



## **Assessing the vulnerability of economic sectors to climate variability to improve the usability of seasonal to decadal climate forecasts in Europe – a preliminary concept**

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Climate variability poses major challenges for decision-makers in climate-sensitive sectors. Seasonal to decadal (S2D) forecasts provide potential value for management decisions especially in the context of climate change where information from present or past climatology loses significance. However, usable and decision-relevant tailored climate forecasts are still sparse for Europe and successful examples of application require elaborate and individual producer-user interaction. The assessment of sector-specific vulnerabilities to critical climate conditions at specific temporal scale will be a great step forward to increase the usability and efficiency of climate forecasts. A concept for a sector-specific vulnerability assessment (VA) to climate variability is presented. The focus of this VA is on the provision of usable vulnerability information which can be directly incorporated in decision-making processes. This is done by developing sector-specific climate-impact-decision-pathways and the identification of their specific time frames using data from both bottom-up and top-down approaches. The structure of common VA's for climate change related issues is adopted which envisages the determination of exposure, sensitivity and coping capacity. However, the application of the common vulnerability components within the context of climate service application poses some fundamental considerations:

**Exposure** – the effect of climate events on the system of concern may be modified and delayed due to interconnected systems (e.g. catchment). The critical time-frame of a climate event or event sequence is dependent on system-internal thresholds and initial conditions. But also on decision-making processes which require specific lead times of climate information to initiate respective coping measures.

**Sensitivity** – in organizational systems climate may pose only one of many factors relevant for decision making. The scope of “sensitivity” in this concept comprises both the potential physical response of the system of concern as well as the criticality of climate-related decision-making processes.

**Coping capacity** – in an operational context coping capacity can only reduce vulnerability if it can be applied purposeful. With respect to climate vulnerabilities this refers to the availability of suitable, usable and skillful climate information. The focus for this concept is on existing S2D climate service products and their match with user needs.

The outputs of the VA are climate-impact-decision-pathways which characterize critical climate conditions, estimate the role of climate in decision-making processes and evaluate the availability and potential usability of S2D climate forecast products. A classification scheme is developed for each component of the impact-pathway to assess its specific significance. The systemic character of these schemes enables a broad application of this VA across sectors where quantitative data is limited. This concept is developed and will be tested within the context of the EU-FP7 project “European Provision Of Regional Impacts Assessments on Seasonal and Decadal Timescales” EUPORIAS.