



## **Towards a common approach for mapping areas susceptible to landslides in Europe**

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In the framework of the European Soil Thematic Strategy, and the associated preparation of a directive on the protection and sustainable use of soil, landslides were recognized as a soil threat requiring specific strategies for risk assessment and management. The criteria for harmonized risk area delineation proposed by the Soil Information Working Group (SIWG) of the European Soil Bureau Network (ESBN) adopt a nested geographical approach based on “Tiers” and exploit thematic and environmental data of different type, quality, and resolution using a variety of methodological and technological approaches. The Tier 1 assessment is aimed at the general (i.e., synoptic) identification of areas potentially subject to landslides, providing a low-resolution (1:1 Million scale) evaluation of landslide threats using existing thematic and environmental data. The Tier 2 assessment is intended to perform more detailed analyses in the areas identified by Tier 1, and should provide results at a higher spatial resolution using existing and new data currently not available in all European countries.

The main requirement for a Tier 1 assessment for the delineation of areas subject to soil threats in Europe is the availability of relevant input data. At present, a continent-wide assessment of landslide susceptibility in Europe is feasible only adopting a qualitative evaluation technique. This is largely because a systematic landslide inventory

coverage is not yet available for the whole of Europe. A generic Tier 1 landslide susceptibility assessment can thus be performed using a reduced set of data, including common information on the instability conditioning factors (e.g. soil/bedrock, slope angle and land cover). Adoption of an index-based evaluation method can allow the production of a continent-wide landslide susceptibility map for Europe, provided it is calibrated with representative landslide data.

Quantitative evaluations of landslide susceptibility according to a Tier 2 assessment require the availability of landslide inventory maps and databases. The minimum content requirement for such databases to generate Tier 2 susceptibility maps at scales around 1:200,000 consists of type and location of historical landslide events. When these data are available in addition to ground material and other conditioning factor data, multivariate statistical evaluation techniques can be applied to quantify landslide susceptibility of appropriate terrain mapping units. These might best consist of small administrative units in order to meet the needs of most end-users.

We outline the current advances towards the development of a common methodology for assessing the landslide threat in Europe. We refer to limitations, data needs and future work to be carried out, and present examples of preliminary assessments.