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Summary

Flood risk has increased in France, and throughout Europe, in the last few decades, and is projected to increase further in the future as a result of socio-economic development in flood-prone areas and climate change. In recent years, studies have shown that adequate undertaking of flood protection measures at the household level can considerably decrease the costs of floods for households. Based on a literature review, a flood damage model of the Meuse river basin, and a survey of 885 households in three flood-prone areas in France, this thesis aims to gain insights into the factors which influence households to implement flood damage mitigation measures, and the capacity of these measures to reduce flood damage. To do so, the French flood insurance system ('CatNat') and the combined "Risk Prevention Plans" (PPRs) are studied with regard to their capacity to stimulate the undertaking of measures by communities and households. It is shown that these schemes do not provide optimal incentives for flood damage reduction. This is confirmed by the results from the survey. Moreover, an extended version of the Protection Motivation Theory (PMT) of individual disaster preparedness is proposed and empirically tested using the results of the survey. Although the results differ per category of mitigation measures, the overall findings show that threat appraisals have a small effect on mitigation behaviour, while coping appraisals have a more important influence. Several of the variables that have been added to the PMT framework also appear to be influential in households' preparedness decisions. Furthermore, the results of the flood damage model of the Meuse river basin provide insights into the substantial capacity of flood damage mitigation measures to reduce flood damage at the regional level, now and in the future. Regression analyses of the survey data provide estimates of the potential damage savings of specific flood damage mitigation measures that were implemented by households in France. Cost-benefit analyses examine the economic desirability of these measures. The main conclusions drawn from this study include that several of the mitigation measures can effectively reduce flood damage, although the effectiveness of the measures are shown to be very regional dependent. It also appears that several measures can be cost-effective, but their cost-effectiveness depends strongly on the flood probability faced by households. Based on these results, this thesis provides several recommendations which could help improve the effectiveness of the CatNat system as well as flood preparedness in France.