



## **Synthesis of primary impacts of climate change in Belgium, as an onset to the development of an assessment tool for adaptation measures**

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Adaptation measures will be necessary to protect populations and eco-systems against climate-related hazards in the next decades. In this context, policy-makers will be responsible for selecting, among a wide range of possible adaptation measures, those which will produce most benefits compared to the means required for their implementation.

The Belgian National project “ADAPT” aims to develop an efficient decision support tool for the integrated assessment of adaptation measures against climate change induced flooding. During the project, a suitable methodology will be developed and comprehensively tested with the selection and assessment of adaptation measures for reducing future flood risks in the two main Belgian river basins, the Meuse and the Scheldt.

As a first step of the ADAPT project, a synthesis of the knowledge and facts available concerning the effects of climate change in Belgium has been carried out. This synthesis provides a clear overview of the expected climate change impacts, their intensity, their variation, their uncertainty and their probable progression in time.

The present contribution will focus on systematically describing those expected primary impacts in Belgium. They include not only rises in temperatures and changes in precipitation, but also issues such as the occurrence and intensity of heat waves and droughts, rainfall and storms, as well as floods. Especially extreme weather events need to be considered.

The analysis highlights that future evolutions of precipitation vary drastically between

winter time and summer time, necessitating a thorough analysis on a seasonal instead of a yearly basis. It also reveals that climate change is expected to lead to an increase in the river discharges at the end of winter and at the beginning of spring, while a decrease is expected in autumn. Indeed, the frequency of recorded floods has already increased during the last decades. Major inundations took place in Belgium in 1995, 1998, 2002, 2003 and 2005. Land use planning is obviously partly responsible for those floods, but variations in winter precipitation and increased frequency of heavy rainfalls will still amplify this flood risk. Those impacts are shown to be strongly catchment dependent, since they directly depend on the properties of the catchment itself.

These primary impacts have an impact on natural and human systems, called “secondary impacts”, taking the form of economical, ecological and social effects of climate change, which will constitute a core component of the 3-pillar sustainability assessment procedure during the ADAPT project. In turn, human induced future developments (demographics, spatial planning, economics, ...) will play a major role in the magnitude of the primary impacts.