

DANUBIUS-RI
making River-Sea Systems work

International Centre for Advanced Studies on River-Sea Systems

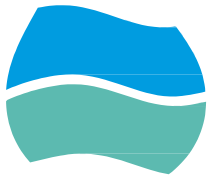
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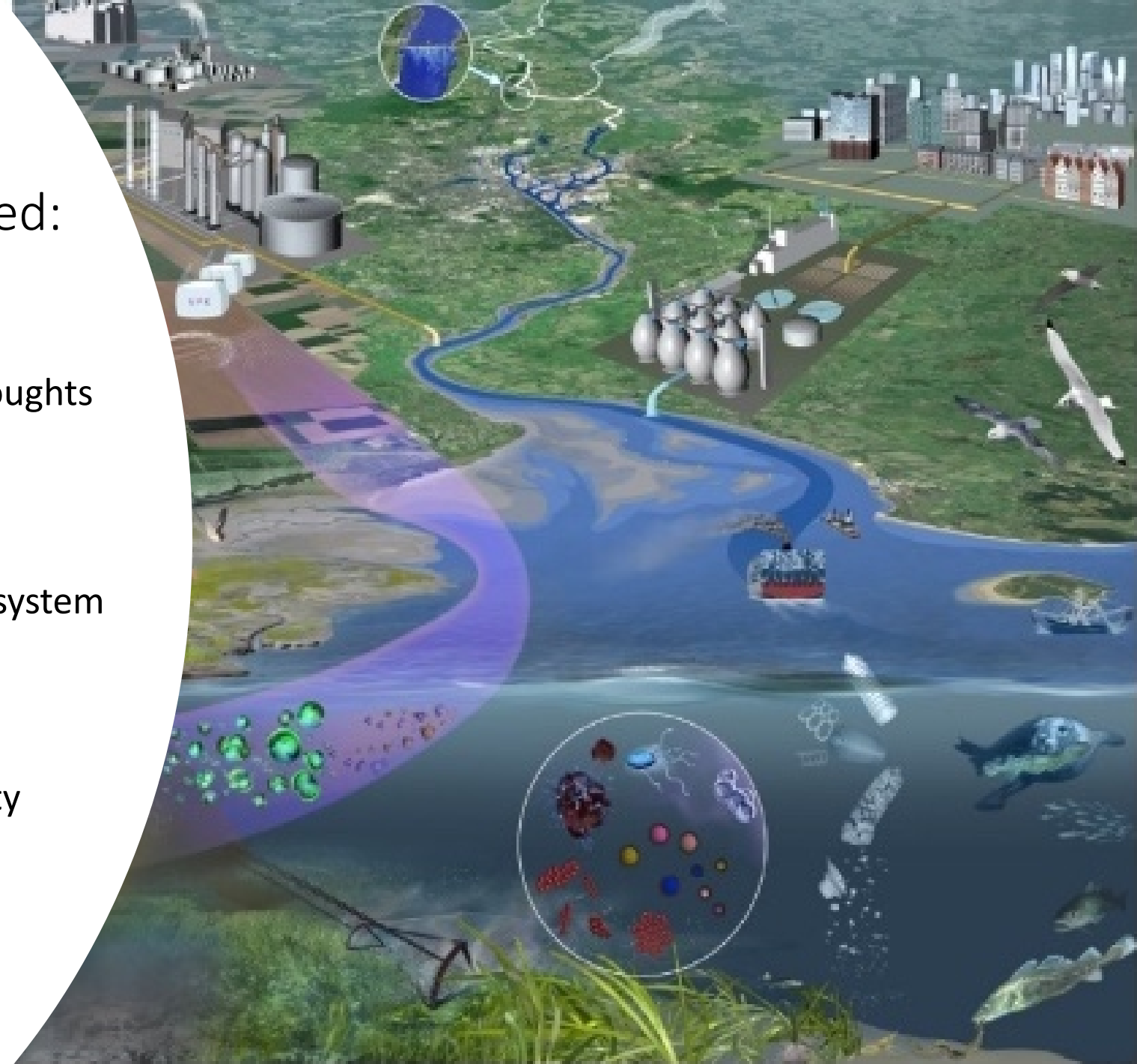




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Interdisciplinary Science is needed:

- Climate Change – felt through water
 - Extreme Events: Storms, floods and droughts
 - Climate change scenarios - worsening
- Multiple pressures
- Unfulfilled opportunity that require whole system understanding (Source- to-sink approach)
 - Net Zero & Green Recovery
 - Sediment Management and Biodiversity





Our Vision

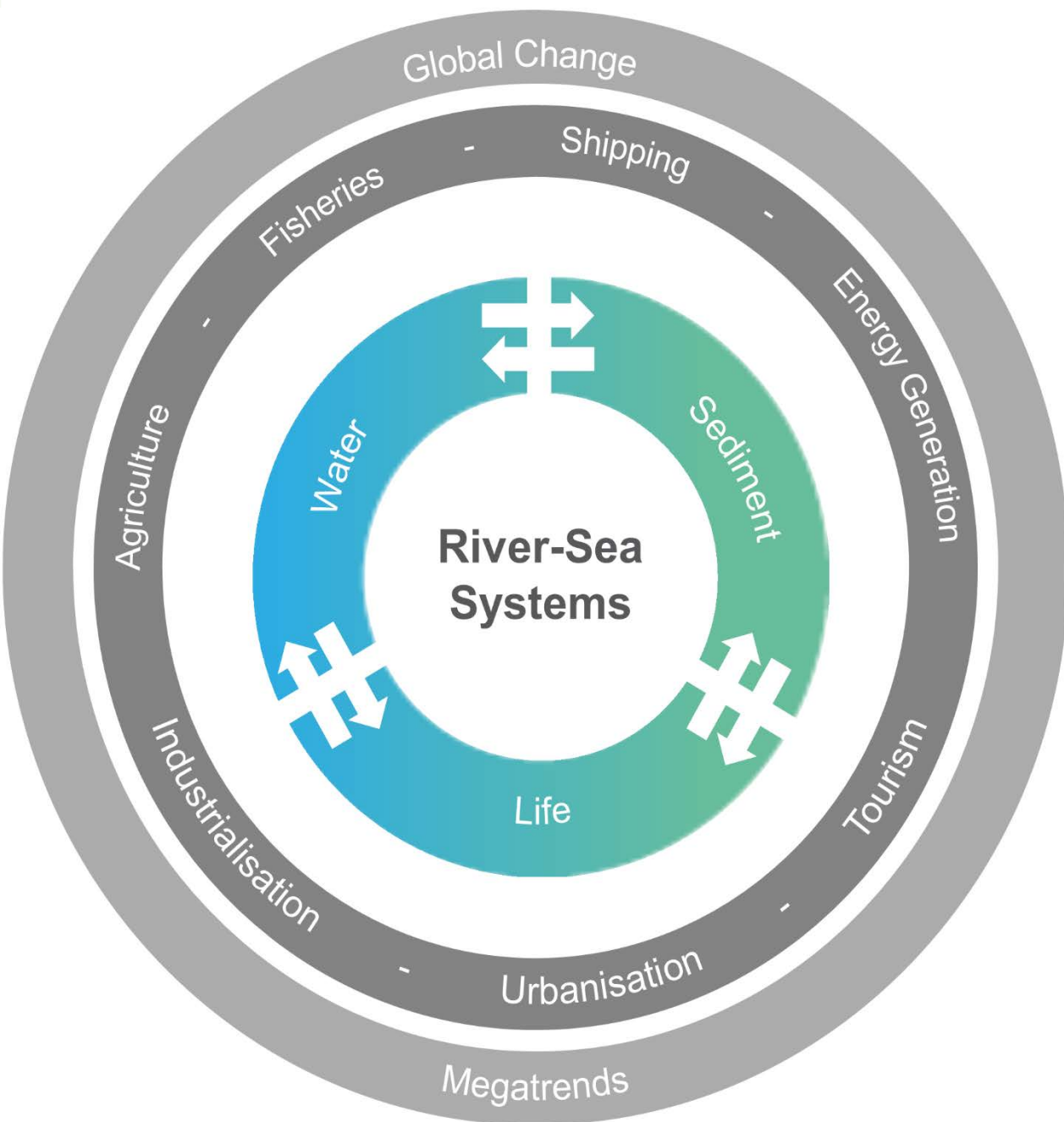
to achieve **healthy River-Sea Systems** and to advance their **sustainable use**, in order to live within the planet's ecological limits by 2050.

Our Mission

- to provide **state-of-the art research infrastructure** from river source to sea;
- to facilitate **excellent interdisciplinary science**;
- to offer **integrated knowledge** to manage and protect River-Sea Systems.

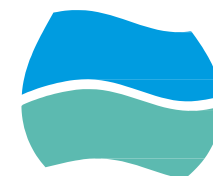
Our Goals

- **to overcome the current fragmentation of science, knowledge, data & management** in rivers and seas by integrating spatial, temporal, disciplinary and sectorial thinking;
- **to provide scientific solutions to environmental and societal risks** from climate change;
- **to resolve problems** arising from human impacts on River-Sea Systems by using an **interdisciplinary perspective**, from source to sea.



Overarching challenges

- External (Climate Change and Extreme Events) and internal drivers (e.g. Fisheries, Transport) resulting from basic human needs cause cumulative effects on River-Sea Systems.
- Overarching challenges for DANUBIUS-RI relate to:
 - Water Sufficiency
 - Sediments and their Management
 - Ecosystem Health.



Strategic priorities for the Nodes & Supersites – alignment with the Horizon Europe Framework Programme

Mission1 : Achieving healthy inland, transitional and coastal waters.

- Research Priority 1 - Water Quantity
- Research Priority 2 - Sediment Balance
- Research Priority 3 - Nutrients and Pollutants

Mission 2: Adapting to Climate Change: Enhancing Resilience of River-Sea Systems

- Research Priority 4 - Climate Change
- Research Priority 5 – Extreme Events

DANUBIUS-RI: Addressing Key Societal Challenges. (From Mission Restore Our Oceans and Waters by 2030)

- Research Priority 6 – Protecting and Restoring Ecosystems and Biodiversity
- Research Priority 7 – Digital Twin



DANUBIUS-RI - a pan-European distributed
Research Infrastructure dedicated to
Interdisciplinary Science in River-Sea Systems

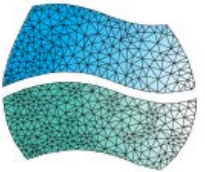
Observation Node



Analysis Node



Modelling Node



Impact Node



 DANUBIUS-RI Components 2023



Basemap from www.presentationgo.com





Supersites

- Natural laboratories for observation, research, modelling and innovation at locations of high scientific importance and opportunity
- Covering River-Sea Systems from river source to transitional waters and coastal seas
- Ranging from the near pristine (e.g. Danube Delta) to the heavily impacted (e.g. Thames Estuary)
- Identifying, modelling and defining system states and conditions for naturally and anthropogenically triggered transitions in the physical, biogeochemical and biological states
- DANUBIUS-RI will also support research at other locations



Services

- Digital and Non-Digital Data
- Tools, Methods and Expert Support
- Study and Measurements
- Diagnostic and Impact
- Solution Development
- Tests, Audit, Validation and Certification
- Training

Work in progress:

- Testing services / development of the **DANUBIUS catalogue** and improvement of connectivity and data flow
- **Strengthening the DANUBIUS Stakeholder community** (academia, agencies, policy makers, local representative of economic sectors)



DANUBIUS-RI development (1)

- Originated as Danube River-Delta-Black Sea project – Romanian Initiative (current effort from 2010, idea going back in early 1990s)
- Unique – did not start as a Network of RIs – but from the Scientific Case Study (Interdisciplinary sciences in River-Sea Systems)
- Accepted on the ESFRI Roadmap – 2016
- Preparatory Phase funded by H2020 grant (December 2016 - November 2019)
- Developed into pan-European distributed RI concerned with all European River-Sea Systems
- ERIC Step 1 – submitted in 2020
- Now in Implementation Phase with Step 2 ERIC application to be submitted to the EC in 2023 (November?), Project DANUBIUS-IP
- Consortium includes institutions from **11** European countries (October 2023)



DANUBIUS-RI development (2)



- All decisions – taken by the DANUBIUS BGR (Board of Government Representatives) – the governing body
- Present day focus
 - ERIC Step 2 submission underway
 - Strengthening the RI – preparation of SLAs between components
 - Testing the services
 - Structuring the Data Centre



DANUBIUS-RI

- Working closely with other environmental RIs within the ENVRI community
- DANUBIUS-RI community is growing in discussion with other European countries and globally
- Future aspirations beyond Europe

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