

**Vulnerability to extreme weather events: mapping natural hazards and related activities.
Analysis of selected sectors and infrastructures at risk due to extreme meteorological events
in Wielkopolska region**

Threats related to weather extremes occurring in the natural environment usually do not lead to economic losses. The situation is different when dangerous events take place in areas of human activity. The highly-urbanised areas are the most exposed, however, negative effects are also felt in non-urban space. Determining the degree of exposure to meteorological extremes risk and vulnerability of the system to these threats is the basis for reducing the risk associated with natural disasters and building skills to deal with them. The project of mapping the impact of natural hazards related to extreme meteorological events, including urban areas and extra-urban areas in Wielkopolska region, aims to undertake a spatial analysis, allowing to understand vulnerability of buildings and road infrastructure, as well as energy and transport sectors to current and predicted extreme weather events. This identification of threats in the region will be compiled with the analysis of the activities of state administration and local government units as well as representatives of the transport and energy sector in the perception of meteorological threats and actions taken in relation to them. Here, case studies will be the largest cities of the region: Poznań, Kalisz, Konin, Leszno and Piła, and in the case of rural areas - municipalities selected in the process of hazards identification. An important element of the study is the analysis of how key institutions involved in activities related to extreme weather events threats, are acting to reduce the risk, and in the event of their occurrence how recovery process are being conducted. Moreover a look at development planning in the long run, strategies that take into account the risk reduction associated with weather extremes, or investments in new solutions, but also the level of risk acceptability and adaptation activities is to be analysed.

Risk assessment will consist of integration of data on meteorological hazards, such as: extreme precipitation, heat waves, storms, heavy snowfall with spatial data obtained for the Wielkopolska province, concerning the State Fire Service interventions related to heavy rain and storms, road accidents, provided by the Polish Road Traffic Safety Observatory and information on breaks in power supply and other power grid problems resulting from the occurrence of extreme weather events. Moreover, analysis of the activities of the involved institutions, including state administration and local governments, representatives of transport and energy sectors, made on the basis of individual in-depth interviews in major cities and selected municipalities, will enable assessment of meteorological hazards and actions taken in relation to them, learning obstacles in activities, indication of needs and the most problematic areas.

Both, frequency of occurrence of extreme events and costs of removing their effects have been increasing noticeably in recent decades. Striving to reduce the risk associated with the occurrence of these events and building capacity to deal with them seems to be an extremely important task. Although the scientific objective of the project is not to directly assess the costs of losses in relation to extreme meteorological events, but to analyse risk and vulnerability of selected sectors and infrastructure to weather extremes threats. This approach should allow to indicate mutual links between reducing the risk of natural hazards (or its lack), recovery and long-term development planning, and coordinated and comprehensive strategies that take into account the risk reduction associated with natural hazards. Moreover, a very important effect of the study is to be an attempt to apply and develop theoretical approaches regarding exposure and vulnerability, in the area of actual activities on a local and regional scale in relation to extreme weather events and their consequences in socio-economic system, an area insufficiently researched in this context (especially smaller municipalities), and in Polish specificity.