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**Mapping ecosystem services as a method for evaluating the ecological, social, and economic benefits of restoration efforts**

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**Introduction**

**Wetlands** are among the most critical ecosystems, providing essential **ecosystem services** such as water purification, flood regulation, carbon storage, and biodiversity support.

- Human activities can degrade them, leading to biodiversity loss - reduced ecosystem services, and increased vulnerability to climate change
- Ecosystem restoration is a global priority, emphasized by the UN Decade on Ecosystem Restoration (2021–2030).
- Restoration of wetlands is challenging, as it requires balancing **ecological, social, and economic** dimensions.



**Methodology**

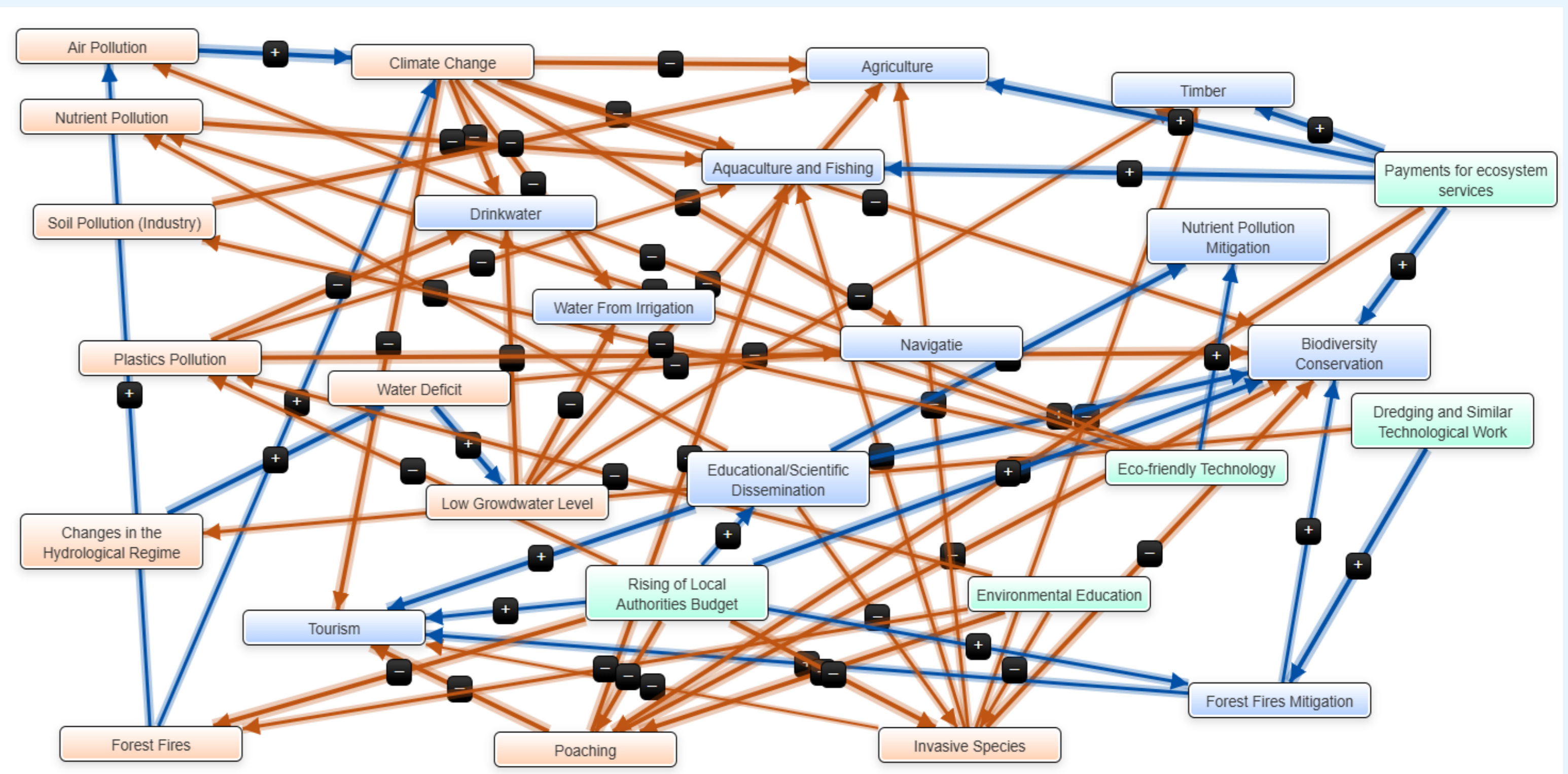
**Workshop** - 20+ stakeholders: administration, education, fishing, etc., to capture their perspectives on pressures, ecosystem services, and potential solutions for the **Danube Delta Wetlands**.

**Knowledge** - Fuzzy Cognitive Mapping (FCM) - allowed us to explore three future restoration scenarios

**Co-creation** - links between impacts, ecosystem services, and possible solutions, integrating both **scientific and stakeholder views**

Each link was attributed a value between -1 (negative influence) and +1 (positive influence).

Simulated the improvement of: climate change, groundwater levels, plastic pollution, invasive species, and drinking water quality from the worst scenario to the best.



Web of Impact Types, Ecosystem Services, and Remedies in Mental Modeler (www.mentalmodeler.com), with their corresponding relations

**Results**

**Worst Scenario**

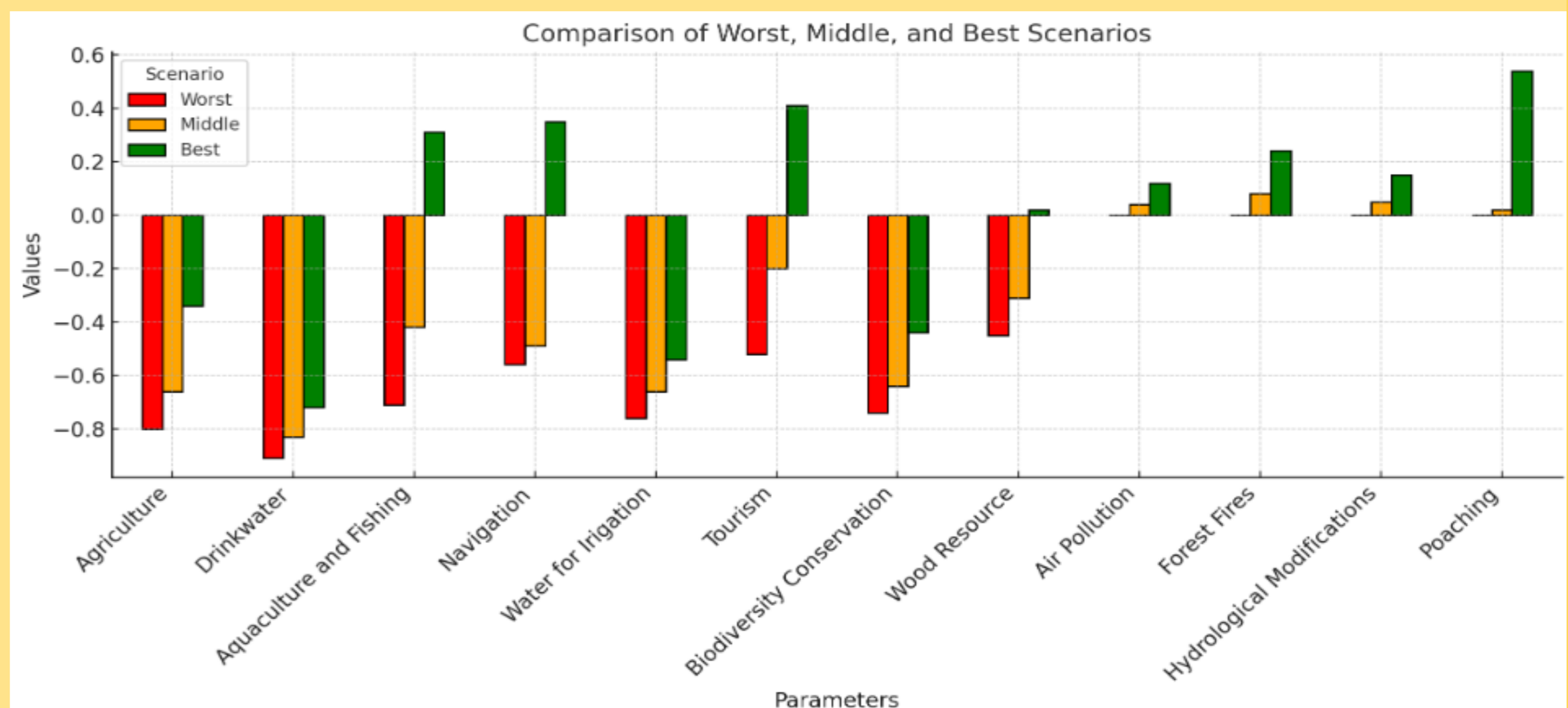
- Most parameters show negative values, especially for **agriculture, drinking water, and aquaculture**, threatening **food and water security**.

**Middle Scenario**

- Moderate improvements across most categories.
- **Aquaculture and fishing, water for irrigation, and tourism** begin to stabilize.
- Challenges persist in **biodiversity conservation, agriculture, and drinkable water**, requiring stronger interventions.

**Best Scenario**

- Significant positive shifts in nearly all parameters.
- **Agriculture and biodiversity conservation** show strong recovery.
- **Aquaculture and fishing, navigation, tourism, forest fires prevention, wood resources, and poaching** show the greatest and most positive changes.



3 possible futures for wetlands under different management strategies

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