

94. Multicriteria approach to define adequate areas for the implementation of Ecosystem-based Adaptation strategies

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ABSTRACT:

This concept was developed in the framework of a task of the C2IMPRESS Horizon Europe Project focused on disaster-resilient societies.

It deals with the use of an ecosystem-based adaptation (EBA) approach to increase groundwater resources. The objective is to create storage and water infiltration conditions. By contributing to mitigating water scarcity, if necessary, using treated wastewater, this approach simultaneously develops local ecosystems and helps prevent wildfires.

The main rationale is to use in-channel Managed Aquifer Recharge (MAR) methods, making use of natural topographical and geological features coupled with the potential upstream natural erosion and sedimentation processes to generate storage capabilities in areas where aquifers do not occur.

To define the best areas, a multicriteria system is defined and an analytic hierarchy process (AHP) is applied to weight the relative importance of each criterion. The following criteria were defined, based on the objective and available information: Slope, Geology, Land Use, and Sediment generation potential. Use of treated wastewater as an alternate water resource (AWR) for infiltration is also considered.

The methodology is applied to the Alva watershed located in Centre Portugal, where maps were produced to classify each criterion and AHP was used to produce the final maps.

Keywords: Drought resilience, flooding resilience, Multicriteria analysis, Analytic Hierarchy Process, Ecosystem Based Adaptation

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