

## Project pilot Areas: Pinios Hydrologic Observatory (Greece)

### TACKLE THE WATER-ECOSYSTEM-FOOD (WEF) NEXUS CHALLENGES IN THE PILOT AREA OF PINIOS HYDROLOGIC OBSERVATORY

In recent years, a significant effort has been put into improving the understanding of the Water-Ecosystem-Food (WEF) Nexus system as a framework to promote sustainable development. Agia watershed and Pinios Delta located in Thessaly region, Greece, constitute highly productive sub-basins, encountering several sectoral problems, including occasional water shortage and quality deterioration, environmental degradation, and agricultural production decrease and net income reduction over time. Investigation and identification of the sectoral problems faced, and the cross-sectoral interdependencies and conflicts sensed by stakeholders, along with the development of Nature-based Solutions to mitigate the vulnerabilities of the pilot areas, aim at successfully building coherent and resilient agricultural societies, and preserving natural ecosystems under climate crisis.

#### GENERAL CHARACTERIZATION

##### PINIOS DELTA

- ✓ **Highly productive plain** of about 75 km<sup>2</sup>
- ✓ **Annual crops** are dominating, mainly. Sunflower and corn. Kiwi fruit is also upscaling.
- ✓ **Irrigation from groundwater and surface water – lack of infrastructure**
- ✓ **Water salinisation** issues.

##### AGIA WATERSHED

- ✓ **Area:** Approx. 53 km<sup>2</sup>
- ✓ **International Long Term Ecological Research (ILTER) Site**, highly instrumented area.
- ✓ **Agriculture is dominant.** Orchards mainly, apples and cherries.
- ✓ **Irrigation from groundwater.**



#### LENSES GOALS

The LENSES project will contribute to all the Nexus domains' challenges. In particular:



**Water** □ Provisioning to protection and improvement of the water bodies' statue, Sustaining a sufficient quantity and quality of water to meet the needs of water users; Developing management practices to address salinity problems in the delta plain; Introduce agro-ecological and irrigation practices to reduce water consumption from the agricultural sector, Improve water resources management adaptability to climate change.



**Ecosystem** □ Maintain environmental flow; Improve management of produced agricultural residues; Improve the NATURA 2000 protected area preservation.



**Food** □ Maintain agricultural production; Improve the viability and competitiveness of the agricultural sector; Optimize production costs; Promote the quality elements of local products to increase their added value in the market.



## HOW WILL LENSES WORK?

✓ **Plan Nature-based Solutions based (NBS) measures to address the identified vulnerabilities and challenges in the pilot areas** □ Considered NBSs include: ✓ Agroecological approaches focusing on irrigation practices improvement; ✓ Increase of soil water holding capacity and infiltration rates; ✓ Incorporation of manure, compost, biosolids or crop residues to enhance carbon storage; ✓ Mulching; ✓ Use of soil conservation measures – Cover crops; ✓ Soil improvement and conservation measures mainly through conservation tillage.

✓ **Drive Nexus Dialogue** □ A broad range of **stakeholders from all sectors, levels and functions** are engaged supporting the Active Learning & Action Alliance development, aiming at collective learning of stakeholders.



## FUTURE PERSPECTIVE “CALL TO ACTION”

*“Each area, each farmer, and every citizen calls for special attention and individualized design of solutions tailored to the specific needs of the people who live and experience the day-to-day problems to be tackled and adapted to the capacity of the ecosystem. Science, can and does provide valuable data, advanced methodological approaches, experience and expertise in best practices, hi-end solutions and advanced technological tools that are needed in environmental problem solving and management. Still, the secret ingredient is not kept by the scientists, but the society itself. Active stakeholders’ engagement is the road to fully comprehend the needs and the dense web of inter-sectoral relations that characterizes each particular study area. Based upon them, we may safely design viable, practicable and realistic solutions that are suitable to the needs and born by nature: Natural Based Solutions. This is their ecosystem, their space and their call to where they wish to steer. They know by tradition the values and virtues of their land, the capacity and self-healing power of nature. We are providing the navigation tools and together we built a brighter and more sustainable future that will ensure the safety of the NEXUS sectors”.*

**SWRI Team**



## COUNTRY PILOTS REGIONAL TEAM



The Soil and Water Resources Institute (SWRI) is one of the 11 research institutes of the Hellenic Agricultural Organization-DEMETER in Greece that specializes on the protection and management of soil and water resources. SWRI is involved in resource management and policy support oriented projects, focusing on environmental modeling, applying state-of-the-art technological solutions and sensors in environmental monitoring, developing and proposing good agricultural practices, performing climate change impact assessment and environmental impact assessment in agriculture, and managing soil resources in agricultural areas. SWRI is one of the founding partners and the operator of the Pinios Hydrological Observatory (PHO), which is included in the International Long-Term Ecological Research (ILTER) sites and the European Network of Hydrological Observatories (ENOHA). SWRI also manages national river discharge monitoring network operating in the framework of the WFD 2000/60/EU .