Advancing RHE-MEDiation Solutions Across the Mediterranean and Beyond

Through its Open Call, the RHE-MEDiation project extended its impact beyond the original demo sites by engaging Associated Regions in testing the feasibility, replicability, and scalability of its innovative solutions. These replication projects focus on preventing, monitoring, and remediating chemical pollution in diverse environmental contexts, while promoting sustainable water management practices aligned with EU directives.

Moldova – Ișnovăț River Sub-Basin (GISmart RHE-MEDiation)

The Moldovan replication site addresses severe water quality degradation in the Ișnovăț River sub-basin, caused by nutrient loading, agricultural runoff, and legacy pollution. The project evaluates the deployment of the GREEN DUNE® microalgae photobioreactor as a nature-based solution to remove nutrients, heavy metals, pesticides, and other priority pollutants.

A key innovation lies in the integration of bioremediation with geospatial intelligence through the SIGSNL system (State Geographic Informational System at the Local Level). This enables data-driven decision-making and optimal site selection for system installation.

The project, led by the Agency for Geodesy, Cartography and Cadastre (AGCC) in collaboration with scientific partners, also focuses on capacity building and institutional strengthening. By the end of the project, a stakeholder-validated roadmap will outline technical, regulatory, and financial strategies for scaling up the solution at national level, supported by measurable improvements in water quality.

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Egypt – Port Said (Clean Port Said Project)

The Port Said replication site targets a semi-enclosed coastal ecosystem heavily impacted by industrial pollution. The project aims to establish a comprehensive environmental remediation framework by first generating a robust scientific evidence base.

Through targeted sampling campaigns and accredited laboratory analyses, contamination hotspots will be identified and mapped. These data will feed into a feasibility study assessing the applicability of RHE-MEDiation technologies within the local environmental, infrastructural, and regulatory context.

Coordinated by the Institute of National Planning (INP), the project emphasizes governance, stakeholder engagement, and strategic planning. The final output will be a validated dataset and a replication roadmap, positioning Port Said as a national reference point for sustainable coastal remediation and alignment with EU environmental approaches.

Morocco – Tangier (REMEDTAR Project)

In Tangier, the project focuses on a semi-confined coastal area affected by industrial discharges and urban runoff, where real-time monitoring and coordinated pollution control are currently lacking.

The initiative will establish a continuous water quality monitoring system tailored to local conditions, enabling the tracking of priority pollutants such as lead, cadmium, and PFAS. Building on previous RHE-MEDiation models, the project aims to adapt and validate these solutions within the Moroccan context.

A strong emphasis is placed on stakeholder engagement through co-creation processes, technical consultations, and training activities. The resulting roadmap will define governance structures, intervention priorities, and financing mechanisms, supporting future upscaling and replication at national level.

Egypt – North Sinai (SINAQUA Project)

The SINAQUA project addresses one of the most critical pollution hotspots in Egypt: the discharge of untreated agricultural drainage water from the Balooza Drainage Water Station into the Suez Canal.

Handling approximately 388,800 m^3/day of effluent containing pesticides, PFAS, heavy metals, nutrients, and high salinity, the site presents significant environmental challenges. The project evaluates the feasibility of applying GREEN DUNE® photobioreactors under these complex physicochemical conditions.

Structured in three phases—baseline assessment, feasibility analysis, and impact simulation—the project integrates scientific research, predictive modelling, and institutional coordination. The final outcome will include a national roadmap for scaling up microalgae-based bioremediation across Egypt's drainage network, contributing to the protection of the Mediterranean Sea.

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Bulgaria – Sozopol (SCeNiC Project)

The SCeNiC project focuses on the Port of St. Nicolas in Chernomorets, a key fishery hub and environmental hotspot on Bulgaria's southern coast. This project conducts a theoretical replication of RHE-MEDiation technologies.

The initiative includes a feasibility assessment, development of a context-specific replication strategy, and the creation of a stakeholder-driven roadmap. A Living Lab will be established to ensure continuous engagement and co-creation among local authorities, port administrators, and scientific institutions.

By addressing governance complexity and site-specific challenges, the project aims to validate the adaptability of RHE-MEDiation solutions while strengthening local environmental management capacities and fostering long-term partnerships.

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