



## **Development of climate risk services under climate change scenarios in the North Adriatic coast (Italy).**

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Nowadays, the challenge for coastal stakeholders and decision makers is to incorporate climate change in land and policy planning in order to ensure a sustainable integrated coastal zone management aimed at preserve coastal environments and socio-economic activities. Consequently, an increasing amount of information on climate variability and its impact on human and natural ecosystem is requested.

Climate risk services allows to bridge the gap between climate experts and decision makers communicating timely science-based information about impacts and risks related to climate change that could be incorporated into land planning, policy and practice. Within the CLIM-RUN project (FP7), a participatory Regional Risk Assessment (RRA) methodology was applied for the evaluation of water-related hazards in coastal areas (i.e. pluvial flood and sea-level rise inundation risks) taking into consideration future climate change scenarios in the case study of the North Adriatic Sea for the period 2040-2050.

Specifically, through the analysis of hazard, exposure, vulnerability and risk and the application of Multi-Criteria Decision Analysis (MCDA), the RRA methodology allowed to identify and prioritize targets (i.e. residential and commercial-industrial areas, beaches, infrastructures, wetlands, agricultural typology) and sub-areas that are more likely to be affected by pluvial flood and sea-level rise impacts in the same region. From the early stages of the climate risk services development and application, the RRA followed a bottom-up approach taking into account the needs, knowledge and perspectives of local stakeholders dealing with the Integrated Coastal Zone Management (ICZM), by means of questionnaires, workshops and focus groups organized within the project. Specifically, stakeholders were asked to provide their needs in terms of time scenarios, geographical scale and resolution, choice of receptors, vulnerability factors and thresholds that were considered in the implementation of the RRA methodology.

The main output of the analysis are climate risk products produced with the DEcision support SYstem for COastal climate change impact assessment (DESYCO) and represented by GIS-based maps and statistics of hazard, exposure, physical and environmental vulnerability, risk and damage. These maps are useful to transfer information about climate change impacts to stakeholders and decision makers, to allow the classification and prioritization of areas that are likely to be affected by climate change impacts more severely than others in the same region, and therefore to support the identification of suitable areas for infrastructure, economic activities and human settlements toward the development of regional adaptation plans. The climate risk products and the results of North Adriatic case study will be here presented and discussed.