



GENERAL OFFER

Future Danube Model

The Future Danube Model (FDM) is a catastrophe model compliant with both insurance industry standards and climate science best practices. In its core it provides risk and damage information for fluvial flooding for the entire Danube Basin and pluvial flooding for selected cities in the Danube Basin for the past, present and future. A unique feature is the use of climate change scenarios to provide risk information for the present (2006-2035) and two future climate periods (2020-2049, 2070-2099), allowing analyses of risk with regards to the baseline period (1970-1999). The model was co-designed and co-validated in collaboration by the Potsdam Institute of Climate Impact Research (PIK), the German Centre for Geoscience (GFZ) and the Technical University of Denmark (DTU) with partners from the insurance industry.

The high-resolution pluvial flood risk assessments are now available for four selected cities (Budapest, Hungary; Bratislava, Slovakia; Novi Sad, Serbia; Vienna, Austria) but will also be available for other cities upon request.

Results

FDM was already used by **Novi Sad municipality** during the investment of a **new Wastewater Treatment Plant**. It will be initiated in 2021 and the model provided added-value for the decision-making processes, in terms of effectiveness, optimized technological opportunities and minimized risks.

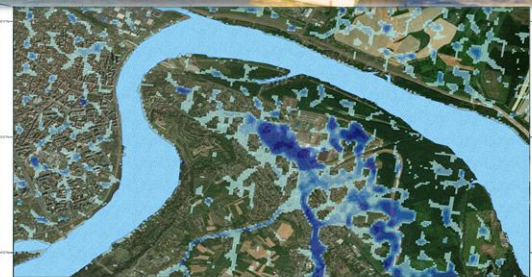
The model helped in:

- Selection of WWTP location
- Selection of wastewater treatment options
- Improving the design and construction of WWTP, retentions, pipelines and pumping stations

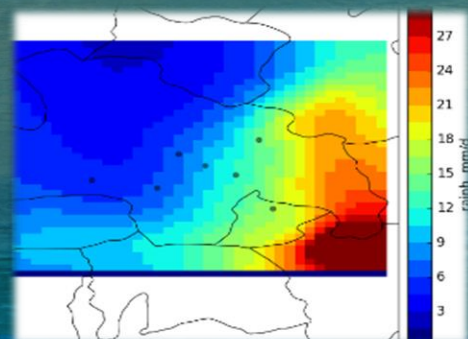
Impact highlights:

- Improve climate change resilience of the WWTP
- Facilitate overall hygienic conditions in Novi Sad
- Safeguard the potable water resources and the quality of the environment in the areas located downstream and under the influence

100-year event, RP2 Sewer system



Pluvial hazard model for Novi Sad with improved input Novi Sad (5m DEM)



Extreme precipitation in Novi Sad simulated with high resolution climate model

OFFER FOR MUNICIPALITIES

There are a lot of settlements along the river sides in the Danube basin who are vulnerable by the effects of climate change. They need detailed information about future floods, heavy rainfalls, droughts to be able to prepare for these events and the consequences.

Authorities can get the following datas from FDM to help them in decision making:

- ✓ **Climate model simulations** - pertain to the historical, current and future climate periods as well.
- ✓ **Fluvial flood hazard forecast** – show the extreme events in the next 10.000 years
- ✓ **Pluvial flood hazard forecast** – show the future flash flood events by the present climate
- ✓ **Fluvial Vulnerability model** - use flood intensity characteristics as for instance inundation depth or inundation duration to estimate flood damage for affected objects
- ✓ **Pluvial Vulnerability model** - follow a probabilistic, multi-variable approach for the estimation of loss in the private sector and can be transferred in location and scale.

Future Danube Model is able to provide the above listed scientific decision support information which can be used in the following areas:

- ✓ **Urban planning** – Detect the areas of the settlement which are exposed by extreme weather conditions.
- ✓ **Urban management** – Suggestions to resize the sewage system, redesign the water supply system, handling floods and hot spots.
- ✓ **Healthcare** – Recommend measures in causes when air pollution, precipitation, extreme air movement affecting health thresholds.
- ✓ **Critical infrastructure** – Technical and environmental recommendations for large scale investments in infrastructure (water & energy supply, industrial facilities, etc.)
- ✓ **Public buildings and spaces** – Detect exposed buildings and spaces which can be damaged by extreme weather conditions.

For further information visit our website: <http://www.oasisdanube.eu/>

PROJECT DATA

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EUR 4,802,522.01

Project coordinator

Potsdam Institute for Climate Impact Research (PIK), Germany



Additional Case study Partners:



Republic of Serbia
Ministry of Environment and Spatial Planning
ENVIRONMENTAL PROTECTION AGENCY

