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Landslide hazard mapping in the Göta river valley to limit

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Landslide scars are frequent along the river bank of the Göta river in southwest Sweden, and several landslides in quick-clay have resulted in casualties and severe damages on buildings and infrastructure during the last century. Moreover, higher average precipitation and increased occurrence of extreme rainfall events are some expected climate changes in Sweden during the coming 70-100 years. The Swedish Geotechnical Institute (SGI) was therefore commissioned by the Swedish Government to perform an inventory of the landslide potential in the Göta river valley, taking predicted climate changes into consideration.

The project was running over three years (2009-2011) and the final report is presented in March 2012. To prevent extensive floodings and damages of cities and infrastructure around Lake Vänern, it is necessary to allow controlled overflow from Lake Vänern through the Göta river. An overflow in the river, in turn, leads to increased risk for erosion and landslides along the river valley. The inventory has included detailed field and laboratory investigations of the geological and hydrological conditions, methodology development, erosion modeling, effects of climate changes on porewater and groundwater conditions as well as an estimation of consequences and probabilities for failure in the present-day and future climate.

In the final report risk estimates for the complete study area are presented along with rough cost estimates for first-order preventing measures. This presentation aims to give an overview of the outcome of the inventory, the experience and new knowledge acquired during the project as well as the need of research and development work in different technical areas in order to improve risk mapping of natural slopes.