



# Tackling Urban Landslides

## Action Points

- Develop sound land use plans that include the mapping of landslide-prone areas and building codes
- Plant vegetation in landslide prone areas
- Improve drainage and water collection systems
- Establish an early warning system using modern Information and Communication Technologies
- Introduce public awareness raising campaigns and training programmes

## Recognising the issue

Especially in cities located close to mountains and hills, landslides are a social, economic and ecological challenge, presenting a direct danger to human lives, properties, and infrastructure. By destructing physical assets such as roads, schools and hospitals, they can disrupt public services and economic activities, thus causing significant costs for local governments and urban communities and posing a threat to the local economy.

## Analysing the drivers

Rapid urban growth and high population density are increasing the pressure on vulnerable land for housing and other developments. This is especially true for informal settlements located on marginal lands such as steep slopes prone to landslides. These areas are often outside the guidelines of building permits, security requirements and law enforcement.

Urban expansion including the replacement and clearing of vegetation for building and road construction can lead to soil erosion. Loss of soil stability increases the likelihood of landslides.

While the hydro-geologic system in a given area has an effect on the probability of

landslides to a certain degree, they are closely linked to precipitation events. Heavy rainfall can particularly spur the destabilising of soil, thus contributing to the discharge of slopes. Climate change is exacerbating the existing risk of landslides. Climate projections show that the regions of Southeast Asia and South Asia are to experience a higher frequency and intensity of heavy precipitation events that most likely lead to an increase in the occurrence and severity of landslides.

## Understanding the consequences

Landslides pose a serious threat to human lives resulting in injuries and deaths. The urban poor and informal settlers are usually the most impacted social groups and suffer the most severe consequences.

Landslides also damage or destroy hospitals, schools, private homes, roads and utilities resulting in high costs for re-construction and repair.

Past events have shown disruptions in transport, commerce and other economic activities impacting livelihoods and the local economy as a whole.

## AsianCitiesAdapt

### Policy Pointer Series

- No. 1 Tackling Urban Landslides
- No. 2 Responding to Urban Heat Island Effects
- No. 3 Addressing Urban Flooding
- No. 4 Adapting to Sea-Level Rise

The Policy Pointers shall provide local governments with basic insights into selected climate change impacts and present first options of preventing and adapting to them.



Holger Robrecht / CLEI Europe

## Taking action

Taking action to adapt to more intense and frequent rainfall events and to mitigate the impacts of landslides will save human lives and reduce economic losses. Therefore it should constitute a priority for policy makers. A first step could be to develop an inclusive and comprehensive land-use plan considering non-climatic and climatic drivers, risk-prone areas and vulnerable groups and sectors.

The inclusive involvement of relevant stakeholders in the planning processes will prove to be crucial for gaining valuable knowledge and taking effective action. Sectors to involve could include land use planning, housing, solid waste, urban drainage, public health and emergency management.

In addition, communities most vulnerable to landslides should be engaged in providing local knowledge and supporting the identification of appropriate action. Mapping helps to localise the most vulnerable areas and the affected social groups. These may also contribute to a better understanding of the urban vegetation and its functions to prevent slope failure.

The collection of relevant data to calculate scenarios for landslides based on past and projected rainfalls is essential to understand, get prepared for or even avoid the occurrence of landslides of a given territory.

Moreover, local governments should aim to improve communication and awareness-raising activities involving actors from NGOs and disaster management institutions to also help mitigate the risk at household level. Early warning systems using modern Information and Communications Technologies (ICTs) could be one option worth considering.

In landslide-prone areas tree-planting programmes and improved water networks are particularly important. Urban forests in mountain areas have proven to not only protect communities from landslides but also to prevent them from occurring in the first place.

Due to the strong correlation between landslides and rainfall improving drainage systems and water collection as well constitute an effective response to the issue.



For more information on the project and all other results see:

[www.asian-cities-adapt.org](http://www.asian-cities-adapt.org)

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AsianCitiesAdapt – Impacts of Climate Change in Target Cities in India and the Philippines and Local Adaptation Strategies (2010-2013) brings together science and policy in order to identify the impacts of climate change and develop local adaptation strategies in four cities each in India and the Philippines.

AsianCitiesAdapt is part of the International Climate Initiative. The Federal Ministry for the Environment, Nature Conservation and Nuclear Safety supports this initiative on the basis of a decision adopted by the German Bundestag.



Federal Ministry for the  
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