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Landslides in Flanders (Belgium): Where science meets public policy

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Although scientific research on landslides in the Flemish Ardennes (710 km^2; Belgium), has been conducted over the last decades, the Flemish Government only took account of slope failure as a soil degradation process after the occurrence of several damaging landslides in the beginning of the 21st century.
Here we aim to present the successful collaboration between the Physical and Regional Geography Research Group (FRG; Dept. Earth and Environmental Sciences K.U.Leuven) and the Environment, Nature and Energy Department (LNE; Flemish Government) in landslide management. We will demonstrate how geomorphologists produced practical tools for landslide management which can be directly applied by LNE as well as other local and regional authorities and planners.

Since 2004 three projects on landslide inventory mapping and susceptibility assessment in the Flemish Ardennes have been funded by LNE, and a fourth one on landslide susceptibility assessment in remaining hilly regions in Flanders west of Brussels recently started. Together with a steering committee composed of stakeholders, persons from LNE supervise the research carried out by geomorphologists experienced in landslide studies.
For the establishment of the landslide inventory map of the Flemish Ardennes we combined the analysis of LIDAR-derived hillshade and contour line maps with detailed field controls. Additional information was collected through interviews with local authorities and inhabitants and from analysis of newspaper articles and technical reports. Then, a statistical model, logistic regression, was applied to produce a high quality classified landslide susceptibility map.

The unique part of this collaboration is that all end products are online available at user-friendly websites designed by LNE. The scientific report containing (1) general information on landslides, (2) a description of the study area, (3) an explanation of the materials and methods used, (4) a presentation of the resulting landslide inventory map and landslide susceptibility map and (5) practical information on the application of both maps for landslide risk reduction through prevention and remediation is available at (http://www.lne.be/themas/bodem/grondverschuiving/grondverschuiving). Equally important, however, are the digital landslide inventory map and landslide susceptibility map which can be consulted at 'The geographical database of Flanders' (http://dov.vlaanderen.be). This database enables persons to easily combine the landslide inventory and landslide susceptibility maps with topographical and lithological maps allowing them to check the susceptibility to landslides throughout the Flemish Ardennes. For each landslide on the landslide inventory map, there is a corresponding file containing specific information on this landslide. After a simple mouse click on a mapped landslide, the file belonging to this landslide pops up. Finally, guidelines for assessing the impact of planned interventions (e.g. construction of buildings, roads, ...) on landsliding can be consulted at (http://www.mervlaanderen.be/uploads/b332.pdf).

Thus, we present here an example of how 'Science meets policy'. The created susceptibility map is an important tool for improving land use planning, and in particular for zoning the susceptibility classes with very high, high and moderate landslide susceptibility where prevention measures are needed and human interference should be limited. The on-line availability of all project documentation opens perspectives for managing landslide-affected areas through both top-down and bottom-up initiatives.