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The social, cultural and ecological impact of floods in Flanders: expansion of the LATIS tool

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Since 2003 Flanders Hydraulics developed in collaboration with the University of Ghent (Department Geography) a methodology for the prediction of economic risk and the number of victims due to floods. Based on land use information, socio-economic data and damage functions the economic damage and the number of victims for Flanders of a flood scenario can be determined. The methodology was implemented in the software LATIS, a specific GIS-tool programmed in C#.Net that uses the GIS-technology of IDRISI (raster-GIS).

The European Flood Directive (Directive 2007/60/EG) describes an arising need to quantify, in addition to the quantification of economic damage and victims, also other negative aspects of floods. At this moment flood management can only take into account some aspects of flood risks and optimum flood measures cannot be guaranteed. The directive stipulates that the Member States of the European Union have to make flood risk maps that also show the negative consequences of floods to humans, the environment, cultural heritage and the economy. It also stipulates that the Member States have to make flood risk management plans that will limit these consequences.

In this paper a methodology was developed to quantify the social, cultural and ecological impact for a given flood scenario in Flanders. Based on the literature study, indicators were selected that characterize the social vulnerability of the Flemish population, the vulnerability of cultural heritage and the ecological vulnerability of vegetation types due to flooding. Social, cultural and ecological vulnerability indexes are derived from the combination of their vulnerability indicators. These indexes can be compiled for the whole of Flanders and will represent the maximum social, cultural and ecological vulnerability. When the maximum social, cultural and ecological vulnerability index is combined with flood characteristics and the number of people affected (only for social impact), it is possible to quantify the social, cultural and ecological impact of a certain flood.