

The main aim of the project is to research how flooding affects individual car transport in Poland. The project will be carried out on two levels. **Firstly, changes in transport accessibility will be scrutinized**, including changes in potential travel time by passenger car between two different points (e.g. towns) in Poland. **Secondly, car routes will be delineated both during a flood and without flooding.** This will allow to estimate the number of cars on individual sections of the road network and at the same time point to places where traffic jams are formed.

At the beginning accessibility and the number of vehicles will be calculated for the condition without a flood so as to enable comparative analyses at the subsequent stages of the research. Then the applicants will delineate areas of the country which will remain under water during a flood (in this project the authors understand flood-stricken areas exclusively as the so-called 100-year flood zones, which were delineated on flood hazard maps since it is precisely these areas that are most commonly used for research in the literature in this respect). This will allow to **point to those sections of the road network which will be impassable during the natural disaster.** Upon excluding these sections, measurements of accessibility will be calculated again (e.g. how many towns may be reached from Warsaw in one hour). Comparing travel times between the same points during a flood and without it will allow to determine **to what extent this type of natural disaster handicaps the functioning of car transport.** In order to analyze routes and numbers of vehicles on roads it will be necessary to base the calculations on information concerning departure points of passengers, their destinations as well as the number of people who travel. **The research takes into consideration journeys to work which Polish people make.** Data of this kind is made available by the Central Statistical Office (GUS). As it was mentioned above, first the research will focus on the number of vehicles and road types on which they move on roads in order to transport people to work in “normal” conditions. Then, identical calculations will be made but under the assumption that part of roads are flooded. Juxtaposing these two results will give the information on **what roads people going to work use to avoid flooded areas and what consequences this brings for the flow of traffic**, formation of traffic jams and, consequently, how this affect travel time. Research into changes in transport accessibility and road network load will be conducted separately for each province, for the whole area of Poland as well as for the three largest rivers in the country, namely the Vistula, the Oder and the Warta (the analysis will include the so-called 100-year flood zones in each case).

The current state of knowledge shows that **floods are the most frequently occurring natural disasters in the world which generate huge losses.** Regrettably, scientists are of the opinion that extreme flooding phenomena will occur with greater frequency due to changes in the climate and land use. Therefore it is **so important to be able to assess potential damage which may occur in the aftermath of flooding.** The literature tends to deal with the topic of assessing direct financial losses. Indirect losses, in turn, are usually ignored as they tend to be difficult to express. As preliminary research shows, however, road traffic disruptions caused by flooding concern an area much larger than that which may be flooded. Besides, their consequences are usually experienced much longer. **Conducting research at the interface of such topics as flooding, transport accessibility and mobility is of special importance due to transport exclusion brought about by the phenomenon of flooding.** This may not only bring traffic to a standstill but also cause administrative paralysis even on a national scale which may threaten the country’s stability and security.

The conclusions drawn from the research will be translated into a set of recommendations directed to decision-makers responsible for shaping the policy concerning flood risk management and transport infrastructure development. This decides about the importance of project results for the development of spatial planning and geography of transport. Research results may justify obligatory preparation of analyses concerning changes in transport accessibility and load of the road network for flood risk areas and all this in different spatial scales. Furthermore, procedures of transport flow management may be formulated and implemented on individual spatial levels on the basis of the results obtained. Apart from formulating the strategy and operating plans on the level of transport administrators and organizers, research results may point to **guidelines for education programmes for inhabitants of flood risk zones and areas in their immediate vicinity as far as shaping correct transport behaviours in crisis situations is concerned.** If on the regional or national level such behaviours may be conditioned by means of technical and technological solutions, then learned behaviours are of key importance on the local level, where flooding directly and instantly affects the local community. Good practices in this respect would allow to limit the adverse consequences of floods for human health and life as well as they would boost the effectiveness of activities of rescue services in the context of flood protection.