Impacts of Climate Change on Urban Infrastructure & the Built Environment

A Toolbox

Tool 2.3.5: Landslide Tools – Linkages to Risk Assessment, Adaptation Options and Decision Tools

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Contents

1. Introduction

The Tools in Bin 2.3 of this Toolbox demonstrate a method for estimating and mapping present-day and future rainfall-induced landslide potential. The assessment process can be equally applied to urban and rural environments, although the examples given are specifically for urban centres. A critical question is what to do with this information?

The landslide potential maps and data produced can be used as input into a risk assessment. Such an assessment requires detailed information on what could be affected by landslides – e.g. buildings, infrastructure, and people. Following on from a risk assessment of potential hazards, work can be done on assessing adaptation options to reduce the risk. This assessment should, if possible, include some form of cost-benefit analysis. The Tools highlighted in the next section demonstrate some of these risk assessment, adaptation options and cost-benefit methodologies.

2. Linkages to Other Assessment Tools

Table 2.1 outlines the Tools in this Toolbox that can be used to build on an assessment of landslide hazard under climate change. In particular, the Tools shown here demonstrate various approaches to risk assessment, identifying adaptation options, and analysing costs and benefits. It is recognised that other approaches are available which can be used to perform functions similar to those described here.

Table 2.1: Linkage Tools associated with risk assessment, adaptation options and cost-benefit

Tool Name	Tool Reference	Purpose of the Tool
Climate change risk assessment good practice	[Tool 3.1]	Provides guidance on quantifying climate change risks, the treatment of uncertainty and how to make judgements about the tolerability of risk, to support decisions about the levels of protection that would be considered sufficient and appropriate.
Using RiskScape	[Tool 3.2]	RiskScape is a regional risk and impact assessment tool. Its primary purpose is to provide a framework in which the risk of impact to assets due to various hazards can be calculated. Rainfall-induced landslides are a hazard included in Riskscape.
Individual house flood mitigation measures - benefit/cost tool	[Tool 4.4]	Example application of the classical Benefit Cost Analysis process to explore the balance of economics versus performance of alternative building design adaptations for particular valued buildings. Flooding is used as the specific hazard example for this tool, but it could equally be used for landslides.
Setting priorities using a multi-criteria analysis approach	[Tool 4.5]	The MCA-based tool is specifically designed to allow prioitisation of actions to prevent or mitigate the impact of hazards (in this case landslides) based on the level of risk they present, taking account of climate change.