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Climate services for large scale investments in infrastructure and climate resilience in the Danube Basin

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The results presented in this contribution demonstrate the value of climate services for the planned construction of the new Wastewater Treatment Plant (WWTP) in Novi Sad, Serbia. In this case, climate services provided added value for the decision-making processes, in terms of enhanced effectiveness, optimized technological opportunities and minimized risks and by serving as the means of involving and better-informing end-users and stakeholders. The specific goal of the research was to improve climate change resilience of the WWTP and to facilitate better overall hygienic conditions in Novi Sad and to safeguard the potable water resources and the quality of the environment in the areas located downstream and under the influence of the Danube River.

In order to achieve it, preliminary activities were oriented on analyzing the current climate and hydrological conditions, engaging the relevant data providers, stakeholders and policy makers and evaluating what relevant local data would be useful for the study. The data collected was applied in the testing and for improving the Future Danube Multi-hazard, Multi-risk Model (FDM), a catastrophe model implemented in the OASIS Loss Modeling Framework (Oasis-LMF). The FDM is implemented for the entire Danube Basin. High-resolution components for pluvial flood risks were further implemented to the city of Novi Sad, Serbia, after successful testing in the Budapest region. Observations and model results were used in a climate change impact assessment with the purpose of identifying adaptation options, appraisal of adaptation options and integration of an adaptation action plan into the Feasibility Study of the WWTP construction. The results of the pluvial flood model for Novi Sad clearly suggested that it is important to consider pluvial flood risks and that protective measures have to be considered as part of the WWTP construction, both under current and future climate conditions. Moreover, novel estimates of drainage water intensities during heavy rains would advise the design of the simultaneously planned pumping station on the banks of the Danube. Combined, this clearly demonstrates the added value of the climate services and risk information delivered by the FDM also beyond the insurance sector, as well as its potential to support adaptation decision making with respect to infrastructural investments in Novi Sad.