Adapt – Towards an integrated decision tool for adaptation measures to climate change-induced flooding

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Climate change is expected to increase the frequency and the intensity of heavy precipitation events. This may cause increasing flood risks. Since floods can cause a lot of havoc and disaster, it is necessary to anticipate to these increasing flood risks and to limit or avoid the flood impacts. In other words, adaptation policy needs to be developed. But climate change is inherently uncertain. In particular, place, time and extent of flood events are uncertain and complex to understand. This may hinder decision-making. The Adapt project meets this challenge by the development of an integrated decision tool that can be used to support decision-makers and water managers in their choice between the various adaptation measures towards floods.

The decision tool will be developed, tested and improved based on two case studies: the Dender basin, located in the Flemish region, and the Ourthe basin, located in the Walloon region. Firstly, the hydraulic model Wolf 2D is used, which tests 3 different scenarios on river discharge for 2 return periods. Secondly, this information is used as an input to assess the flood impacts. Although several ex-ante damage assessment methods exist, social and ecological impact assessments are often missing. However, to achieve sustainable flood management, the three types of impacts needs to be integrated in an equal way, which will be the strength of the new decision tool. Thirdly, information will be provided on the selection of the most preferred adaptation measures, which will be based on cost-benefit analysis or/and multi-criteria analysis. Besides technical measures like dykes, dams and weirs, non-technical measures are taken into account as well, like spatial planning, early warning and insurances. These measures are categorised according their preventive, source-oriented, effect-oriented and curative purposes (DPSIR). To cope with uncertainty and complexity in climate change decision making, there is need to integrate stakeholders alongside experts and policymakers. The Adapt project will on the one hand include stakeholders in the development of the tool and on the other hand outline an effective way to integrate stakeholders in decision-making.

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