



An indicators' based approach to Drought and Water Scarcity Risk Mapping in Pinios River Basin, Greece.

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Assessing the vulnerability and the associated risk to water scarcity and drought is a complex multi-factor problem. The underlying exposure to climatic stresses may be similar even in quite different conditions, yet the vulnerability and prevailing risk are a function of the socio-economic state, the current policy and institutional setting, the adaptive capacity of the affected area and population, and the response strategies adopted (Kossida et al., 2012). Although flood risk assessment has been elaborated under the EU Floods Directive, there is currently a lack of analytical frameworks for the definition and assessment of drought and water scarcity related risk at European level. This can partially be attributed to the inherent complexity of such phenomena which lie at the crossroads between physical and anthropogenic drivers and pressures, operating on many scales, and with a variety of impacts on many sectors.

The quantification of the various components of drought and water scarcity risk is challenging since data present limitations, relevant indicators that can represent or proxy the various components are still not clearly defined, while their relevant weights need to be determined in view of the prevailing regional conditions. The current study in Pinios River Basin, an area highly impacted by drought and water scarcity, proposes a methodology for drought and water scarcity risk assessment using blended indicators. Using the Standard Precipitation Index (SPI) as a base drought indicator, relevant sub-indicators reflecting the magnitude, severity, duration and recurrence of drought events from 1980-2011 have been produced. These sub-indicators have been assigned relevant scores and have been blended into a Drought Vulnerability Index (DVI) using different weights derived from an analytical hierarchy process (AHP). The resulting map of DVI has been then blended with additional socio-economic indicators of surface and groundwater exploitation, water deficit and land use to provide (following again a scoring and weighting process) a relevant drought and water scarcity risk map of the area. The proposed methodology has proven to be useful, and can provide a robust tool for prioritizing areas which need immediate interventions, facilitating thus decision making and planning.

References:

Kossida M., Kakava, A., Tekidou, A., Iglesias A., Mimikou, M. 2012. Vulnerability to Water Scarcity and Drought in Europe. Thematic assessment for EEA 2012 Report. ETC/ICM Technical Report 2012/3. ISBN 978-80-85087-13-0.