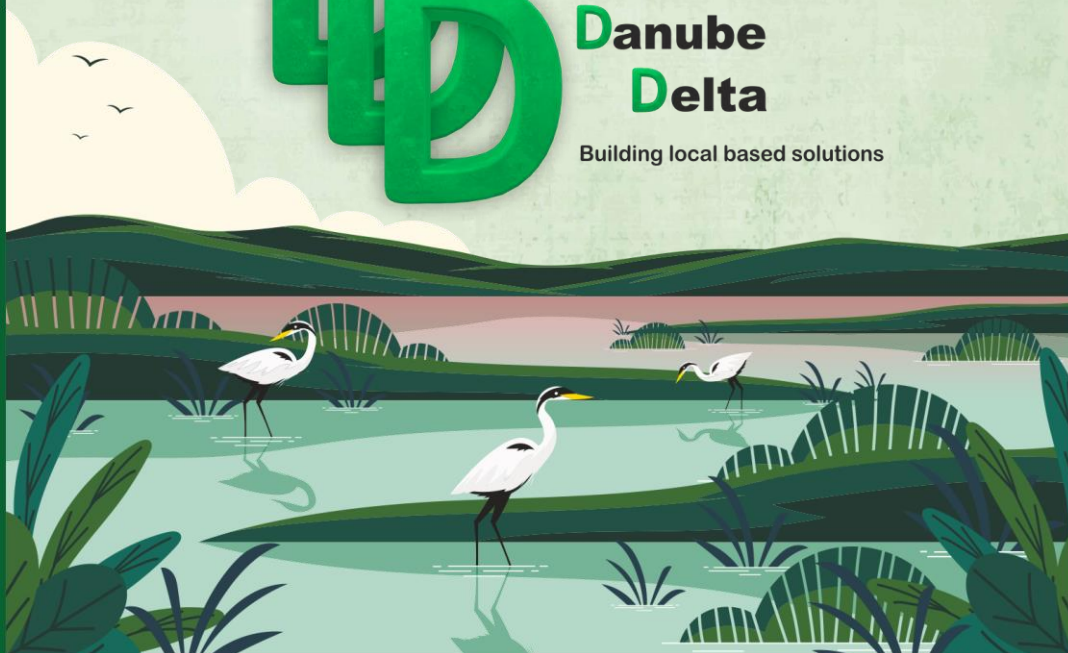


# DECARBONISING DELTA & WETLANDS

**3D Initiative**  
**Decarbonising**  
**Danube**  
**Delta**

Building local based solutions



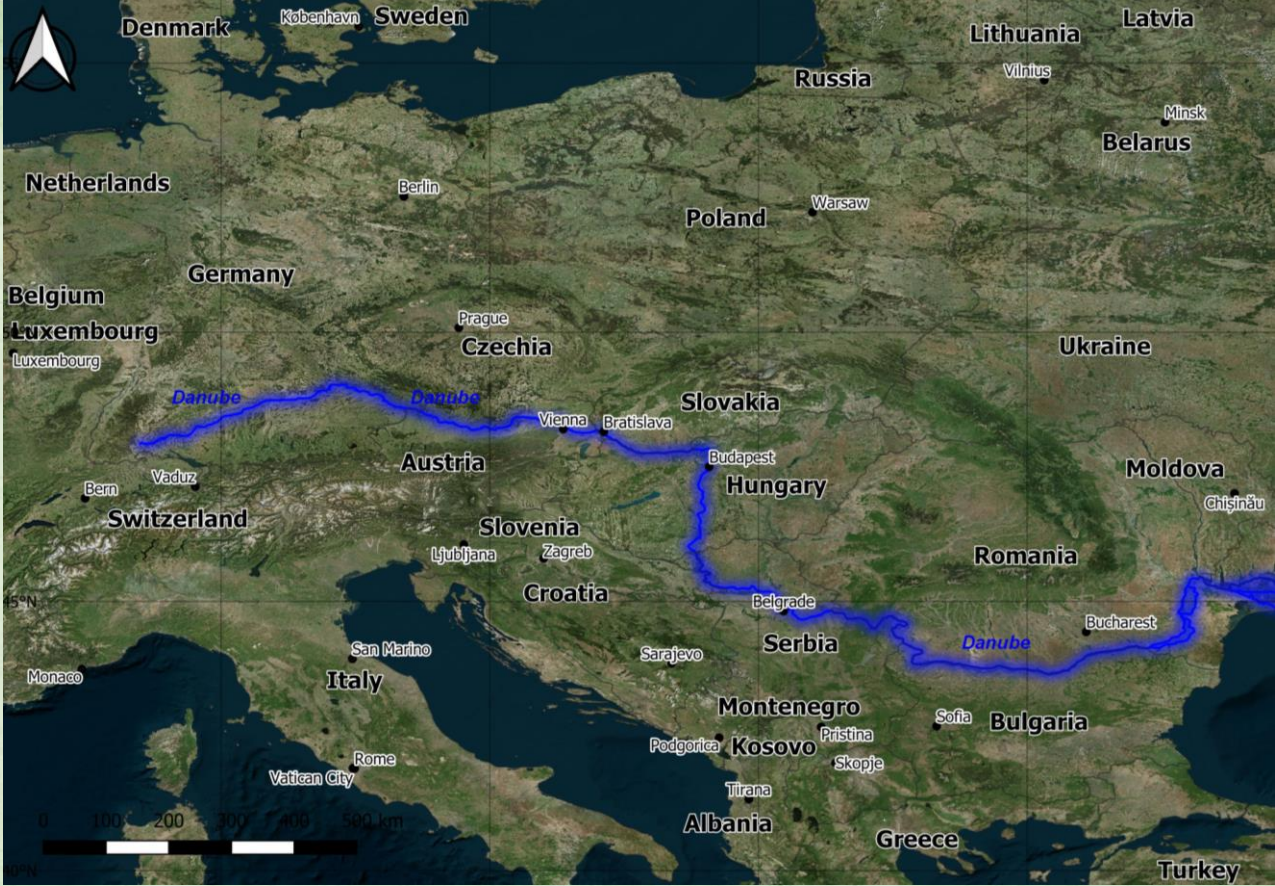
Asociatia  
Ivan Patzaichin - Mila **23**



ROMANIAN RESEARCH &  
DEVELOPMENT INSTITUTE FOR  
GAS TURBINES



Danube River Basin



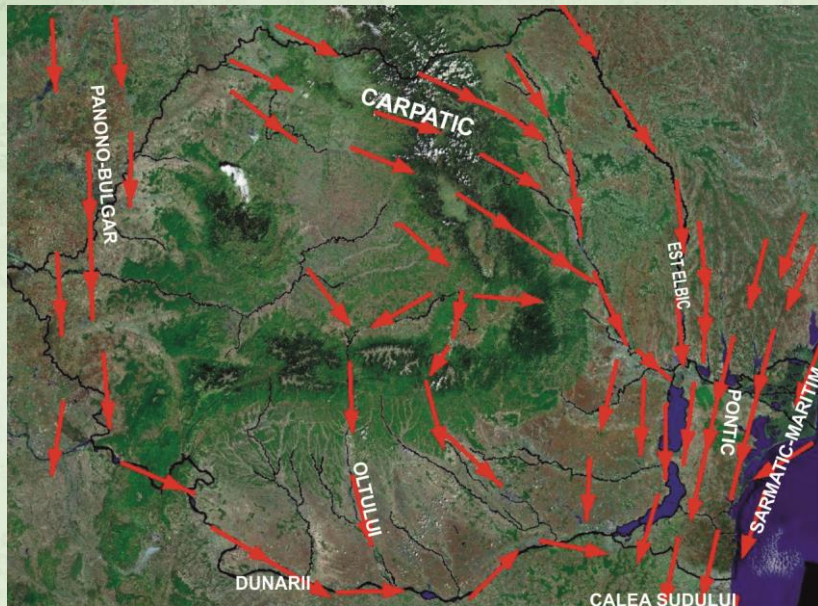
Europe’s largest wetland and reed bed

Danube Delta





# Biodiversity of the Danube Delta



There are over 320 species of birds found in the Delta during summer, of which 166 are hatching species and 159 are migratory



The mosaic of habitats hosts a unique mix of flora and fauna species, with about 2000 vascular plants and more than 3000 animal species





## Biosphere Reserve, Ramsar site, UNESCO World Heritage Site



Home to several globally threatened bird species, including the red-breasted goose, the Dalmatian pelican and the pygmy cormorant, which either breed or winter in the delta.



Preferential habitats and natural passageways of the species must be determined, and mobility solutions must be adapted in relation to them and investigate the synergistic effects of **climate change** and other **pressures on biodiversity** and **ecosystems** and integrate measures for **nature conservation**

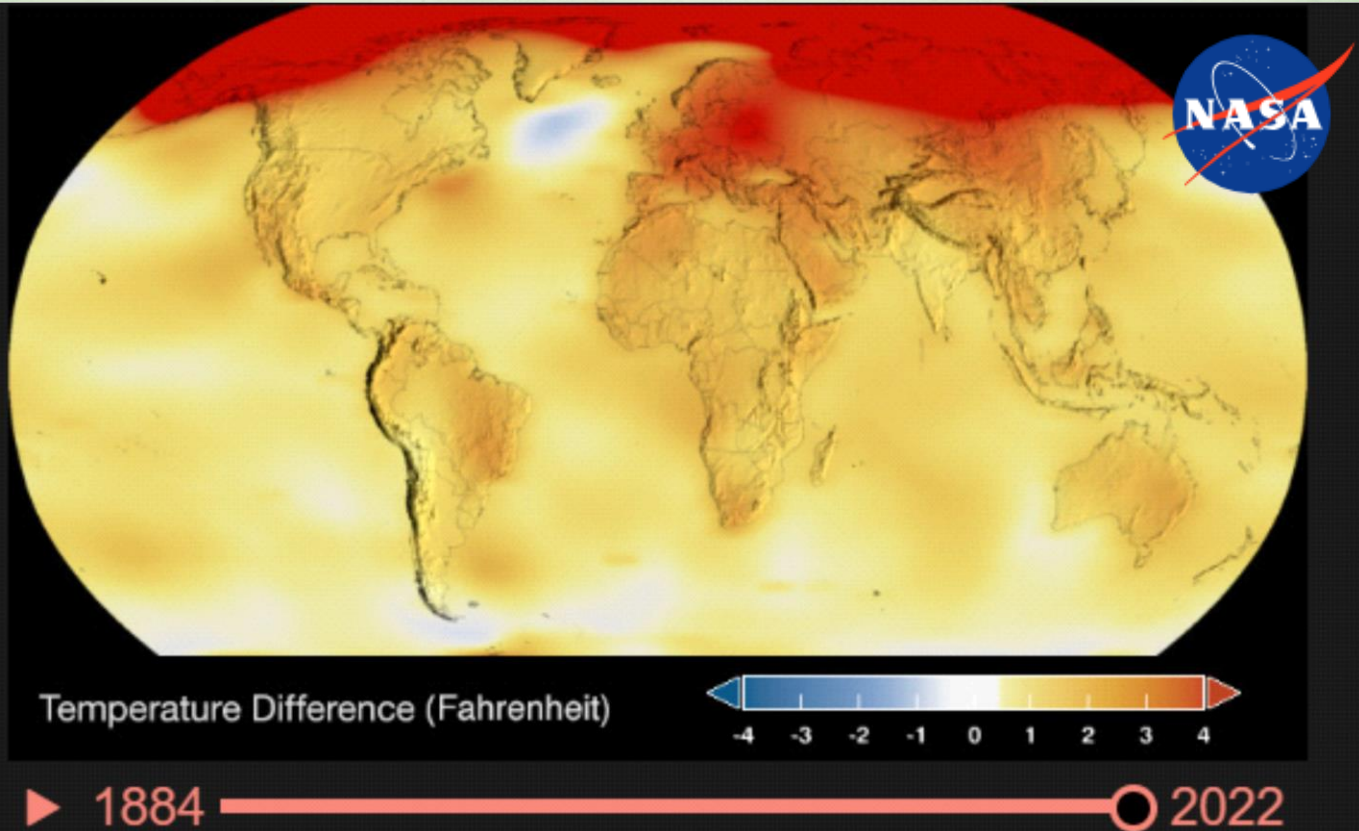




# Climate

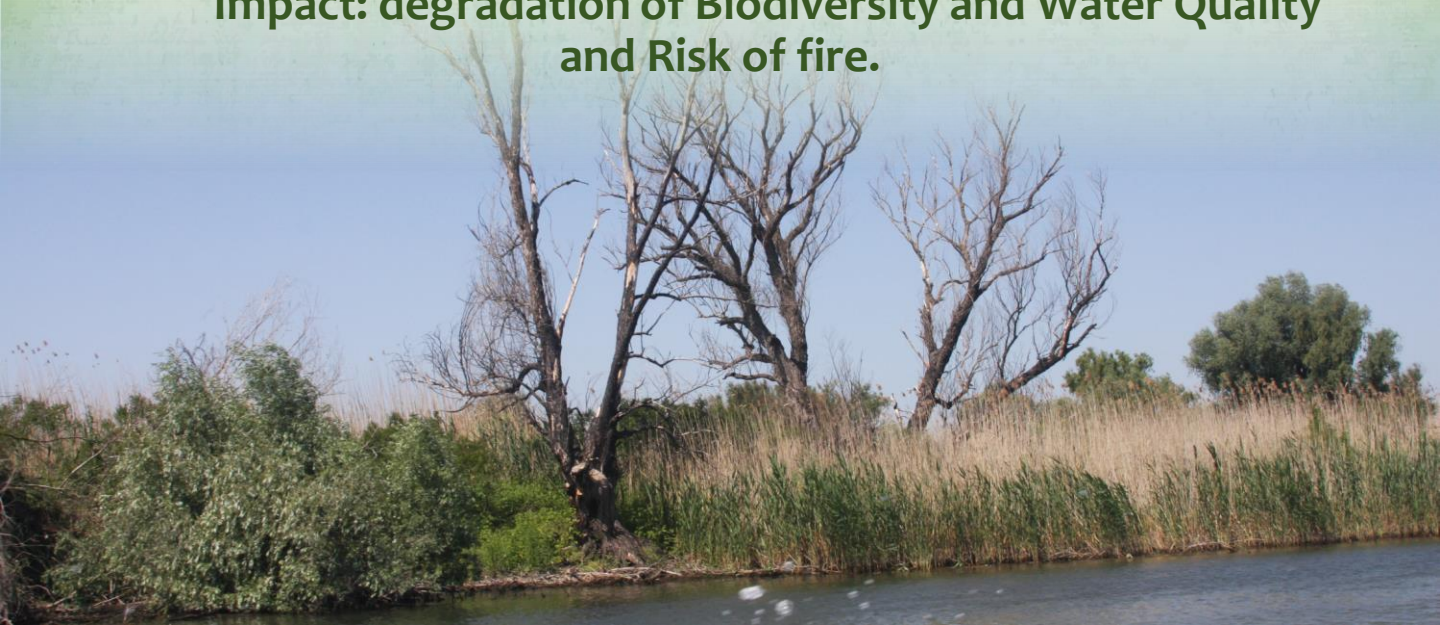
The climate of the Danube Delta is *continental*, with strong influences from the vicinity of the Black Sea and its dominant amphibian environment.

It is the driest and sunniest region of Romania.



Global temperatures in 2022 were 0.89 degrees Celsius above average of NASA reference period (1951-1980)

Impact: degradation of Biodiversity and Water Quality and Risk of fire.





April 2006

Climate Impact



July 2010

## Extreme Weather Events



Gura Portitei -14 June 2015







**April 2002**



**July 2022**

## **The Draught in the Danube River Basin has a major impact on the DANUBE DELTA**



Swamps and lakes turn into arid lands, without vegetation, partially or totally drained.

Reduction of the water volume of the Lake(s)

Need to assess the Impact on Ecosystem Services and the Socio-Economic System



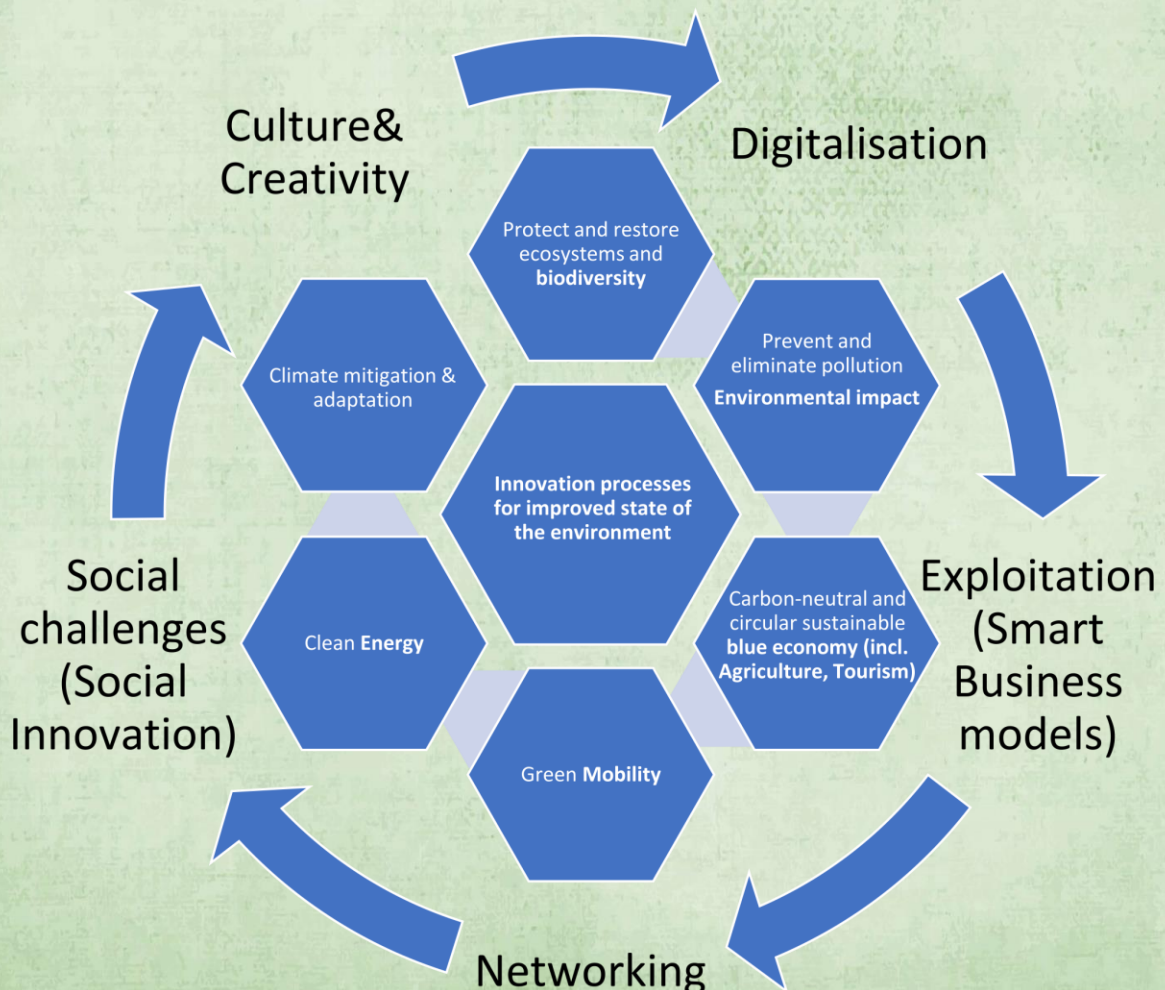




## 3D Decarbonising Danube Delta -*Vision*

3D Initiative, developed in a **multidisciplinary innovation** context, recommends a vision of the Danube Delta transformations, related to all economic and societal components, towards a **well-preserved biodiverse** region with significantly **reduced carbon footprint** by 2030 and aiming at net zero greenhouse gas emissions by 2050

To implement this goal the Team is conducting projects on all levels, from **Research**, to **Innovations**, Scaling Up actions, towards **Business** and **Industry**, targeting as an important milestone Social Innovation with Job Creation.







## 3D Synergies with other EU & Int'l Initiatives

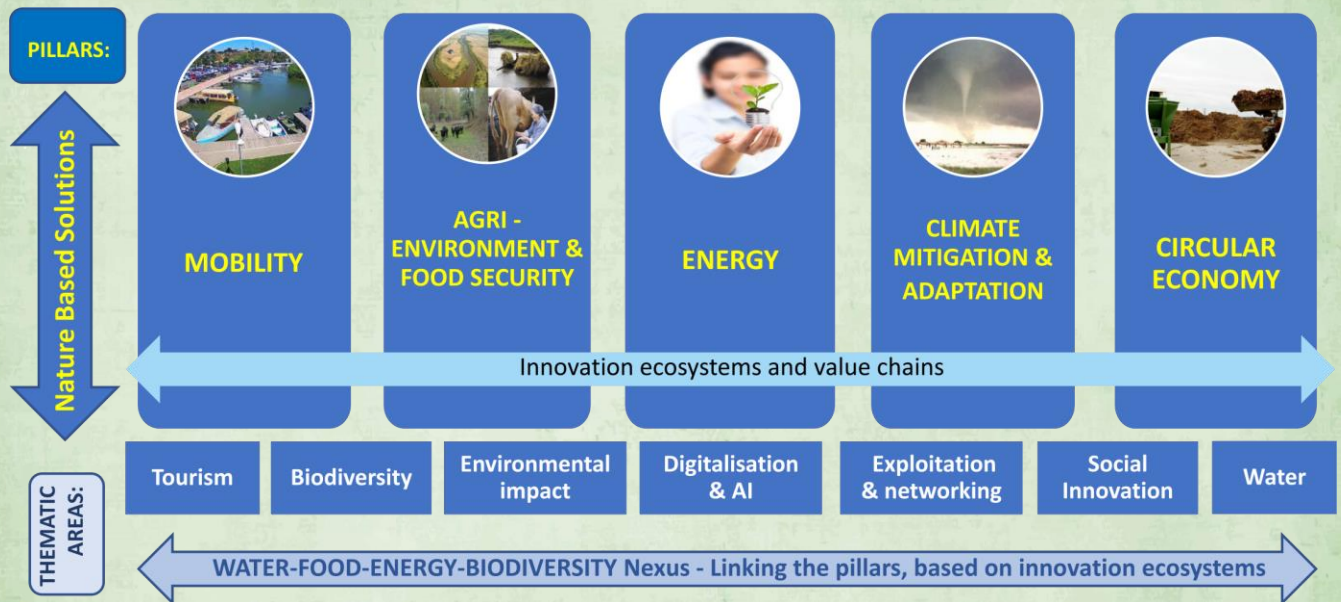
- ✓ Paris Agreement
- ✓ EU Green Deal
- ✓ Biodiversity Strategy 2030
- ✓ UN Sustainable Development Goals
- ✓ Intelligent and Integrated Mobility
- ✓ EU Climate Law
- ✓ Mission Restore our Ocean and Waters by 2030
- ✓ Renewable Energy Initiatives



*This systematic multidisciplinary initiative proposes a complete innovation management process (supported by innovation agencies and companies in the group) in order to bring the region to the decarbonization goal.*



# 3D Initiative Strategic Pillars



## *Sustainable Blue Economy*



*Carbon circular economy*  
*Waste management*



*Traditional farming*  
*Old-style activities*







## *Green Mobility and Sustainable Transport*



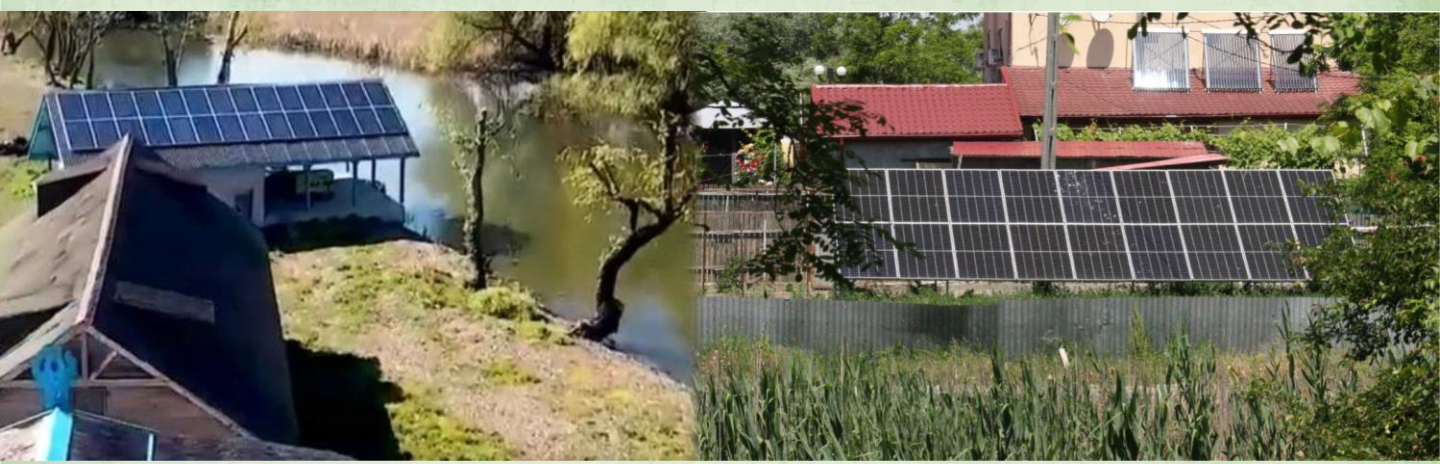
- Implementing *integrated-low carbon intelligent mobility*
  - Green mobility as waterborne transport for passengers & goods
  - Active mobility: cycling, walking





# Renewable Energy Sources

Wind, Solar, Hydro



Explore Production of Biofuels  
from Waste





# Circular Economy



**Reed exploitation**  
explore solutions



**Tourism**  
waste management and capacity  
building (engage hotels and  
guest houses)



**Port city & industry**  
Recycling & recovery of materials



**Fisheries & Aquaculture**  
Byproducts & food waste

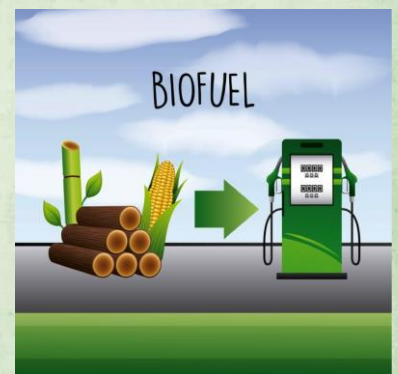


# Circular Economy– Waste to Energy

## Reed resource



- Thatching;
- Paper production;
- Insulation materials;
- Garden fences;
- Particle boards;
- Indoor furnishings: blinds, floor and wall coverings, panels and screens;
- Fodder plant;
- Baskets;
- Souvenirs.



Reed biomass can be used as an **energy source** in three ways: combustion, biogas and biofuel production.



# *Sustainable Ecotourism*



**Responsible travel to vulnerable natural areas that focus on environmental conservation and education**



**...while sustaining local communities economic and social well-being.**





# Social Innovation Solutions

Green jobs

Better quality of life

Public mobilisation  
& engagement

Climate-Air Quality-  
Health



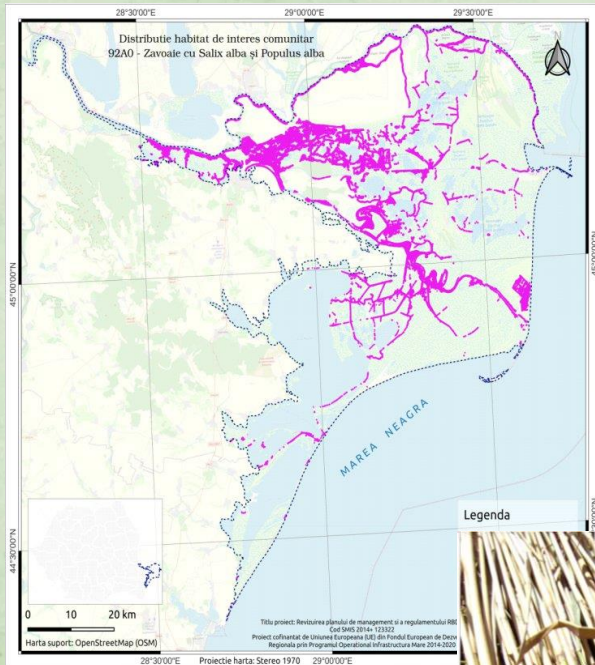
## Socio-ecological Governance and Management Plans



Connecting actors and institutions at multiple organizational  
levels to enable ecosystem stewardship.



# Management Plan for Natura 2000 Sites



## Smart Technologies for Biodiversity Conservation

## Nature Based Solutions & Carbon Sinks



## ESFRI – The Pan-European Distributed Infrastructure project DANUBIUS-RI





# Innovative Solutions to Mitigate Climate Impact in Danube Delta

Improving the flow of water, matter and energy in aquatic complexes



Restoration of ecosystems from abandoned developments and recovery of declined species



Adaptation through biophilia

Mitigation through ecometry

Nature-Based Solutions (NbS)



# Projects



RESTORE OUR OCEAN & WATERS  
Concrete solutions for our greatest challenges



**DaWetRest**

<https://dawetrest.eu/>

**Danube Wetlands and flood  
plains Restoration through  
systemic, community  
engaged and sustainable  
innovative actions**



<https://dalia-danube.eu/>

**Danube Region  
Water Lighthouse  
Action**



<https://www.danube4allproject.eu/>

**Restoration of the  
Danube river basin  
waters for ecosystems  
and people from  
mountains to coast**



**Restore4Life**

RESTORING WETLANDS  
FOR A SUSTAINABLE FUTURE

<https://restore4life.eu/>

**Restoration of wetland  
complexes as life  
supporting systems in the  
Danube Basin**

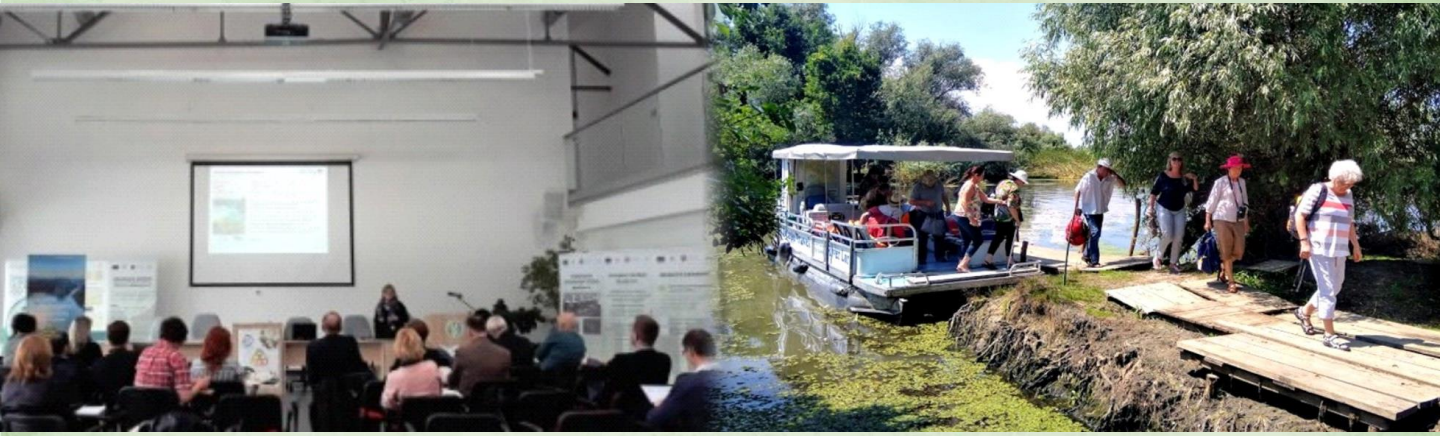


<https://ecodalli.eu/>

**ECOsysteM-based governance  
with DANube lighthouse  
Living Lab for sustainable  
Innovation processes**



# Community Interaction



- New green oriented lifestyles
- New **jobs**: generate income through responsible tourism and reinvesting it in *conservation and community development*
- Develop a Social Enterprise Ecosystems network
- Better integration of social attributes
- Inter-cultural ethnic group
- Access to social services- facilities
- Connect services to markets (website)
- **Preservation of human heritage** – new values!

**Now and for future Generations**

