



Landslide risk impact management and web services for improving resilience: the LIFE+IMAGINE project approach

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The increasing damage caused by natural disasters in the last decades points out the need for interoperable added-value services to support environmental safety and human protection, by reducing vulnerability of exposed elements as well as improving the resilience of the involved communities. For this reason, to provide access to harmonized and customized data is only one of several steps towards delivering adequate support to risk assessment, reduction and management. Scope of the present work is to illustrate a methodology under development 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 an infrastructure based on web services for environmental analysis, that integrates in its own architecture specifications and results from INSPIRE, SEIS and GMES. Existing web services will be customized during the project to provide functionalities for supporting the environmental integrated management. The implemented infrastructure will be applied to landslide risk scenarios, to be 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. More in detail, the landslide pilot will be aimed at providing a landslide risk scenario through the implementation and analysis of: 1) a landslide inventory from available historical 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 (e.g. population, road network, residential area, cultural heritage). The pilot will be implemented in Liguria, Italy, in two different catchment areas located in the Cinque Terre National Park, characterized by a high landslide susceptibility and low resilience, being highly vulnerable to landslides induced by heavy rainfall. The landslide risk impact analysis will be calibrated taking into account the socio-economic damage caused by landslides triggered by the October 2011 meteorological event. 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. The final target of the landslide risk assessment scenario will be to improve the knowledge and 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 can have a practical and positive effects for i.e. i) updating the land planning process in order to improve the resilience of local communities, ii) implementing preliminary 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.