NENUPHAR

New governance models to enhance nutrient pollution handling and nutrients recycling

Nutrients recycling and pollution handling

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Institute of Agricultural Economics

Csaba Bálint
Erika Luzón-Tandazo
Institute of Agricultural Economics.
Budapest, Hungary
Correspondence: balint.csaba@aki.gov.hu

Highlights

- NENUPAR delivers innovative governance models to tackle nutrient pollution and boost nutrient recycling.
- The project encourages multi-stakeholder collaboration between policymakers, farmers, and researcher to create effective nutrient management frameworks.
- Develops cutting-edge recovery systems for processing manure, sewage sludge, and dairy wastewater.
- The project directly contributes to the advancement of the circular bioeconomy by closing nutrient loops and reintegrating recovered nitrogen and phosphorus back into the agricultural system.

Problem Statement: excessive nitrogen and phosphorus levels pose a significant pollution threat to soil, water, and air in the EU, endangering biodiversity in both inland waters and seas**.**

NENUPHAR's Goal: to develop new governance and circular value chain solutions addressing the recovery of N and P from three key waste streams with high nutrient load and widely present in the EU: manure, sewage sludges and dairy wastewaters (DWW).

Significance: Contributes to EU's Green Deal and Circular Economy Strategy.

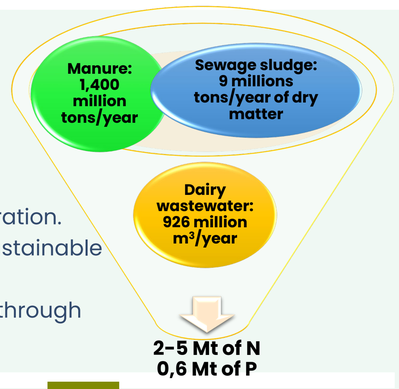
Methods

Target Waste Streams:

- Animal Manure
- Sewage Waste (sludges)
- Food Chain Waste (dairy wastewaters)

Approach:

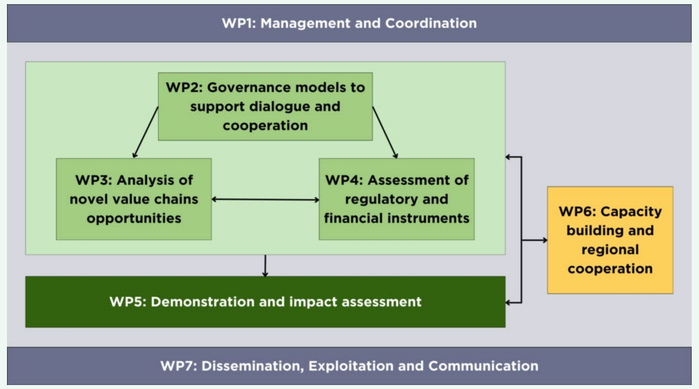
- Governance Models: multi-stakeholder collaboration.
- Economic & Finance Incentives: encouraging sustainable nutrient management.
- Technological Innovations: recovery of N and P through advanced treatment processes.



Partners:

- 10 countries, 21 entities,
- 7 working groups.

The Project



Study Regions & Demonstrations Sites

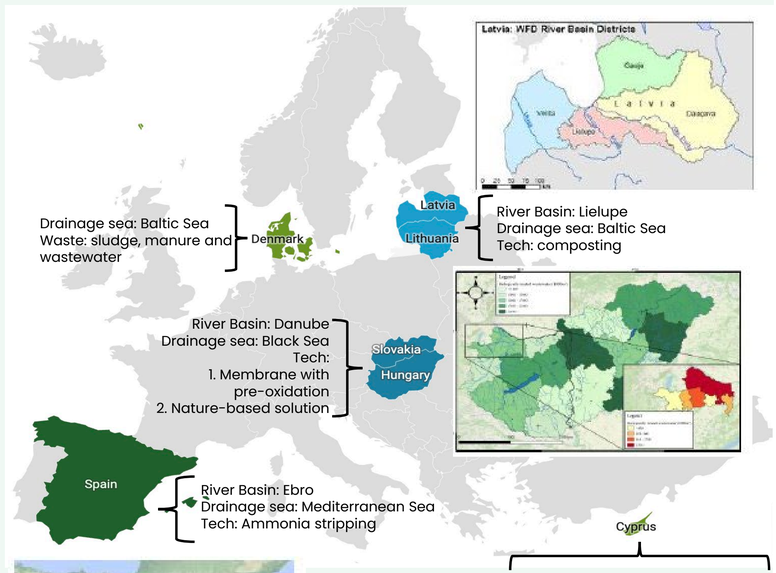
Objective:
Partners involved in the NENUPHAR project are conducting extensive demonstration cases across seven countries and five regions of Europe. Across these countries and regions, partners are testing a series of advanced technological solutions to mitigate nutrient pollution, reduce spiralling costs for fertilisers, and develop concrete, scalable models for more effective nutrient management and recycling.

Demo Cases:

- *Ebro River Basin* (Spain): Pig manure treatment
- *Lielupe River Basin* (Latvia-Lithuania): Sewage sludge composting
- *Danube River Basin* (Hungary-Slovakia): Dairy wastewater purification

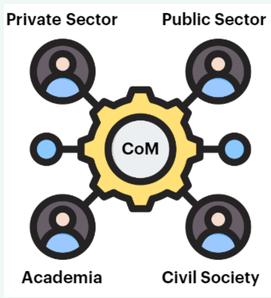
Replication Cases:

- Baltic Sea (Denmark)
- Mediterranean Sea (Cyprus)

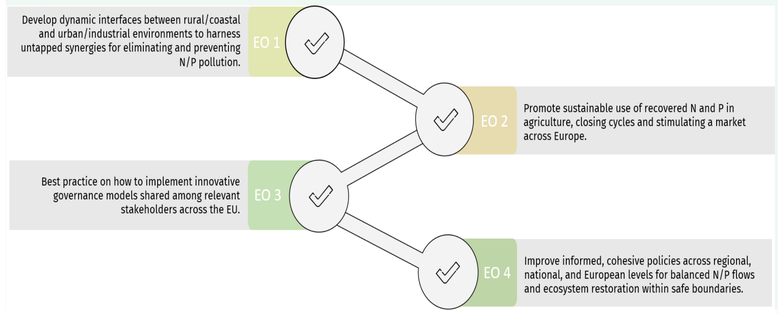


Community of Members

- The community aims to improve management processes to support the transition to circular nutrient management in each region targeted by the project, be it demonstration sites or their replicators.
- The members' association includes organisations that are (potentially) very interested in the project:
  - ✓ **Academia:** scientific, research, educational organizations
  - ✓ **Public sector:** public and state administration
  - ✓ **Private sector** private companies
  - ✓ **Civil society:** NGOs, social enterprises, associations



Expected Outcomes



Scientific

- Evidence for nitrogen and phosphorus recycling feasibility, addressing technical and social aspects, and compile waste inventories and legislations in targeted regions.
- Roadmaps and papers.

Economical/ Technological

- Sustainable nitrogen and phosphorus value chain through new methods, good agricultural practices, and effective governance structures.

Societal

- Reduced nutrient related pollution and access to a higher quantity of sustainable fertilizers.
- End-users' awareness of a sustainable management of N/P streams.

Together, these results could significantly improve environmental wellbeing, safeguard people's health and support farmers' livelihoods.

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