



Problem: During summer 2007, parts of England were devastated by extreme flooding, which resulted in loss of lives and property, caused the largest collapse of essential services since World War II, and incurred costs of several billion pounds to the central government, local public bodies, businesses, and individuals. The historic market town of Pickering in north Yorkshire suffered particularly as floods has a negative impact upon the town's economic infrastructure, tourism, and livelihoods. Although Pickering suffered recurrent flooding over the twentieth century, the frequency of flooding has increased significantly in the last two decades.

Response: In order to reduce the impact of flooding upon Pickering, the Environment Agency (EA) had previously proposed a plan to erect flood defence walls along Pickering Beck, the local river. This plan was supported by some local residents and businesses, but opposed by others who were worried about the increased risk of flooding for some properties and the detrimental effect of walls on the urban aesthetic. As the cost-benefit ratio of this engineering solution was above the acceptable threshold, this proposal was not implemented. The EA was criticised for insufficient action to protect Pickering from flooding. In this politically-charged context, a research project funded by the Rural Economy and Land Use Programme (RELU), focused on using innovative methods for doing inter-disciplinary science in collaboration with local people, and explored the potential of upstream bunds as an alternative to flood defence walls for managing flood risk in Pickering.

Stakeholders and networks: The Ryedale Flood Research Group (RFRG) consisted of academics and local participants, who provided support to stakeholders who were directly affected by flooding. The local MP used this access to academic expertise to facilitate his lobbying. The ideas that emerged from RFRG were taken up by the local Environment Agency, which helped develop a multi-partner implementation project involving the Forestry Commission, Environment Agency, Natural England, Regional Flood Defence Committee, major landowners, and Durham University.

Research and knowledge: RFRG brought together scientists and local stakeholders in developing models that explored various options through which flood risk could be reduced. Local members had a complex understanding of how the river catchment worked, which presented an important input into the modelling. The Pitt Review, commissioned by the government in 2007, also supported such new thinking on catchment level approaches to flood risk management.

Communication: At the end of the project, RFRG organised a free public exhibition at the Pickering Civic Centre, which presented the group's work, the history and science of flooding in the town, the results of the modelling project, and key recommendations that had emerged from the research. The event created a constituency of support to enable the translation of research into action. Following the exhibition, Mike Potter, a local member of the RFRG who later became an activist on the issue, made numerous presentations to politicians, wrote articles in local newspapers, and ensured that the report 'travelled' as a 'free feasibility study for cost effective upstream bunds'.

Impact: Theoretical ideas proposed by the RFRG were translated into a workable model, called 'Slowing the Flow', by the EA. The model focused upon an integrated application of a range of land management practices that could help reduce the risk of flooding at the catchment scale. Anecdotally, many areas that were prone to flood risk are said to have been 'saved' by the new dams. Sufficient funding for the construction of bunds has also been secured.

Top tips

- Collaboration between scientists and local stakeholders helped to identify innovative and cost-effective solutions to a long-standing environmental risk.
- The timing of the research coincided with a high level of local interest in the issue because of recent flood damage.
- Good communication created local support for interventions, which was used to develop a multi-partner project involving technical agencies and landowners in the catchment.
- The research helped resolve the political impasse created by previous interactions between local communities and the EA.