

Assessing flood risk management: Czech Republic

Key Messages

- The development of the multi-annual programme of flood prevention is, inter alia, guided by the Czech central government. The legal concept of flood protection in the Czech Republic is set such that every citizen is responsible for protecting his own property and life from flooding, as established in the Czech National Flood Protection Strategy (2000). Presently, the biggest problem is the management of 'active zones': flood prone areas.
- The selection of Czech flood protection measures is based on a multi-criteria approach combining Benefit-to-Cost Ratios (BCR), technical merit and environmental considerations. Priority is given to non-structural measures.

Context

The Czech Republic is vulnerable to natural disasters caused by hydro-meteorological events, especially river flooding. A large flood in 1997 started discussion on new flood-control management in the country. Later, another devastating disaster occurred in 2002 due to extreme rain fall in Central Europe. Water levels rose up to 3 meters in unprotected areas, 15 people were killed and 220,000 citizens were evacuated. In total, 1.6 million people were affected by the floods, 100 towns and villages were flooded and another 350 were partially flooded on the Vltava, Berounka and Labe rivers. Total economic damage in the Czech Republic has been estimated around 3-3.6 billion Euros. Around one third of the damage was concentrated in the capital city of Prague. The districts of the Lesser Town (Malá Strana), the Old Town (Staré Město), the Jewish Quarter (Josefov) and Karlín suffered especially heavy losses (Genovese 2006). At the time of the 2002 floods the Czech Republic did not have sufficient experience to protect citizens from extreme flooding. Since then, the Czech Republic has experienced six major flood events with substantial damages, the last one in 2013. Apart from these large flood events, the Czech Republic experiences between 60 to 100 flash floods per year, causing damages to municipalities located mainly in the upper parts of watercourses, in the mountain areas and in the foothills.

Policy and methodological developments

As a response to these devastating floods, and because of the need to transpose European law, the Flood Protection Strategy of the Czech Republic and the Flood Plan of the Czech Republic were developed in 2000 and 2005 respectively. In the same period, 'The plan of flood protection of the City of Prague' was developed both to protect the city of Prague and as a requirement of the 'water law' (no. 254/2001). The main inspiration for the plan came from the flood protection plan of the city of Cologne in Germany. The main flood protection measures of the plan are the construction of a movable barrier along the Vltava River in the historic city centre of Prague and construction of dykes and dams in the northern and southern outskirts of the city.

The legal concept of flood protection in the Czech Republic is set such that every citizen is responsible for protecting his own property and life from flood, as set in the Czech National Flood Protection Strategy (2000). However, while the damages that are covered by insurance have substantially increased since 1997, the general practice of the insurance companies is to cover only around 1% of the insured amount, and many insurance companies do not cover flood risks in floodplains. In some cases after a major flood there is a one-off subsidy measure by the government that covers some flood damage.

Flood protection planning is widely developed by the public sector, and accounts mainly for flood protection measures that affect larger areas in the river basins. Local administrations play a role in regulating development in floodplain areas, both by setting the territorial plan of the municipality, and by participation in the building-permit process. According to the Water Act, property development is forbidden in so called 'active zones' of floodplain areas, which are the most

vulnerable areas within floodplain zones. Flood protection management is assured by flood protection authorities (during the flood, these include a flood committee and integrated rescue system), which follow flood-event management plans.

National level

At the national level a number of ministries are involved in flood protection policies. The Ministry of the Environment plays a crucial role in flood risk management; specifically its Department of Water Protection is the central authority in flood protection. Further, the Ministry is also responsible for drafting the Flood Plan of the Czech Republic (Povodňový plán České Republiky). The Ministry of Agriculture acts as the coordinator for the development of the Programme of Flood Prevention in close cooperation with the European Investment Bank (EIB). In the first two phases, 2002-2014, 750 million Euros were invested in a wide range of preventive measures (dykes, retention areas, river regulation and polders) integrated at the river basin level. Currently, this program is in the third phase, which should finish in 2019. In this phase it is planned to invest another 180 million Euros (4.5 billion CZK) from national resources. The greatest emphasis in the third phase is on the retention of water in the landscape.

The selection of flood protection measures is based on a [multi-criteria approach](#) combining Benefit-to-Cost Ratios (BCR), technical merit and environmental considerations. Priority is given to non-structural measures. Considerations other than those of purely economic nature also play a role in determining the preferred level of protection in this case. Fošumpaur and Satrapa (2011) suggest that economic evaluation serves as a strategic decision tool for flood protection that allows for determining preferences in the implementation of proposed projects or the rejection of inefficient projects.

The representatives of the Ministry of Agriculture contended that at present most towns have sufficient flood protection. In the Vltava river basin, protection is only insufficient in the towns of Rokycany and Kralupy nad Vltavou. Presently, the biggest problem is the management of 'active zones': the flood prone areas. It is prohibited to construct new buildings in such areas, but existing buildings can be reconstructed. The Ministry of Agriculture provides guidelines to towns about the demarcation of active zones, but these guidelines are just recommendations, and they are not always followed. As a result, active zones are not always clearly determined, and their demarcation is subject to lobbying practices.

Regional level

The Regional Authority of Central Bohemia is a main actor at the regional level. The role of the Regional Authority in flood risk management is defined by the Water Act, but the institution also works beyond this regulation. The Regional Authority is responsible for drafting and updating the Flood Plan of Central Bohemia. This is the main document for managing the flood events within the region. According to the Water Act, the Flood Plan has to be updated every year. When a flood occurs, the Regional Authority establishes contact with the Flood Commission. The Commission decides the course of action to take, and the geographical focus of the intervention. The Flood Commission further coordinates flood commissions of lower authorities, such as flood commissions of municipalities.

Local level

According to the Water Act, the municipalities are responsible for the creation of their own flood plans. Like the regional flood plans, they need to consist of factual, organizational and graphical parts and they need to be updated every year. Each municipality must cooperate and communicate with other authorities (local and regional), especially in the case of floods affecting multiple municipalities or regions.

Main implications and recommendations

In the Czech Republic, the central government has an important coordinating role in the

development of the multi-annual programme of flood prevention. The other countries analysed show a different characteristic: (1) Austria: central government in coordination with the regional governments (Länder) is responsible for the designation of flood hazard areas, (2) the Netherlands: flood protection standards for the whole country are written in law and central government and its services play a key role in overall flood risk management and (3) in the UK the Environment Agency has responsibility for managing risk from flooding from main rivers and the sea, including the approval and funding of flood risk management projects undertaken by local authorities and water drainage boards. In our research and interviews we have not been able to find explicit evidence of adaptation to climate change, although the authorities seem to be aware of the potential threats of climate change. Czech Hydro-meteorological Institute (CHMI) plays a central role in making long-term hydro-meteorological forecasts. However, better communication between the CHMI and the state energy company Povodi Vltavy, that operates a cascade of dams in the Vltava river, is needed to improve the forecasts by CHMI for the Prague area. Since CHMI and Povodi Vltavy fall under different ministries (Ministry of the Environment and Ministry of Agriculture, respectively), an inter-ministerial working group could be a solution to enhance communication.

Until now, the Czech Republic focuses on addressing existing risks of extremes, instead of actively factoring-in the effects of future climate change into flood risk management strategies. The selection of Czech flood protection measures is based on a [multi-criteria approach](#) combining Benefit-to-Cost Ratios (BCR), technical merit and environmental considerations. Priority is given to non-structural measures. Compared to the other three countries analysed, as yet, there is no single superior decision-making tool to fit all circumstances. We found that there is growing recognition across Europe, also promoted by the EU Floods Directive, that participatory approaches to decision-making should be employed, whenever this is feasible.

When analysing Czech flood risk management, the evidence suggests that the approaches have by no way settled yet: governments, government agencies and academic researchers are experimenting with approaches and are actively evaluating and developing the options. In this context, the European Commission has rightly argued that in investment projects, climate change-related risk management should be integrated into existing project life cycle appraisal approaches to manage the additional risk from climate change. These existing approaches can vary between countries and sectors. From a practical perspective it is important that risk management approaches complement existing project appraisal processes but not replace them.

Bibliography

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Further Information

[Assessing the economic case for adaptation to extreme events at different scales \[pdf\]](#)

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