

# DESIRED SCENARIOS

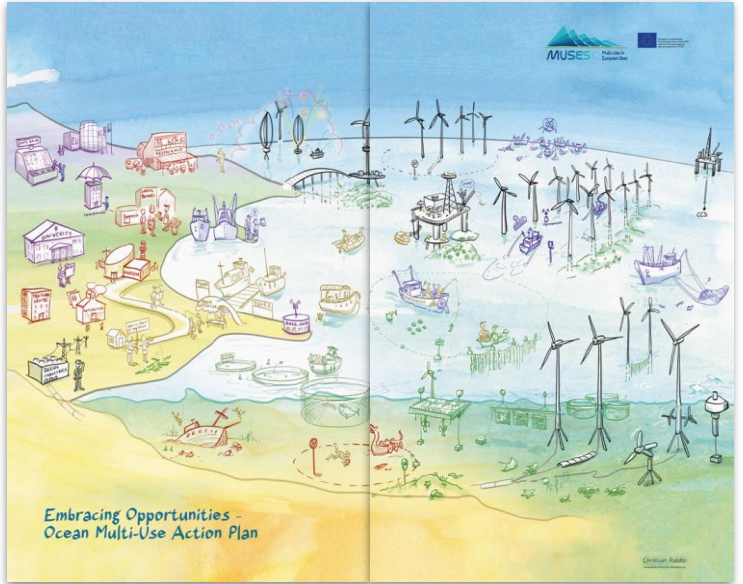
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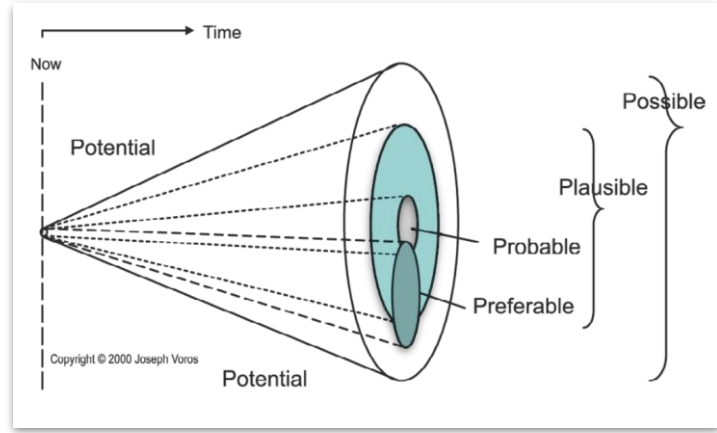


**ADAPTIVE MANAGEMENT**

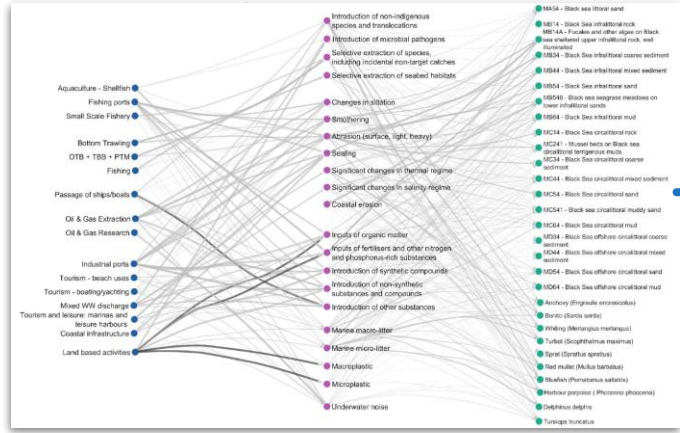
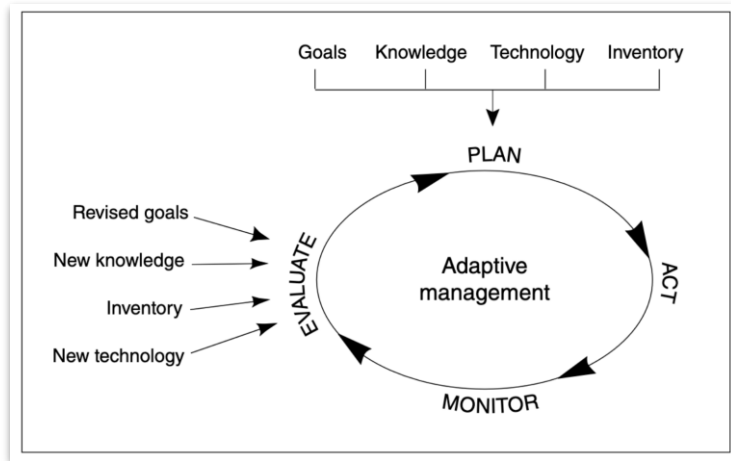
**FEEDBACK MECHANISM**

**DESIRED SCENARIOS**

**RISK-BASED CUMULATIVE EFFECTS ASSESSMENT**



Graphical representation of Adaptive Management as a continuous and systematic process. Source: USDA and USDI 1994:E-14.0



**DIGITAL TWINS OF THE OCEAN**

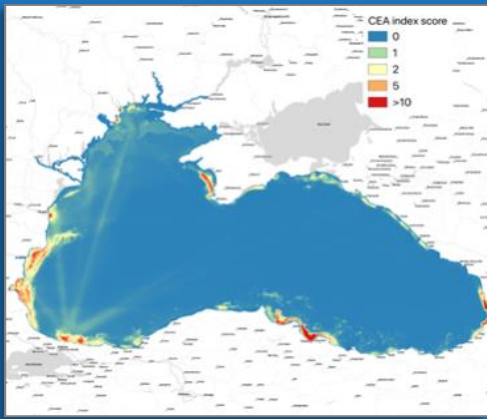


1  
2 3  
Regional  
scale  
(Pilot Sites)



- Future visions at PS scale emerging from 3 rounds of **Living Labs**

Basin scale  
(Black Sea)



- Sustainable Blue Economy Imaginaries for the Black Sea “Ecotopia” and “Unity in Adversity”



MARITIME  
TRANSPORT



FISHERIES



MARINE AQUA-  
CULTURE



LAND-BASED  
ACTIVITIES

- **Scenario co-creation**
- Information on **status and trends of maritime sectors** from literature, local experts, MSP plans, etc.
- **Climate change** projections from BRIDGE-BS models



COASTAL  
AND MARITIME  
TOURISM

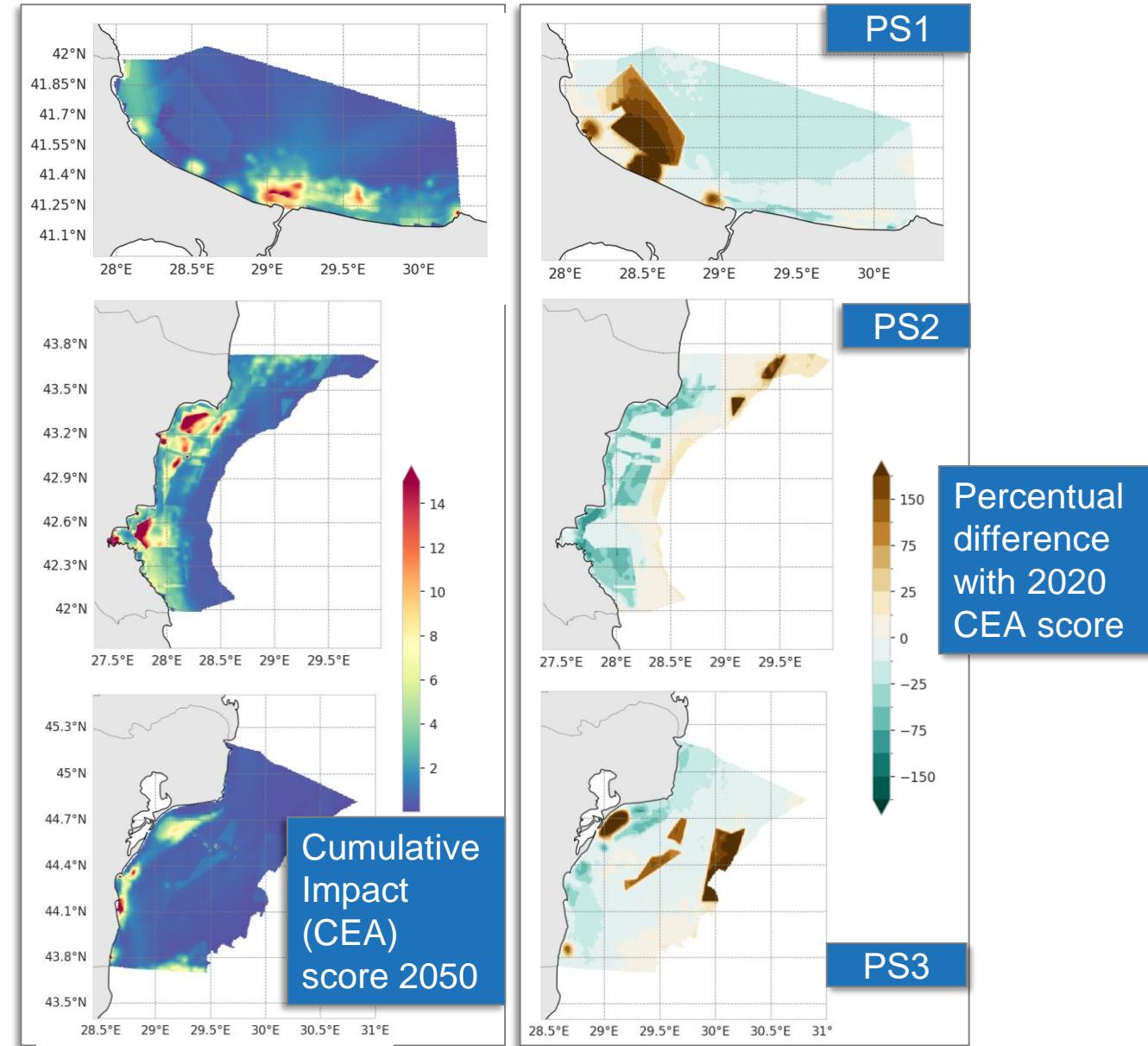


MARINE  
RENEWABLE  
ENERGY



MARINE  
PROTECTION AND  
CONSERVATION

- New activities cause localised increase in CEA (dark brown)
- However, their impacts are compensated by positive change in other sectors
- CEA in 2050 is lower than in 2020 in all PSs
- Overall, the tested **Desired Scenarios are more sustainable** than the current situation for all PSs (in terms of cumulative impacts)



Ecotopia appears as a more effective pathway towards reaching MSFD objectives of Good Environmental Status, achieving improved seabed integrity and conservation.

✓ Significant reduction of fishing activities.

✓ Implementation of MPA network across the basin.

✗ Nutrient input from land-based activities remains major issue.



Green-shipping



Trawling bans

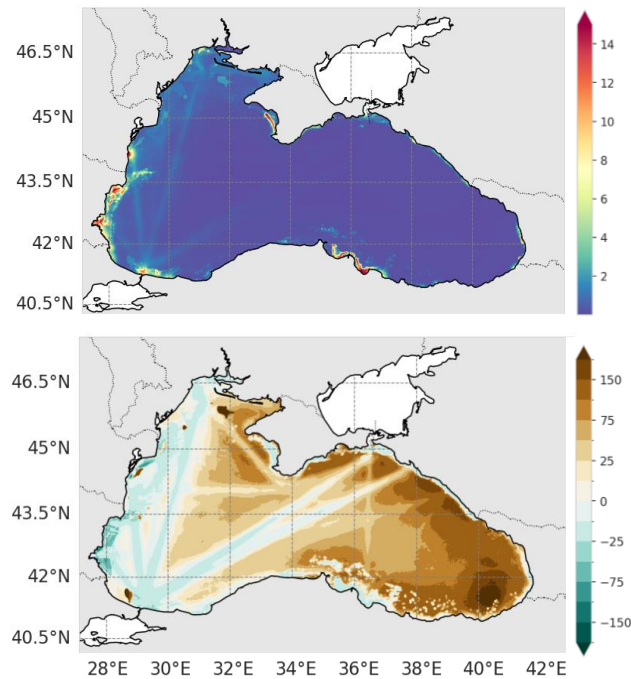


New MPAs

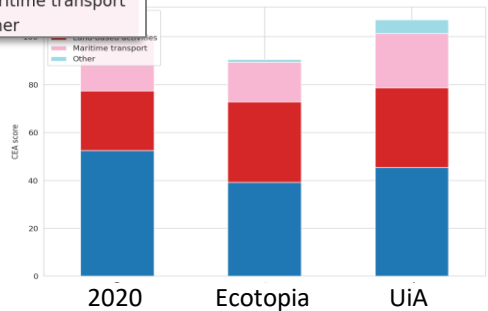


New OWFs

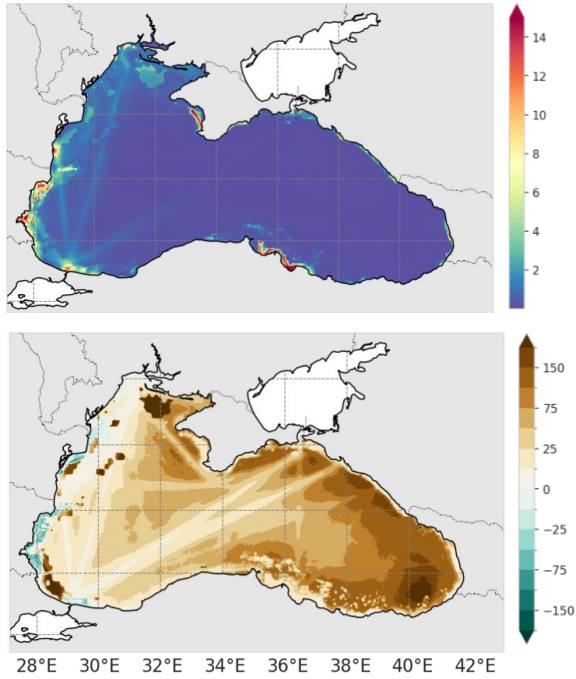
Ecotopia  
CEA  $\searrow$  compared to 2020



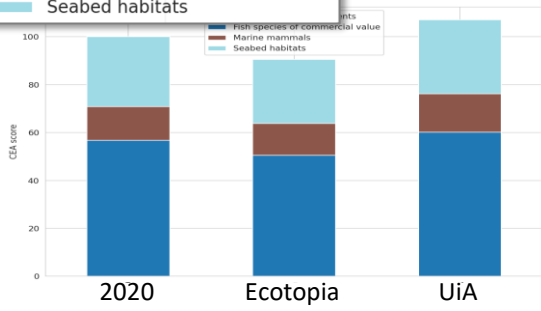
Fishing / trawling  
Land-based activities  
Maritime transport  
Other

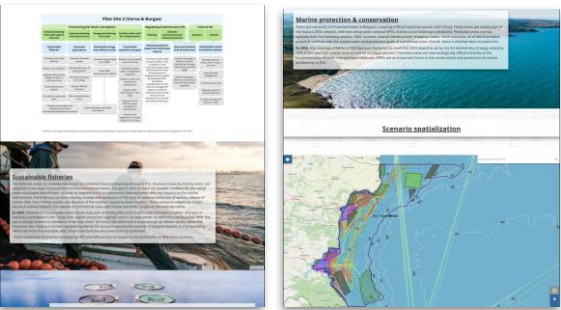
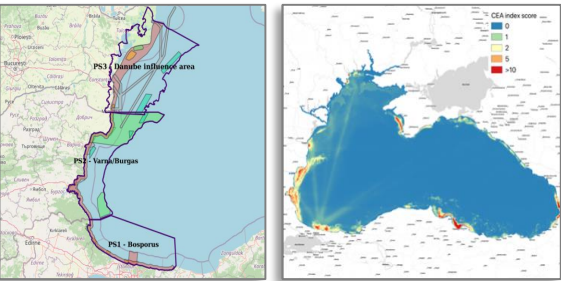
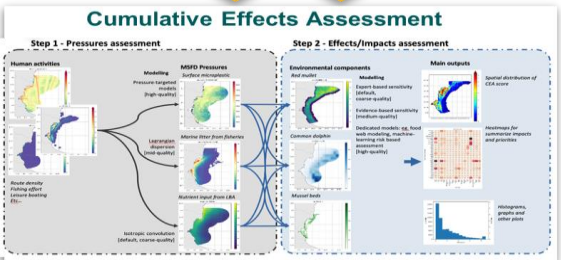
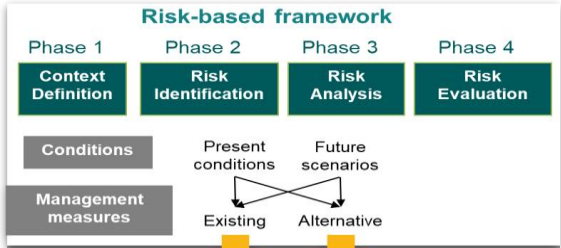


Unity in Adversity  
CEA  $\nearrow$  compared to 2020



Fish species of commercial value  
Marine mammals  
Seabed habitats





✓ A new risk-based Cumulative Effects Assessment (CEA) framework

- Providing a **transferable science–policy tool** to assess cumulative effects and support ecosystem-based and adaptive management across marine and coastal contexts

✓ From Framework to Practice: Applications in the Black Sea

- Portfolio of **17 Scenarios** and an Interoperable **Catalogue of Resources** for the Black Sea

✓ Innovating Tools for Decision Support (on the Path to the DTO)

- Developing an **automated CEA tool** for what-if **scenario analysis** within the Tools4MSP GeoPlatform
- **Ongoing integration with the Black Sea DTO Demonstrator**

✓ Building Capacity and Expertise

- **PhD training (S. Bosi)** combining **Computer and Environmental Science** towards integrated ocean management.



# THANK YOU!

**STAY TUNED!**

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