



Landslide hazard assessment : LIFE+IMAGINE project methodology and Liguria region use case

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Scope of the work is to present a methodology developed for analysis of potential impacts in areas prone to landslide hazard in the framework of the EC project LIFE+IMAGINE. The project aims to implement a web services-based infrastructure addressed to environmental analysis, that integrates, in its own architecture, specifications and results from INSPIRE, SEIS and GMES. Existing web services has been customized to provide functionalities for supporting environmental integrated management. The implemented infrastructure has been applied to landslide risk scenarios, developed in selected pilot areas, aiming at: i) application of standard procedures to implement a landslide risk analysis; ii) definition of a procedure for assessment of potential environmental impacts, based on a set of indicators to estimate the different exposed elements with their specific vulnerability in the pilot area. The landslide pilot and related scenario are focused at providing a simplified Landslide Risk Assessment (LRA) through: 1) a landslide inventory derived from available historical and recent databases and maps; 2) landslide susceptibility and hazard maps; 3) assessment of exposure and vulnerability on selected typologies of elements at risk; 4) implementation of a landslide risk scenario for different sets of exposed elements 5) development of a use case; 6) definition of guidelines, best practices and production of thematic maps. The LRA has been implemented in Liguria region, Italy, in two different catchment areas located in the Cinque Terre National Park, characterized by a high landslide susceptibility and low resilience. The landslide risk impact analysis has been calibrated taking into account the socio-economic damage caused by landslides triggered by the October 2011 meteorological event. During this event, over 600 landslides were triggered in the selected pilot area. Most of landslides affected the diffuse system of anthropogenic terraces and caused the direct disruption of the walls as well as transportation of a large amount of loose sediments along the slopes and channels as induced consequence of the event. Application of a spatial analysis detected ca. 400 critical point along the road network with an average length of about 200 m. Over 1,000 buildings were affected and damaged by the event. The exposed population in the area involved by the event has been estimated in ca. 2,600 inhabitants (people?). In the pilot area, 19 different typologies of Cultural Heritage were affected by landslide phenomena or located in zones classified as high landslide hazard. The final scope of the landslide scenario is to improve the awareness on hazard, exposure, vulnerability and landslide risk in the Cinque Terre National Park to the benefit of local authorities and population. In addition, the results of the application will be used for updating the land planning process in order to improve the resilience of local communities, ii) implementing cost-benefit analysis aimed at the definition of guidelines for sustainable landslide risk mitigation strategies, iii) suggesting a general road map for the implementation of a local adaptation plan.