnet.eu](mailto:janbart.Calewaert@emodnet.eu)



# World Population: 1950-2050



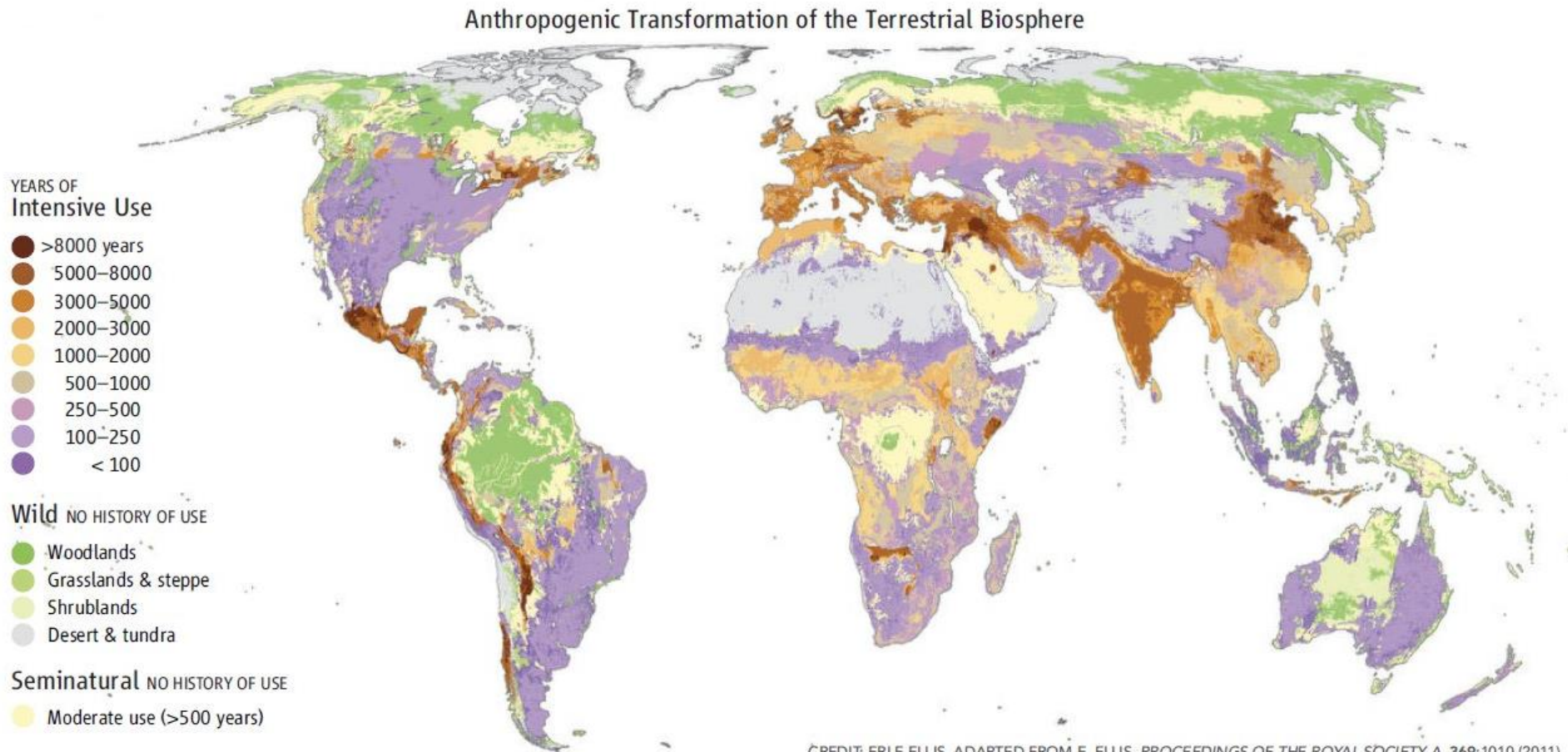
Source: U.S. Census Bureau, International Data Base, June 2011 Update.

# Pressures on land and freshwater

## Countries Overpumping Aquifers



# Pressures on land and freshwater



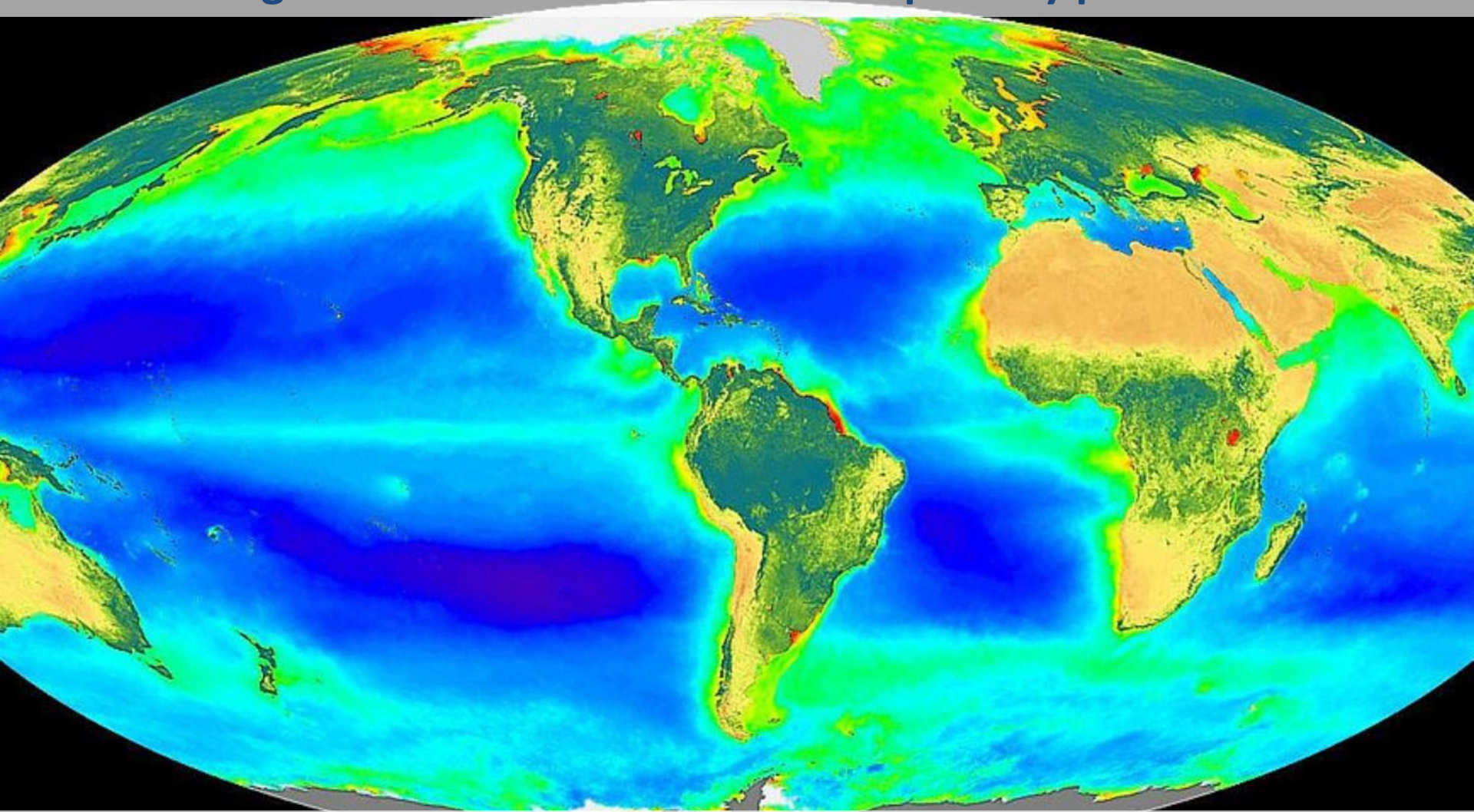
CREDIT: ERLE ELLIS, ADAPTED FROM E. ELLIS, *PROCEEDINGS OF THE ROYAL SOCIETY A*, 369:1010 (2011)



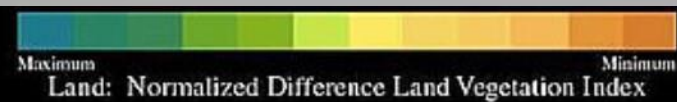
**Oceans cover about 71% of our planet and capture about 50% of the sun's radiated energy**

**Space and energy**

and generate about half the annual primary production



**Vital resources (O<sub>2</sub>, food, raw materials, medicines ...)**



# The ocean: **an economic opportunity** for sustainable growth



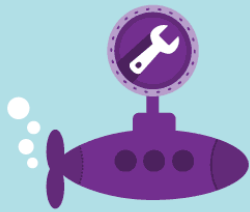
- Underwater expertise and technological tools
- Knowledge on marine environment and diversity of marine life

# BLUE GROWTH

71%  
of the Earth surface  
is **WATER**

## Why?

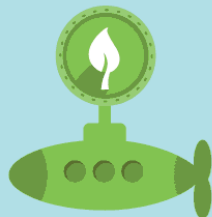
Blue Growth is the European Commission's initiative to further harness the potential of Europe's oceans, seas and coasts for:



**Jobs**



**Value**

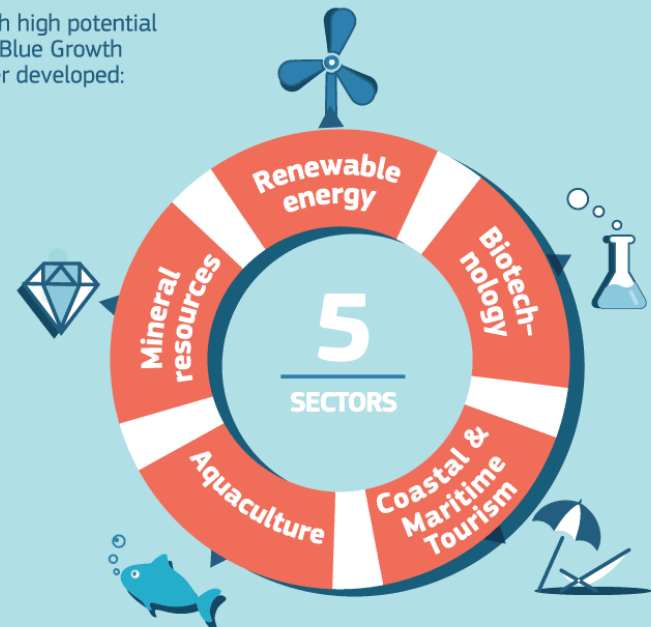


**Sustainability**



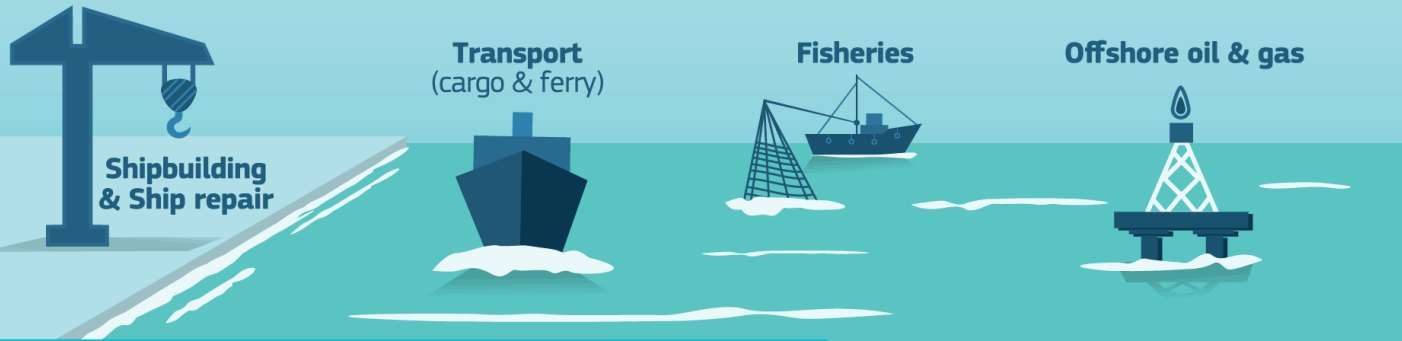
## Focus Area

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





other sectors of the blue economy crucial for value & jobs



## The 5 Blue Growth sectors

**Biotechnology**  
medicines,  
industrial enzymes

**Renewable energy**  
wind, waves,  
tides, biofuel

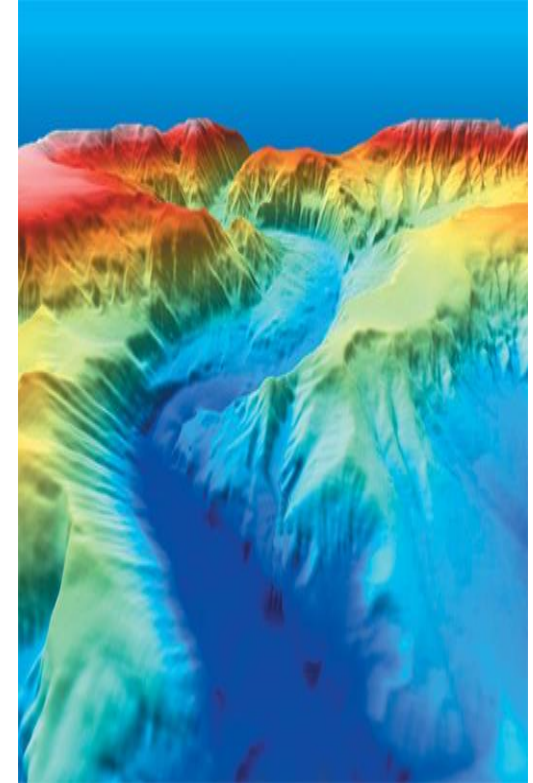
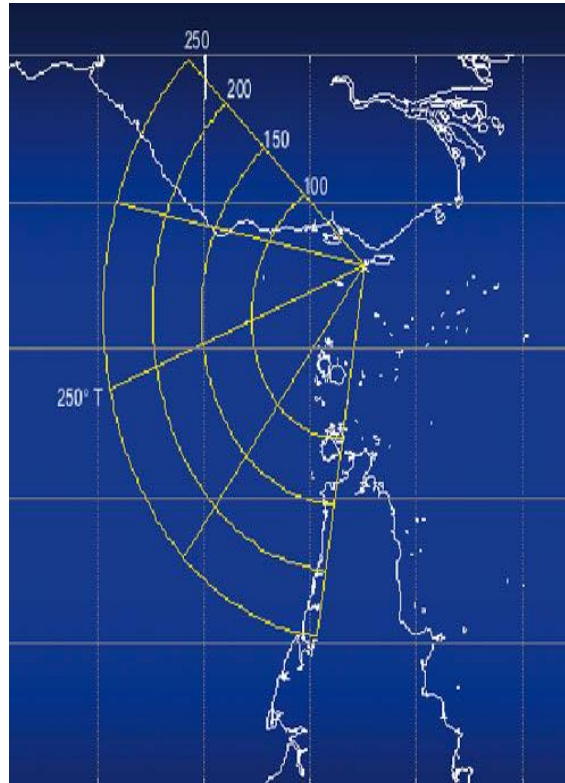
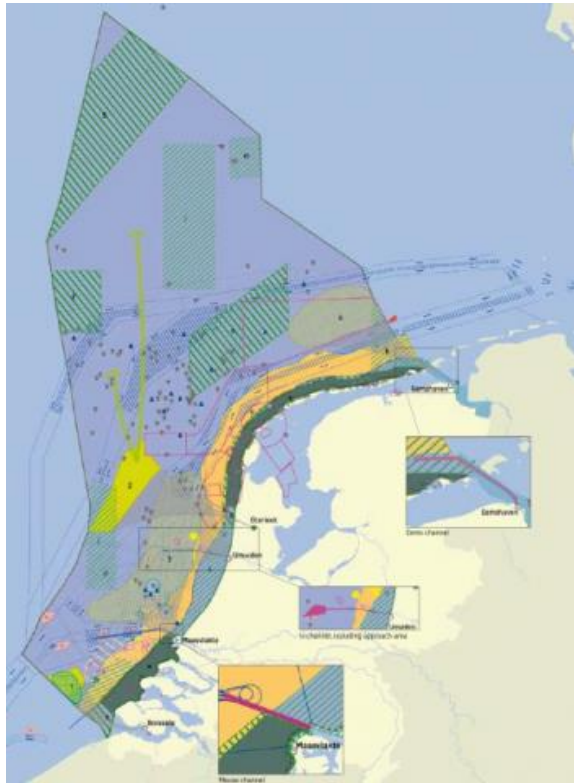
**Coastal & Maritime Tourism**  
coastal tourism,  
cruise tourism,  
yachting

**Aquaculture**  
farming of fish,  
shellfish, marine plants

**Mineral resources**  
gravel, sand,  
zinc, cobalt,  
copper

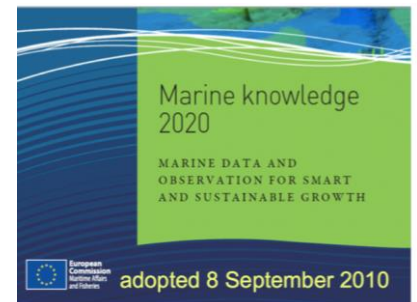


# Integrated Maritime Policy

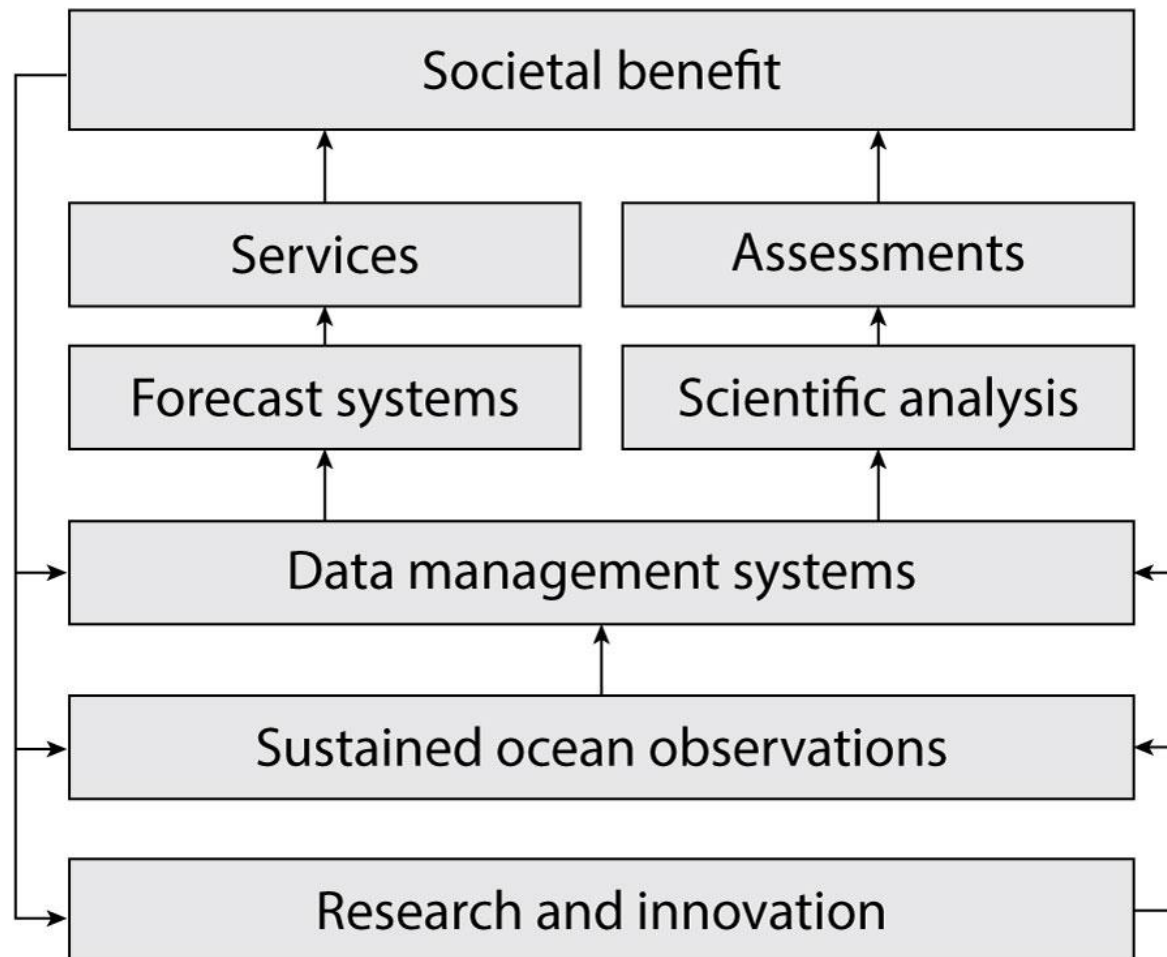


EU IMP covers 5 cross-cutting policies:

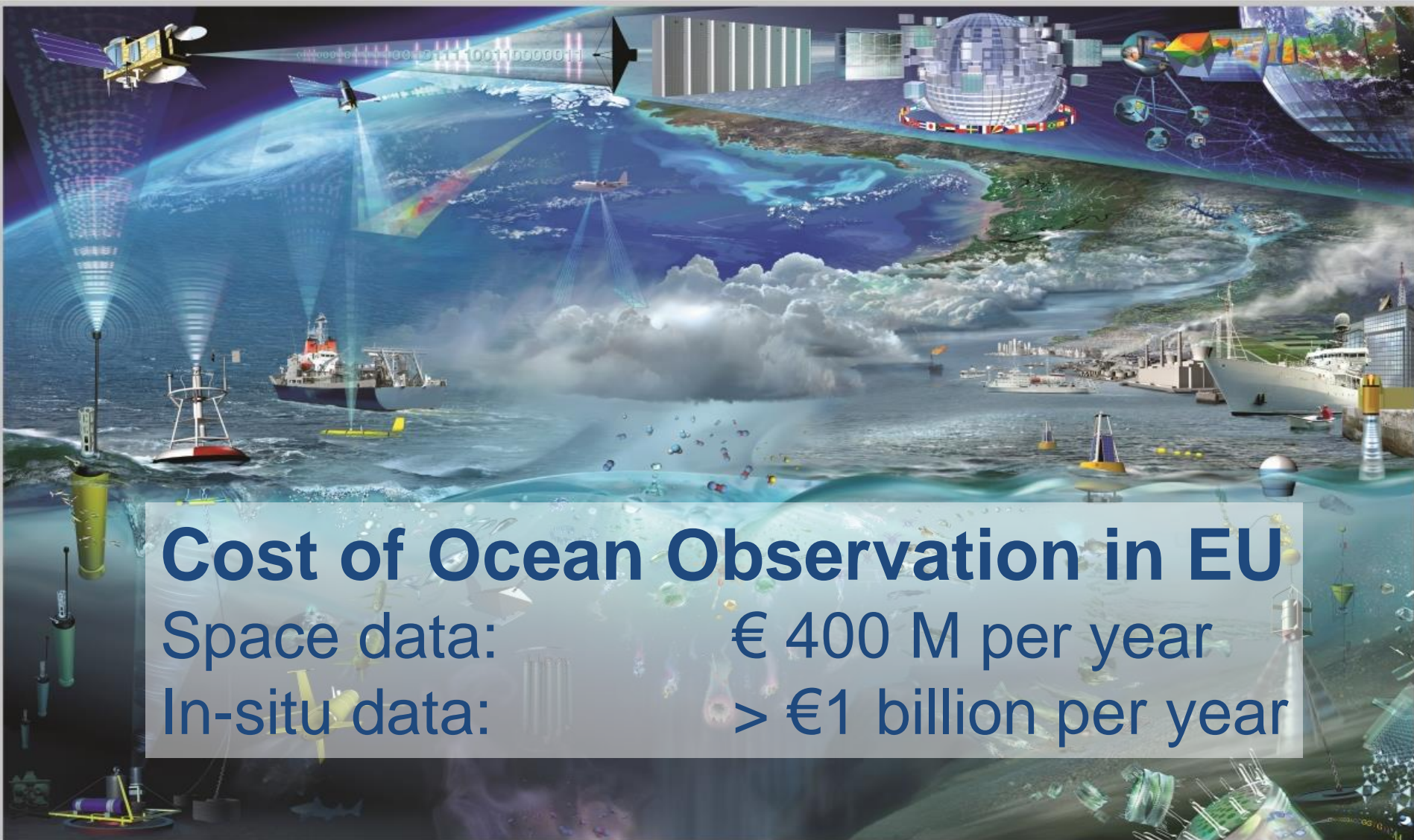
- **Blue growth**
- **Marine data and knowledge**
- Maritime spatial planning
- Integrated maritime surveillance
- Sea basin strategies



# The **value** of ocean observations



There is only one Earth, with only one history, and we get only one chance to record it. Ideas not followed through can be taken up again later. A record not made is gone for good. *Editorial - Nature 450*, 761 (6 December 2007)

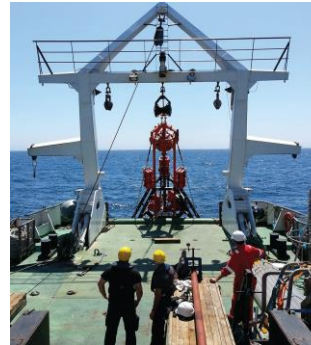
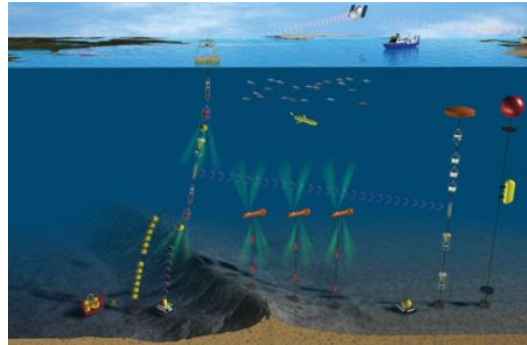
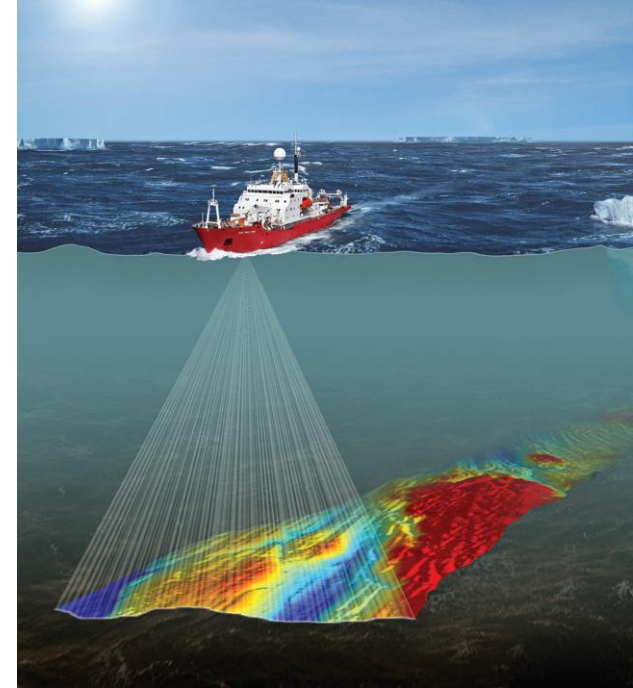
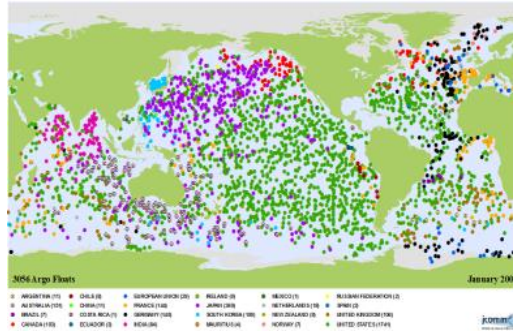


## Cost of Ocean Observation in EU

Space data: € 400 M per year

In-situ data: > €1 billion per year

# Maria Damanaki, former Commissioner for Maritime Affairs and Fisheries



***(...) the data collected through observations can only generate knowledge and innovation if Europe's engineers and scientists are able to find, access, assemble and apply them efficiently and rapidly. At present this is often not the case.***

# Marine Knowledge 2020 – a new vision

- Change the present fragmented EU repositories of marine data with an interoperable sharing framework
- Move to a new paradigm where data are collected once and used for many purposes
- Optimize observation networks by showing how monitoring meets the needs of public and private users (CHECKPOINT)



# Target for 2020

## Seamless multi-resolution digital seabed map of European waters by 2020

- Highest resolution possible in areas that have been surveyed;
- Topography, geology, habitats and ecosystems;
- Accompanied by timely information on
  - Physical, chemical and biological state of the overlying water column
  - Oceanographic forecasts;
- Easily accessible, interoperable and free of restrictions on use;
- Accompanied by a process that helps Member States maximise the potential of their marine



# Data

## **Bathymetry**

Data on bathymetry (water depth), coastlines, and geographical location of underwater features such as wrecks

## **Geology**

Data on seabed substrate, seafloor geology, coastal behaviour, geological events and probabilities, and minerals

# Metadata

## **Biology**

Data on temporal and spatial distribution of species abundance and biomass from several taxa

## **Human activities**

Data on the intensity and spatial extent of human activities at sea



# EMODnet

Central Portal

[www.emodnet.eu](http://www.emodnet.eu)

## **Seabed habitats**

Data on modelled seabed habitats based on seabed substrate, energy, biological zone and salinity

## **Chemistry**

Data on concentrations of chemicals (pesticides, heavy metals, antifoulants) in water, sediments and biota

## **Physics**

Data on salinity, temperature, waves, currents, sea level, light attenuation and FerryBox data

# Data Products

# Data Services

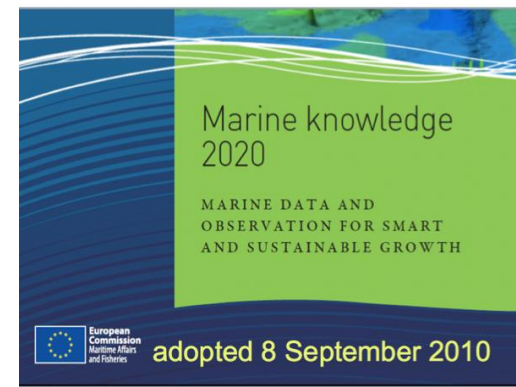




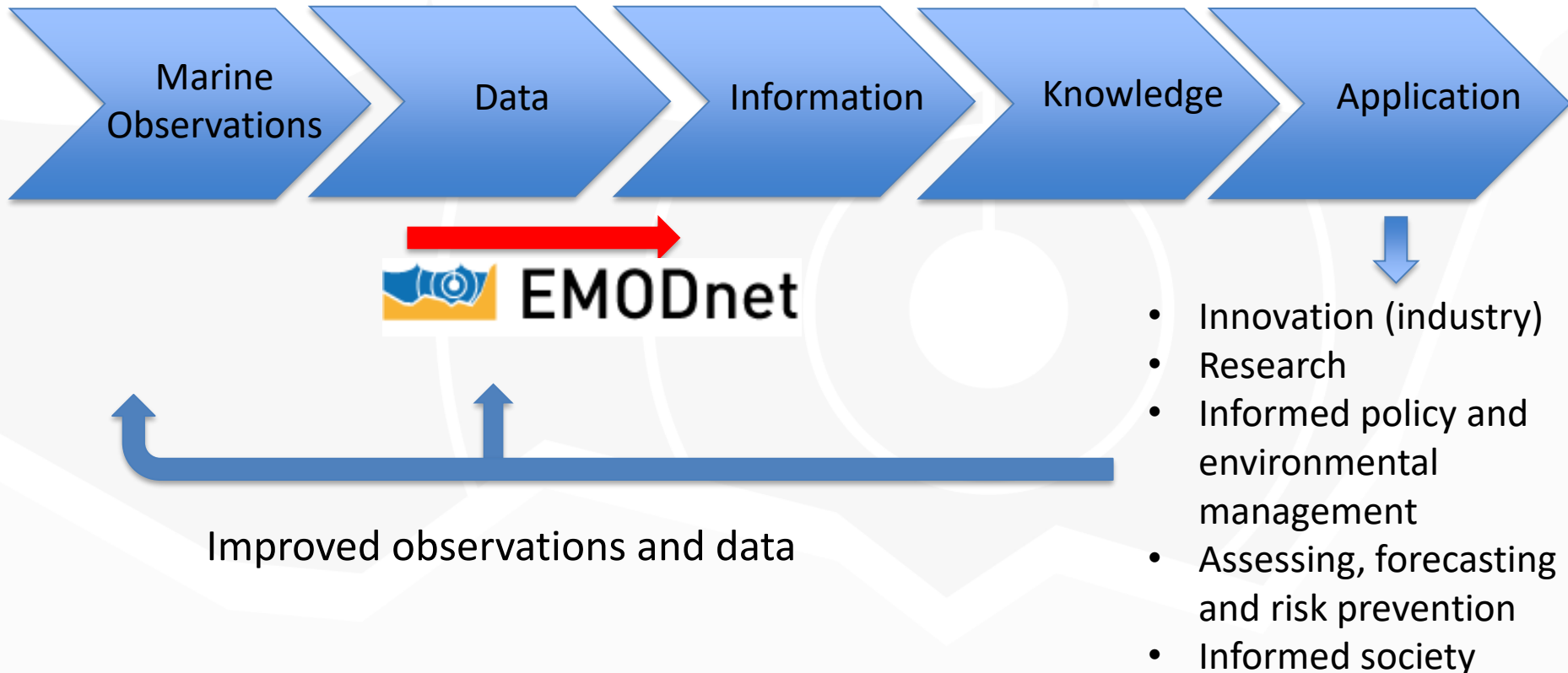
**EMODnet**



# Marine Knowledge – Why EMODnet?



**Data can only create knowledge if it can be found, accessed and used**



# Conserve and Sustainably Use Oceans, Seas and Marine Resources for Sustainable Development



1. **Reduce marine pollution**
2. **Manage & protect marine & coastal ecosystems (by 2020)**
3. **Address impacts of ocean acidification**
4. **Eliminate overfishing, manage stocks scientifically (by 2020)**
5. **Conserve > 10% of coastal and marine areas (by 2020)**
6. **Prohibit harmful fisheries subsidies (by 2020)**
7. **Ensure economic benefits to SIDS & LDCs from sustainable use of marine resources (e.g. fisheries, aquaculture, tourism)**
  - a. **Build science capacity through IOC Criteria and Guidelines on the Transfer of Marine Technology**
  - b. **Access of artisanal fishers to resources and markets**
  - c. **Conventions, UNCLOS**



INTERGOVERNMENTAL OCEANOGRAPHIC COMMISSION  
(of UNESCO)

Fifty-first Session of the Executive Council  
UNESCO, Paris, 3–6 July 2018

## ROADMAP

Item 4.1 of the Revised Provisional Agenda

REVISED ROADMAP FOR THE UN DECADE  
OF OCEAN SCIENCE FOR SUSTAINABLE DEVELOPMENT

### A Vision for the Decade

Develop scientific knowledge, build  
infrastructure and foster partnerships  
for a sustainable and healthy ocean



2021 United Nations Decade  
2030 of Ocean Science  
for Sustainable Development



# The Science We Need for the Ocean We Want

The United Nations  
Decade of Ocean Science  
for Sustainable Development  
(2021-2030)



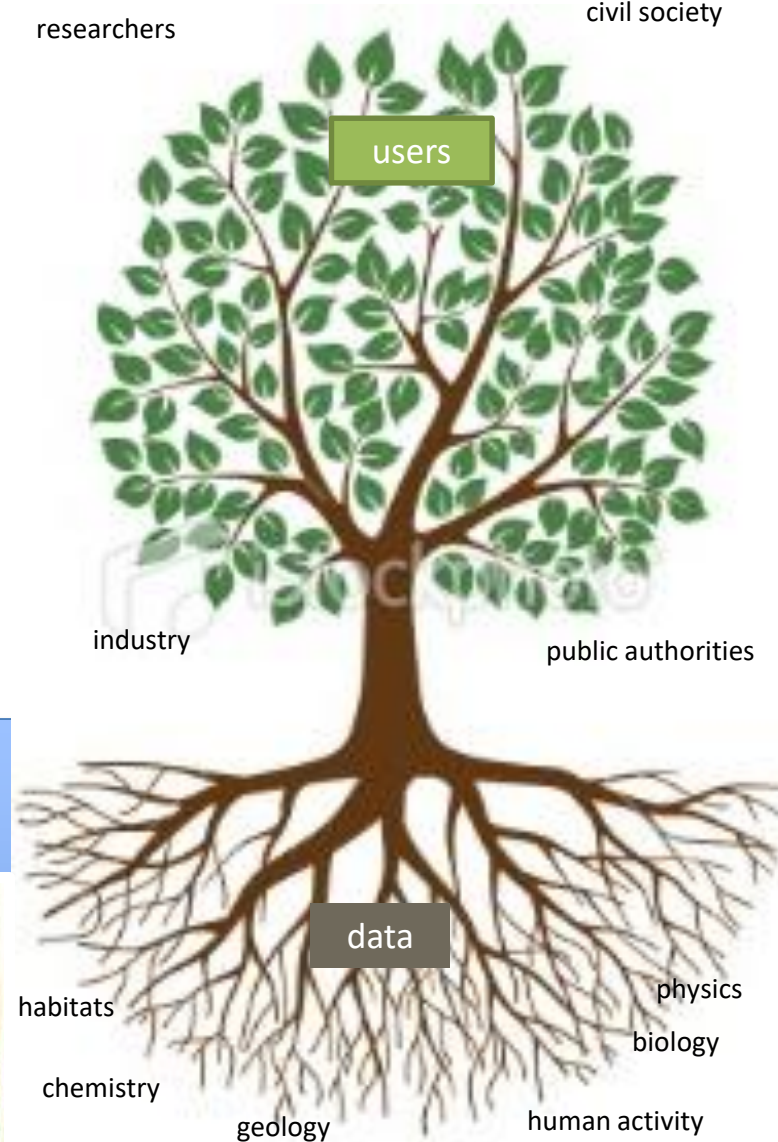
***Thank you for your attention !***



# Tree of marine knowledge



researchers civil society



Data acquisition by sampling,  
observation & monitoring activities