

## La Starfish Mission: Eu Ocean and Water

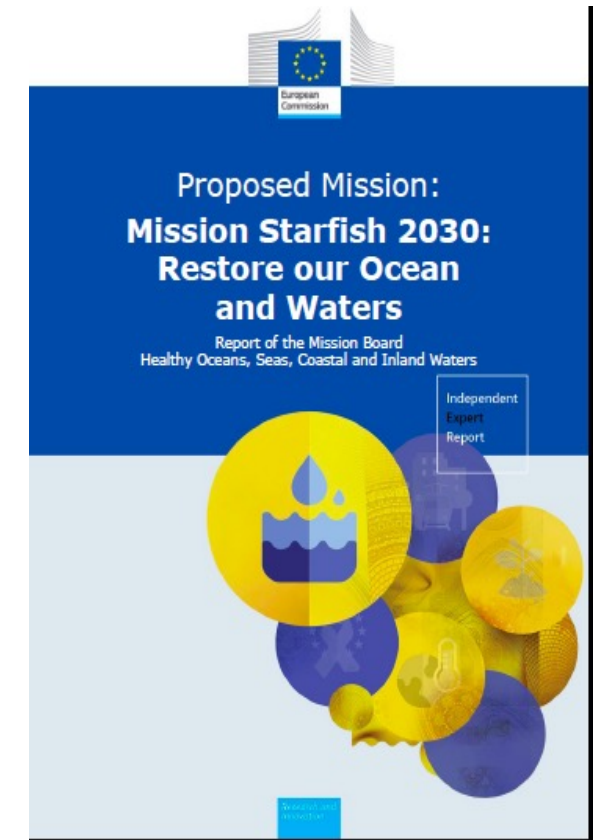
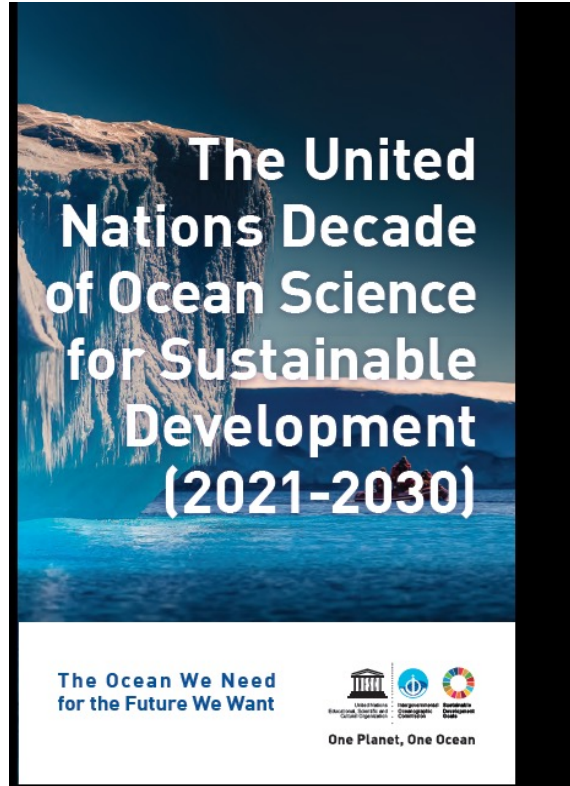
***Cristina Pedicchio*** – Università di Trieste e Board Europeo della Missione HE  
Restore our Ocean and Water 2030

«L'ECONOMIA BLU PER LA TRANSIZIONE ECOLOGICA DEL PAESE»

**BOLOGNA, 15 Aprile 2023**



# The Context





# HORIZON EUROPE

THE EU  
RESEARCH &  
INNOVATION  
PROGRAMME 2021 – 27



This presentation is based on the political agreement of 11 December 2020 on the Horizon Europe. Information on some parts is pending revision.

19 March 2021

# EUROPERAN COMMISSION New Priority - MISSIONS

## The EU must look at the audacity and complexity of the Apollo program



### MISSIONS

## Mission-Oriented Research & Innovation in the European Union

A problem-solving approach to fuel innovation-led growth  
by Mariana MAZZUCATO

- create a European public good
- audacious and with a wide social relevance
- clear direction and concrete results
- targeted, measurable over time
- ambitious but realistic
- interdisciplinary, cross-sectoral research and innovation actions
- capture the public's imagination

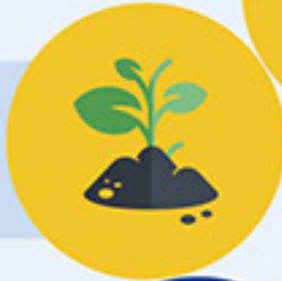
*Mariana Mazzucato*



# The main novelty in Horizon Europe: Missions

## MISSION AREAS:

Soil health and food



Adaptation to climate change, including societal transformation



Climate-neutral and smart cities



Cancer



Healthy oceans, seas, coastal and inland waters



#HorizonEU



European  
Commission



EUROPEAN UNION



# EU MISSIONS

**RESTORE OUR OCEAN & WATERS**

**Concrete solutions for our greatest challenges**



#EUmissions #HorizonEU #MissionOcean



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## Why the **ocean** and **waters** matter

Life on Earth depends on the **health** of the connected system of the ocean, seas and inland waters, which covers around 75% of the Earth's surface. This system regulates our climate and provides oxygen, drinking water, clean energy and food.

**40% of Europeans** live in coastal areas, and at least **4.5 million people** in the EU work in sectors related to our ocean, seas and coasts.

Human-made changes are putting our ocean and waters at serious risk. **But it's not too late.** We can still reverse the negative trend, by shifting our focus from exploiting our ocean and waters to making them **sustainable** and **resilient**, and ensuring economic recovery goes hand in hand with environmental protection.

WHAT'S  
IN IT FOR ME?





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WHAT'S  
IN IT FOR ME?



## Why the **ocean and waters** matter

### What opportunities we have if we take care of the ocean and waters

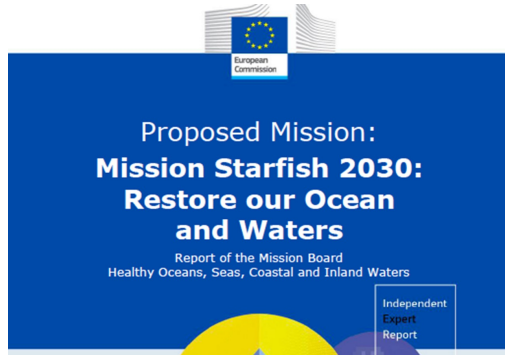
A **restored ocean** and **healthy waters** can play a key role in improving our lives and achieving:

- **Climate neutrality:** the ocean and waters are major carbon sinks and are also essential for adapting to a changing climate
- **Biodiversity:** the ocean and waters are home to a rich diversity of species
- **Economic prosperity:** the ocean is estimated to generate €2.5 trillion of goods and services per year by 2030





# Mission Starfish timeline




Mission concept and document presentation by the Board- 2020

Implementation Plan by the EC  
September 2021


Communication Approval, and launch of the Mission  
September 2021



# The Ocean and Waters are under Threat



Inadequate  
Governance




Unsustain-  
able human  
footprint

*Challenges to  
healthy  
ocean and  
waters*

Climate  
change

Lack of  
understan-  
ding and  
connection

# Unsustainable exploitation of sea and water resources



**Living resources**

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Fish and shellfish harvesting

Fish and shellfish processing

Marine plants and algae harvesting

Hunting and collecting for other purposes

Aquaculture



**Extraction of non-living resources**


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Extraction of minerals including aggregates

Extraction of salt

Extraction of oil and gas

Extraction of water



**Production of renewable energy**

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Renewable energy generation

Transmission of electricity and communications




**Maritime transport**

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Transport infrastructure

Restructuring of seabed morphology

Transport — shipping



**Tourism and leisure**

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Tourism and leisure infrastructure

Tourism and leisure activities



**Public sector**

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Military operations

Research, survey and educational activities

Land claim

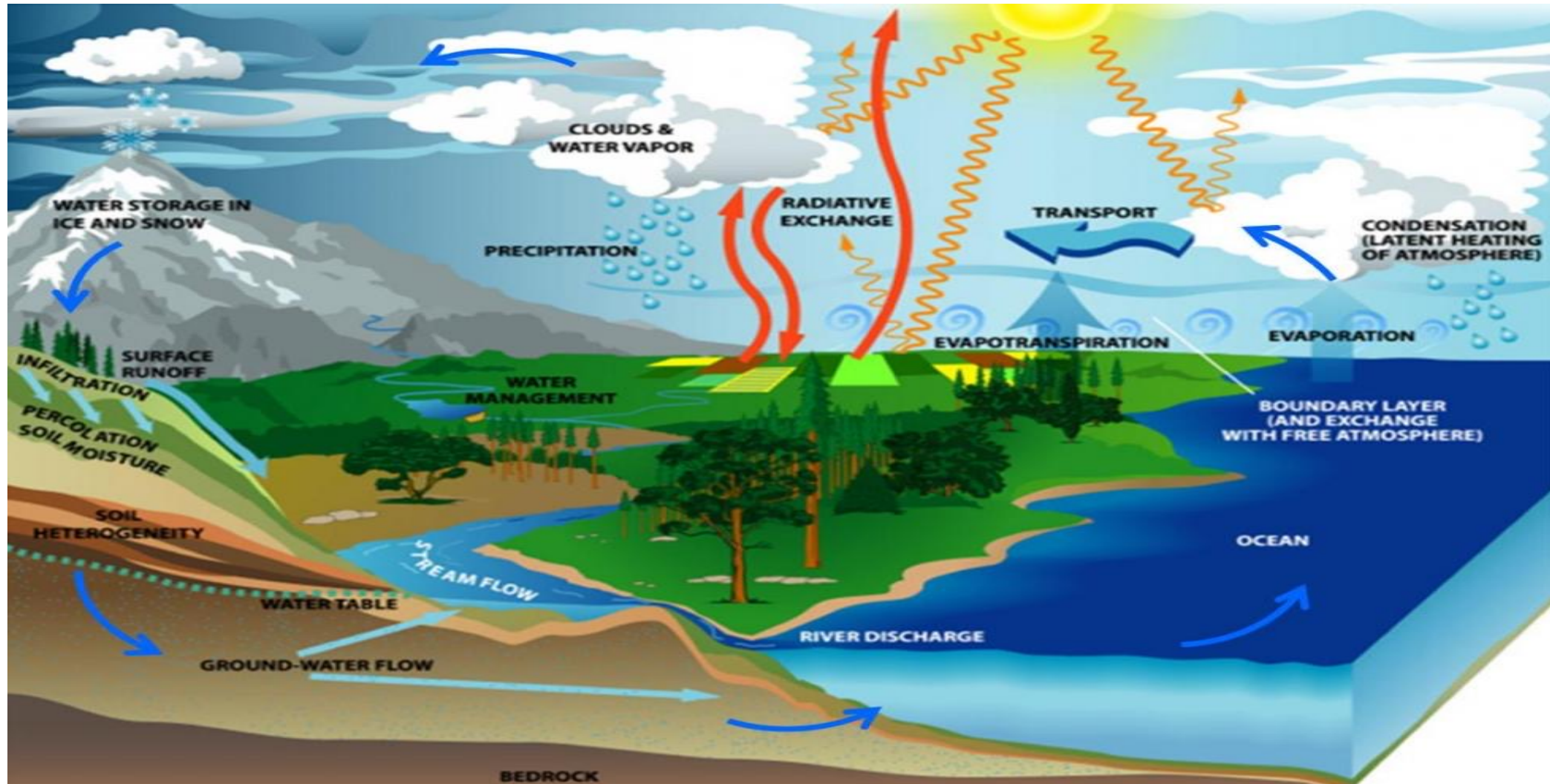
Canalisation and other watercourse modifications

Coastal defence and flood

Offshore structures

Waste management

We need to take a holistic approach to address the water system as a whole:  
oceans, seas, coastal and inland waters



# Mission Starfish 2030: Restore our Ocean and Waters

Inspired by the shape of the **starfish**, the Mission has **five mutually supporting objectives** for 2030, which together enable the restoration and regeneration of the water cycle as a whole.





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WHAT'S  
IN IT FOR ME?

## What happens now?

In early 2022, the first calls for proposals under Horizon Europe will make available **€114 million** to support the rolling out of the Mission. Projects will develop and demonstrate breakthrough innovation to **protect and restore ecosystems, eliminate pollution** and make the blue economy carbon-neutral and circular.

Alongside Horizon Europe the Mission also mobilises the European Maritime Fisheries and Aquaculture Fund (EMFAF), InvestEU and other EU programmes. Together, they will provide around **€500 million** in seed funding during 2021-23. Along with Member State contributions and private funding, this will create a big and lasting impact.

Throughout its lifetime, the Mission will move from piloting to demonstration, deployment and market entry of innovative solutions to restore our ocean and waters.



# Main elements of the Mission Starfish intervention logic

All water systems must be included: preserving natural capital offers enormous opportunities for health and economy



## Phase I (2022-2024)

- Large scale area based lighthouses covering all Mission objectives
- Boosting protection of blue ecosystems
- **ENABLERS:**
  - Actions to increase knowledge and understanding of ecosystems, innovation, digitalisation and governance
  - Launch of programme to boost blue education and skills
  - Launch of citizen and stakeholder engagement activities throughout the EU



## Phase II (2025-2030)

- Scale up of large area based lighthouses
- Replication of lighthouses for all Mission objectives throughout the EU through a bottom-up selection process
- Implementation and scale up of the Blue programmes
- Actions to further boost knowledge, innovation, digitalisation, training and education, and governance
- Citizen and stakeholder engagement activities throughout the EU



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IN IT FOR ME ?

## What are the **lighthouses** and **how do they work?**

In the Mission Ocean and Waters we will set up **four Mission Lighthouses** at basin scale in:

- the Mediterranean Sea
- the Danube river basin
- the Baltic and North Sea
- the Atlantic-Arctic basin

For centuries, lighthouses have been guiding sailors through storms to safety.

The four Mission Ocean and Waters lighthouses will act as **hubs that will develop, demonstrate and deploy new solutions** far and wide across the world. Building on existing governance structures, the lighthouses will bring together relevant Member States, the European Commission and other partners, through a political implementation charter. In the charters, the partners commit to cooperating and aligning resources to achieve the Mission objectives.







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## Mission lighthouses:

sites to pilot, demonstrate, develop and deploy the Mission activities across EU seas and river basins



Baltic & North sea basin

MAKE THE BLUE ECONOMY CARBON-NEUTRAL AND CIRCULAR

Mediterranean sea basin

PREVENT AND ELIMINATE POLLUTION OF OUR OCEAN, SEAS AND WATERS

Danube river basin

PROTECT AND RESTORE MARINE AND FRESHWATERS ECOSYSTEMS AND BIODIVERSITY

Atlantic & Arctic coast



# Mission objectives and targets

## Restore our Ocean and Waters by 2030

### PROTECT AND RESTORE MARINE AND FRESHWATERS ECOSYSTEMS AND BIODIVERSITY

- Protect at least 30% and strictly protect 10% EU's sea areas
- Restore 25.000 km free flowing rivers
- Marine nature restoration targets (incl. degraded seabeds, coastal ecosystems)

### PREVENT AND ELIMINATE POLLUTION OF OUR OCEANS, SEAS AND WATERS

- Reduce by at least 50% plastic litter
- Reduce by at least 30% microplastics
- Reduce by at least 50% nutrient losses, chemical pesticides

### MAKE THE BLUE ECONOMY CARBON- NEUTRAL AND CIRCULAR

- Net zero maritime emissions
- Zero carbon aquaculture,
- Low carbon multipurpose use of marine space

### ENABLERS

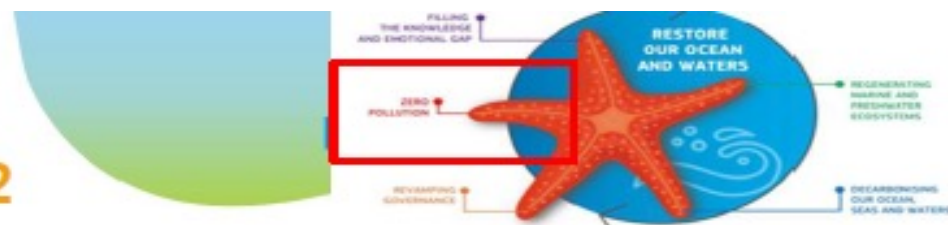
Digital Ocean and Waters Knowledge system

Public mobilization and engagement



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## 2021-2023 WP topics linked to objectives 2 REDUCING POLLUTION



### Mediterranean sea basin lighthouse

- 2021 WP: Actions to prevent, minimise and remediate litter and plastic pollution (IA, 16 million EUR, 2 grants) + **coordination and support action** (3 million EUR)
- 2022 WP Actions to prevent, minimise and remediate chemical pollution (IA, 17 million EUR, 2 grants)
- 2023 WP: Joint call with Mission Soil- nutrient pollution landscape-river-sea system in Med (IA, 16 million EUR, 2 grants)

### Cross-basin topics



WP 2022: Marine litter and pollution – Smart and low environmental impact fishing gears (call ongoing) - IA, 10 million EUR, 4 grants



WP 2022: Prevent and eliminate litter, plastics and microplastics: Innovative solutions for waste-free European rivers (call ongoing) - IA, 10 million EUR, 1 grant

*Mission Ocean Implementation Support Platform*

**Kick-off meeting, February 15, 2023**

Blue  
Mission  
Med

## **BLUEMISSIONMED**

**SUPPORTING THE MEDITERRANEAN SEA BASIN  
LIGHTHOUSE FOR THE IMPLEMENTATION OF THE MISSION  
RESTORE OUR OCEAN AND WATERS**

Fabio Fava, CNR & University of Bologna, Italy

Fedra Francocci, CNR, Italy

[fabio.fava@unibo.it](mailto:fabio.fava@unibo.it)



# Mission Charter: A joint commitment to Restoring our Ocean and Waters

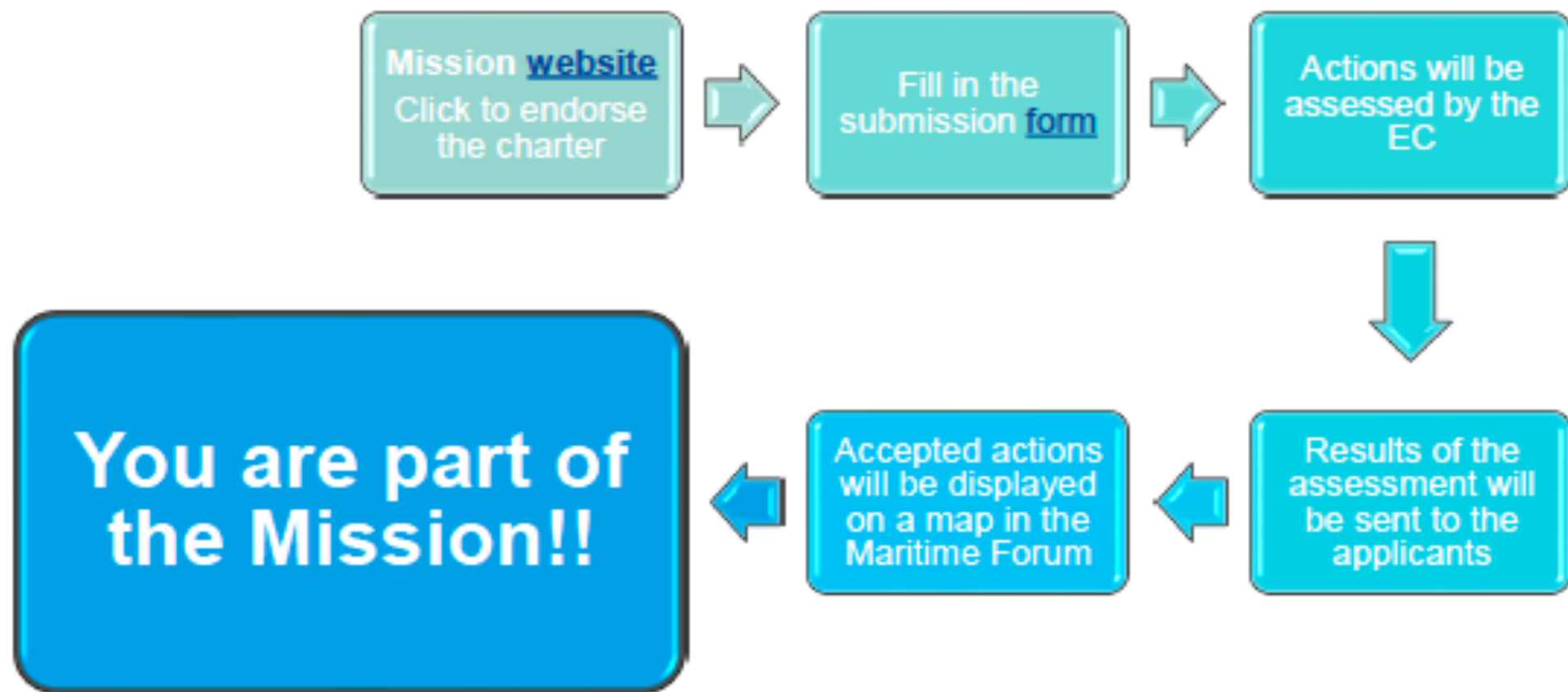


Launched on 30 June 2022 at UN Ocean Conference, Lisbon.

Calling on wide range of stakeholders to **adhere to the Charter by submitting Actions** that will contribute to achieving the Mission objectives

Non-binding engagement, **open** to any public or private interested parties

## How to be part of the Mission



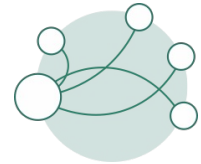
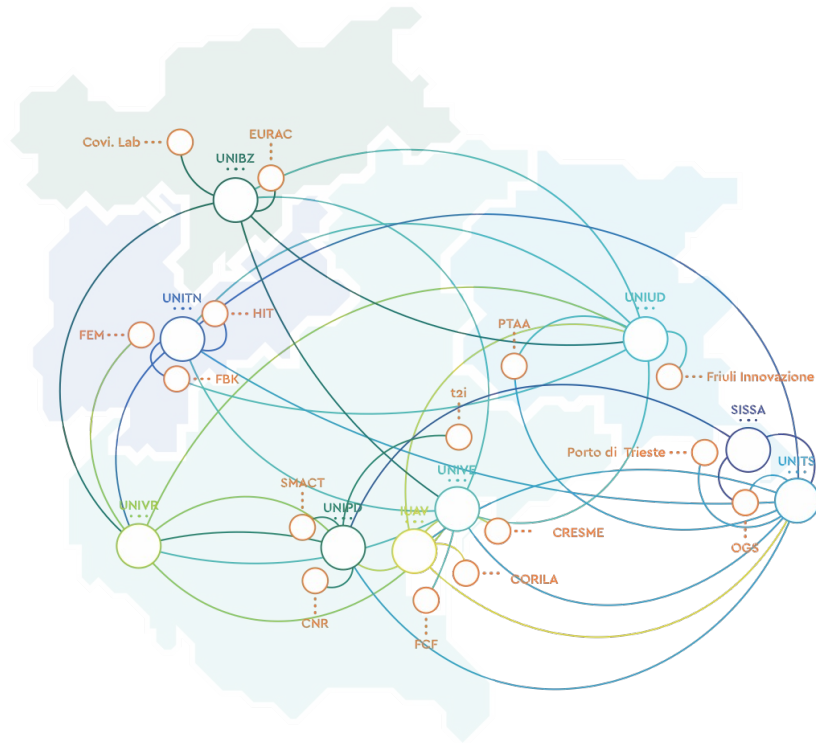
# Cross cutting enablers for the Mission



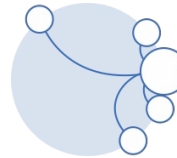
# ESEMPI CONCRETI

## PNRR :INTERCONNECTED NORD-EST INNOVATION ECOSYSTEM

# iNEST



University of Bolzano  
- Ecosystems for mountain innovations



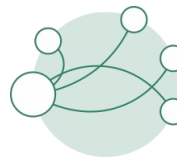
University of Trento  
- Health, Food and Lifestyle



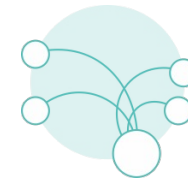
University of Udine  
- Green and digital transition for advanced manufacturing technology



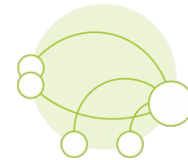
University IUAV of Venice  
- City, Architecture, Sustainable Design



University of Padova  
- Smart & sustainable environments (manufacturing, working, living)



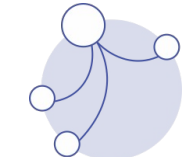
Ca' Foscari University of Venice  
- Tourism, Cultural and Creative industries



University of Verona  
- Smart Agri-Food



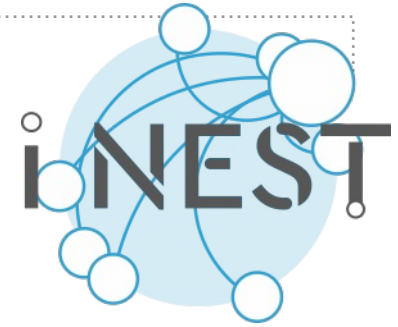
University of Trieste  
- Maritime, marine and inland water technologies: towards the Digital Twin of the Upper Adriatic



SISSA  
- Models, Methods, Computing Technologies for Digital Twins



## Spoke 8: MARITIME, MARINE, AND INLAND WATER TECHNOLOGIES: TOWARDS THE DIGITAL TWIN OF THE UPPER ADRIATIC



### Research Topics

- **RT1**  
Biology of hydrosphere. ecosystems
- **RT2**  
Physical-chemical risks and impacts on the hydrosphere
- **RT3**  
Sustainable waterway. mobility
- **RT4**  
Land-sea integrated maritime and spatial Planning
- **RT5**  
North Adriatic Digital Twin



# Digital Twin of Ocean

U. Von Der Leyen in the Brest conference this year :

**“Europe wants to build a Digital Twin of the ocean, as a platform for global cooperation. We are connecting our satellites, drones, high performance computing. For real-time knowledge and long-term predictions on the impact of climate change.”**

.....Here the ambition in to anticipate the outcome of an intervention. I.e. they are tool from engineering where you optimise for stability, low cost, low impact, etc.

**you want to answer ,what if“ question.** I.e. how will the ocean change if I stop fishing. Or what is the most cost effective way to protect a coastal town from sea level rise (damming, sand bars, mangoves, corals etc. So you start from the outcome and optimise interventions.



**Obiettivo finale:  
MARITIME, MARINE, AND INLAND WATER  
TECHNOLOGIES:  
TOWARDS THE DIGITAL TWIN OF THE UPPER  
ADRIATIC**

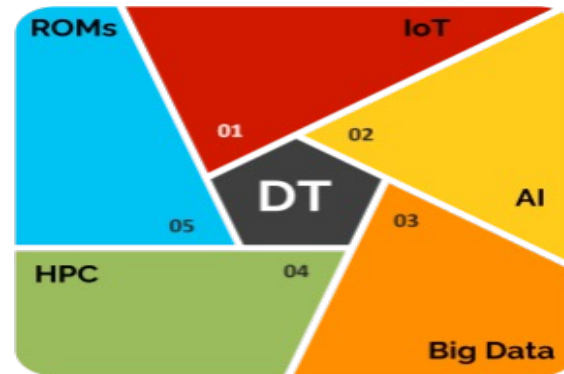


Figure 1: DT foundation pillars




# Concrete Actions: Creating emotions

il mare inizia qui - Cerca con Google

<https://www.google.com/imgres?imgurl=https://www.dorabaltea...>



 Dorabaltea



La campagna di sensibilizzazione francese per combattere l'inquinamento idrico | Dor

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Immagini correlate

Espandi



# ESEMPI CONCRETI

## Science and Art

Exhibition  
**PLATIC-OCENE**  
Elisabetta Milan



**“IL MARE INIZIA IN CITTA”  
CON ELISABETTA MILAN**

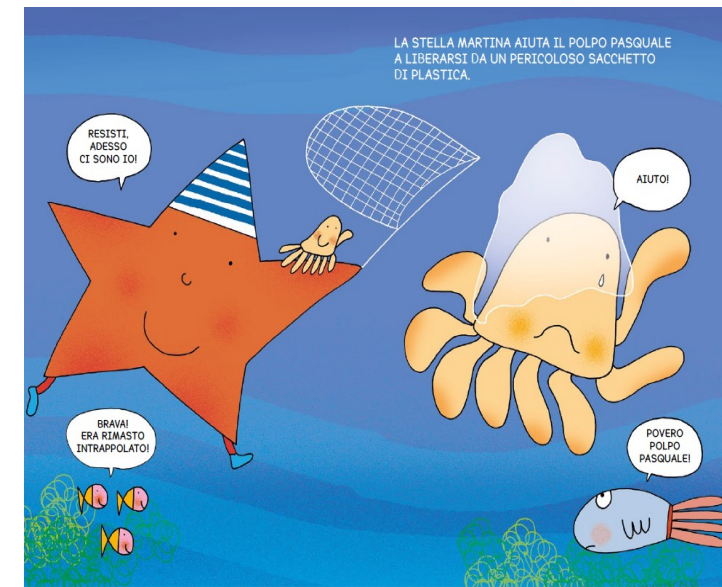
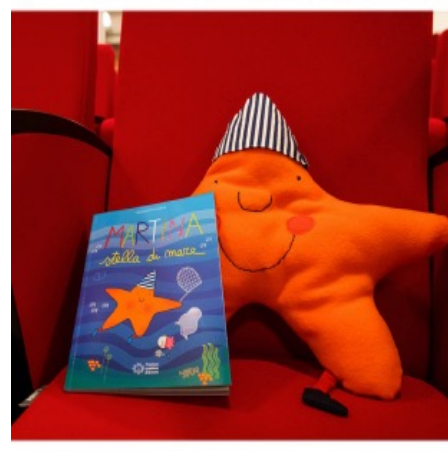
**UDINE**

**SETTEMBRE / OTTOBRE 2022**



# Martina la Stella di Mare by Nicoletta Costa

## 2000 bambini dai 3-6 anni coinvolti in un concorso



# Mission Starfish 2030: Restore our Ocean and Waters

## The time to act is NOW!

