from Nexus **Thinking** to Nexus **Doing**

REXUS

Managing **RE**silient ne**XU**s **S**ystems through Participatory Systems Dynamics Modelling

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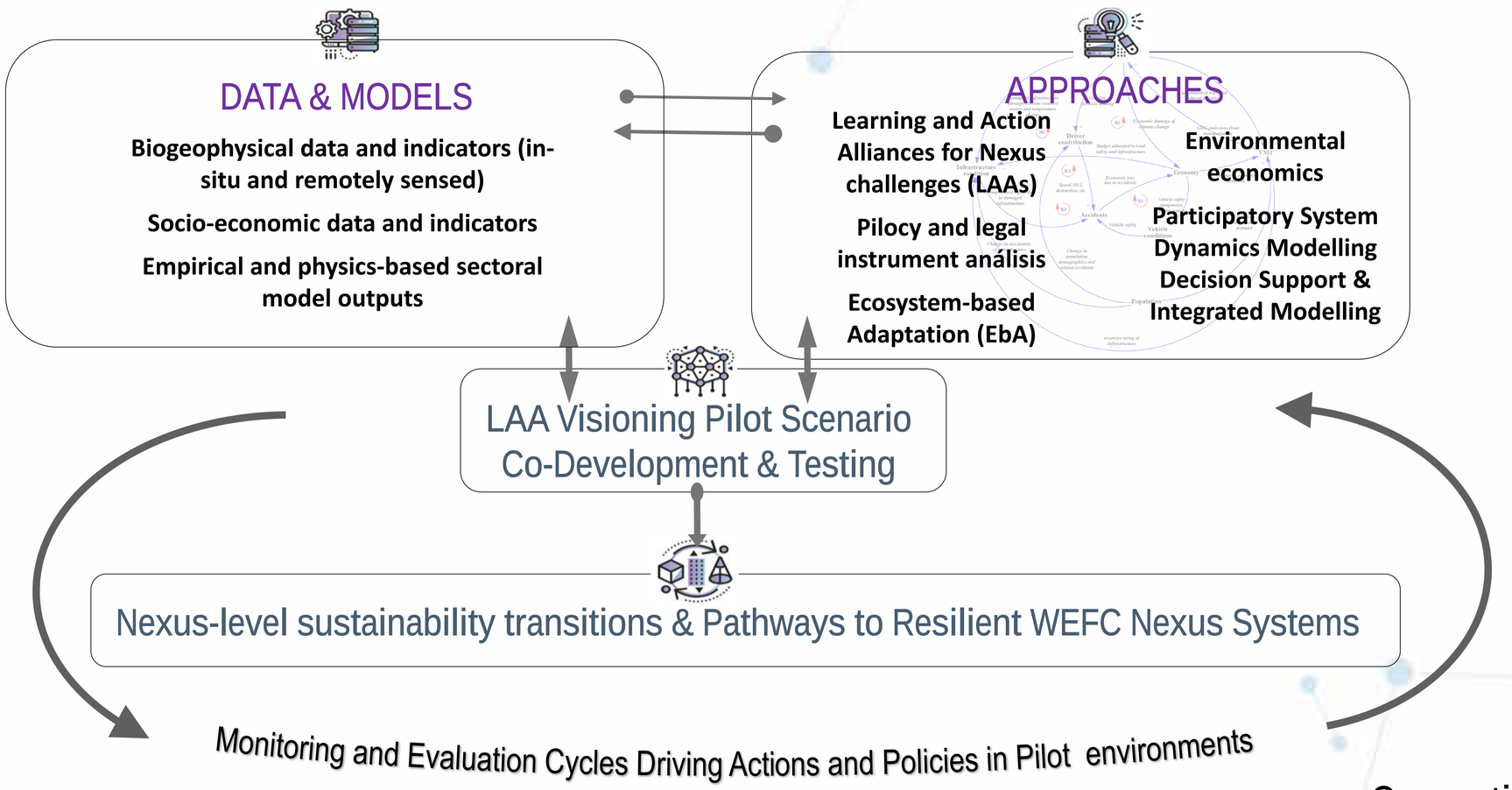
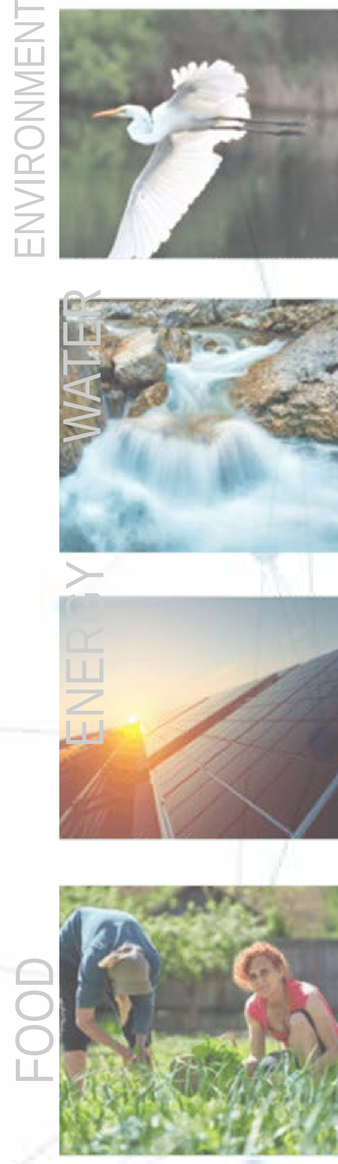
The project

REXUS ambitious goal is to bring transformative change in the way our societies approach the Water Food Energy Climate Nexus. The project argues that this is possible only through the activation of inclusive nexus partnerships, the Learning & Action Alliances (LAAs). The **objective** is to **Co-Develop and Co-validate knowledge and tools that facilitate the transition from the stage of Understanding the NEXUS to NEXUS Doing to strengthen resilience.** In this context, LAAs will (a) co-produce new knowledge regarding Nexus interactions to inform the development of **Participatory System Dynamics Models (PSDM)** at suitable spatial and temporal scales and (b) explore multiple co-developed scenarios of demographic change, climate change, socio-environmental, economic incentivization and regulatory policies. Thus, **PSDM development is the means** to (i) develop stakeholder platforms of trust, (ii) test the efficacy of integrated cross-sectoral policies, and (iii) build legitimacy for evidence-based decisions towards sustainable transitions. **PSDMs will inform climate risks assessments for combined-resource-management strategies by capturing the cascading effects among Nexus domains**.

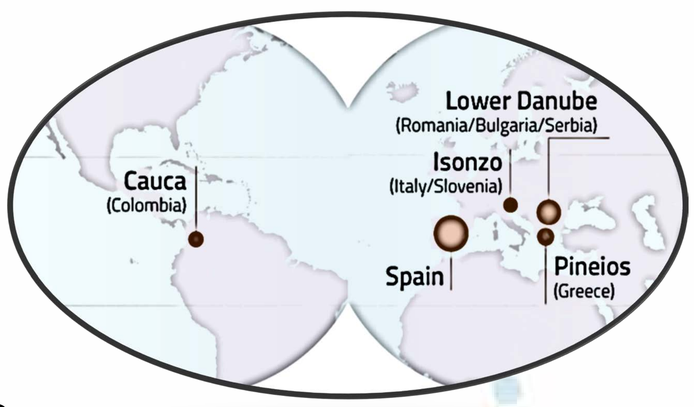
The pilot cases will be the test-beds for the integration of methods, such as thematic biophysical modelling using Earth Observation, environmental cost valuations, natural capital and carbon accounting to explore case-specific challenges. In response to these challenges, **Ecosystem-based Adaptation (EbA) measures will be planned for these regional and transboundary systems**.

On a policy level, for the first time, REXUS will explore the opportunity to link Climate Adaptation (i.e. the Paris Agreement framework) to Nexus management as a means to push forward the Nexus agenda. The approaches above will support REXUS' vision for Nexus systems that are managed within renewable natural resource constraints and in appreciation of climate feedbacks.

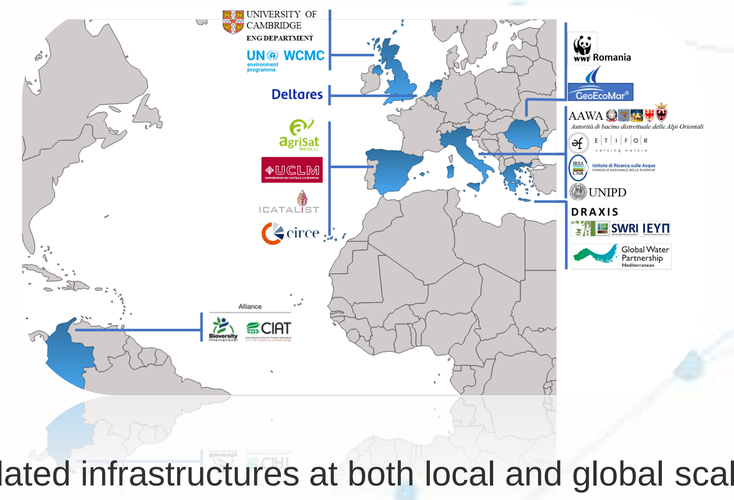




Pilot Areas



Consortium



Impacts

- Provide more accurate evaluations of future demands for water, energy, food and related infrastructures at both local and global scales, taking also into consideration the ecosystem needs.
- Enhance sharing knowledge and best practices in climate-water-energy-food nexus assessment and management and help create critical mass on capacity to innovate.
- Improve integrated water resources management and increase resilience to climate change, considering the value of water for ecosystems and their services and ensuring good quantitative and qualitative status of water, sustainable agriculture, food and energy production, as well as water, food and energy security
- Reduce the water risks for the energy sector and optimize market and trade solutions across the nexus.
- Assess the impacts of EU regulatory framework (e.g. RED) on a sustainable water-energy-food nexus.
- Reduce institutional fragmentation whilst increasing cross water, energy, food collaboration and inclusive multi-stakeholder engagement.
- Strengthen EU role in international water issues, and become a leading actor on water diplomacy.

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