NINFA

Taking action to prevent and mitigate pollution of groundwater bodies

NINFA Project

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The project in numbers

9	6	4M	start	end
PARTNERS	COUNTRIES	INVEST	2022	2026

Funded by the European Union

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NINFA

Prevent and mitigate groundwater pollution

LEITAT managing technologies

IMT Atlantique Bretagne-Pays de la Loire École Mines-Télécom

Ayuntamiento de LOS ALCÁZARES

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Sapienza Università di Roma

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HIDROTEC TECNOLOGÍA DEL AGUA

About NINFA

NINFA Project is a Horizon Europe 2022 Research and Innovation project aimed at developing innovative groundwater monitoring strategies to prevent groundwater contamination. These new approaches will ensure effective management, control, governance and protection of groundwater resources, thereby safeguarding both water quality and availability for future use.

Main objectives

01

Develop and validate innovative strategies, technologies, and tools that go beyond existing groundwater monitoring and protection approaches.

02

Create the NINFA Platform as a powerful IT tool for integrated groundwater management.

03

Implement a Decision Support System (DSS) to support efficient and informed management of groundwater resources.

04

Establish a Groundwater Knowledge Observatory to improve access to, and use of, existing and new knowledge on groundwater contamination.

05

Develop data acquisition and communication networks to enable real-time groundwater monitoring and efficient information sharing.

06

Enhance understanding of the processes affecting ground water quality and contamination.

07

Assess and predict the impacts of climate change on groundwater, surface waters, and interconnected ecosystems.

08

Provide a comprehensive understanding of the water cycle, including synergistic effects of multiple stressors and future risks to water resources.

Challenge

Groundwater is a vital resource for people and ecosystems, yet its quality is increasingly threatened. Diffuse pollution from agriculture, wastewater treatment plants, urban runoff, and emerging contaminants—such as pharmaceuticals, antibiotic resistance genes, hydrocarbons, heavy metals, and microplastics—poses significant risks. Due to the interconnected nature of water bodies, these pollutants spread to rivers, lakes, wetlands, and oceans. Overexploitation, particularly in coastal aquifers, further degrades groundwater quality through saltwater intrusion. Climate change exacerbates these pressures by reducing natural recharge and increasing contamination risks. **NINFA addresses these challenges by developing innovative strategies to monitor, manage, and protect groundwater resources.**

Our solution

NINFA Project aims to go beyond existing actions, technologies, and tools by developing and validating innovative approaches for groundwater management, including:

- **Innovative groundwater monitoring strategies and novel sensors**
- **Hydrogeological and reactive transport models integrated into different water scarcity scenarios**
- **Cutting-edge technologies for contaminant removal and resource recovery**

In parallel, the **NINFA Platform** will be developed as a powerful IT tool, offering:

- **NINFA DSS (Decision Support System)** to support efficient and integrated groundwater management
- **Groundwater Knowledge Observatory** to improve access to and use of existing and new knowledge on groundwater contamination
- **Data acquisition and communication network** enabling real-time monitoring and seamless information exchange

Who will benefit

The **NINFA Platform** will deliver a deeper understanding of the processes affecting groundwater quality. The **NINFA Decision Support System (DSS)** will support the assessment and prediction of climate change impacts on groundwater resources, surface waters, and interconnected ecosystems. Overall, NINFA will enhance knowledge of the water cycle, its synergistic effects, and future risks to water resources.

Key beneficiaries include:

- The scientific community
- Water service providers
- Regulatory authorities
- The EU educational system
- Citizens
- Groundwater monitoring companies