

At the turn of the 20th and 21st centuries, attitudes towards strategies of flood protection changed, from the assumption that fully-effective methods for flood protection were possible to the conviction that total protection was impossible, and that flood-related damage and losses could only be mitigated. Closely related to floods and floodplains is the concept of flood risk, which is the product of hazard, exposure and vulnerability. Recently, knowledge of hazard and exposure has improved significantly, while vulnerability studies have so far been the most formidable obstacle in assessing flood risk. Overlooking social or economic indicators of system vulnerability, i.e. hazard awareness or preparedness for the occurrence of floods, leads to greater losses.

The primary goal of the project is to assess the spatial differentiation of flood vulnerability levels within municipalities in Poland and Austria. The study will investigate the following elements: exposure to the threat (of the area and its population) as well as social sensitivity and the ability of communes with their populations to respond to and cope with a natural disaster. The research will be carried out for all communes in Poland and Austria that have flood hazard areas (from the river) within their borders, specifically areas subject to the 1% annual chance flood.

The motivation for the research on assessing the vulnerability of communes to flooding (in Poland and Austria) is to assess the level of preparedness of their populations and development to this threat as well as the ability of these two elements to return to pre-flood operating characteristics. The rationale for making sense of such considerations comes from the intensification of the drivers of natural disasters emerging globally in recent decades, combined with changes in the approach to flood risk management (which emphasises the importance of vulnerability in the context of loss reduction).

There is no universal definition of vulnerability or a single research approach yet vulnerability is an important element in reducing the level of flood risk.

The project's innovation is ensured primarily by its research procedure dedicated to assessing the relationship between individual elements of vulnerability of communes to flooding (exposure, sensitivity and resilience). Thus, it will be a multi-faceted approach, including physical, social, environmental and institutional characteristics which have never been used on such a scale in Poland and Austria. The implementation of this project will contribute to methodological development in the context of international research on this issue.

In addition, a flood vulnerability index will be developed on the basis of analyses related to exposure, social sensitivity and resilience from the communal perspective. The contribution of the results, obtained from the implementation of the research objectives to the already functioning body of publications on this topic, primarily consists in presenting the international audience an approach to the research into the vulnerability of a place to disasters, as exemplified by floods. In addition, it will be possible to understand the key elements affecting flood risk management through analysing the elements affecting this vulnerability. This will provide an opportunity to tailor flood risk management strategies to communes with specific levels of flood vulnerability.

The analyses to be carried out may contribute to the development of the research workshop in the field of spatial planning and disaster management for studies related to flood risk reduction (here mainly in the part relating to vulnerability). These activities, particularly in the areas of exposure, sensitivity and resilience of communes (and their residents), are important to ensure the safety of citizens. The conclusions of the study will be translated into a set of recommendations addressed to policy makers responsible for flood risk management (in particular flood vulnerability) or transport infrastructure development.

The overall research plan of the project proposed for funding consists consists of seven Work Packages (twenty related tasks).