Landslides Management in Nepal

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Content

• Overview

• Effects and impacts

• Control measures

• Limitations

• Way forward
Overview

• Landslides are local events

• Occurs almost everywhere

• Causative factors and Triggerring factors

• Broadely: naturally occurring and human-induced
Overview......

Naturally occurring landslides
Geology, Physiographic, Climate

Geological Map of Nepal (Upreti and Le Fort, 1999)
Overview....
Naturally occurring landslides
Geology, Physiographic, Climate

(Kizaki, 1994)

N-S topographic profile of Nepal
Overview....

Human-induced landslides
Deforestation; Irrigation;
Road construction; Terrace cultivation; Quarrying, etc.
Effect and Impact of Landslide

- Loss of lives
- Damage to physical infrastructures
- Damage to cultivated land / forests
- Damage to drinking water sources
- Increasing sediment load in rivers
- Damming rivers and valleys
Landslide Control Measures

• **Evaluation of the landslide hazard and risk**
  Based on landslide risk maps, past landslide history, by visual and preliminary evaluation, or based on a detailed engineering geological analysis.

• **Non-structural measures**: Political, Legal, Administrative measures
  Awareness raising, Land use planning, Early warning system, sharing of risk through insurance, etc.

• **Structural and geotechnical measures**: Both external and internal stabilization measures
  Retaining wall, ground modification, rock bolting /anchoring, ground water draining, soil nailing, etc.
Limitations in Landslide Management

- Lack of harmonized methodology for:
  - Landslide inventory,
  - Landslide hazard and vulnerability analysis,
  - Landslide risk assessment, and
  - Selecting preventive/mitigation measures,
- Lack of a data sharing platform
- Lack of relevant policies, plans, regulations, guidelines, acts, etc.
- Limited human resources
Limitations-examples

Can we go back to our school now?

How to define hazard/risk zone??

Rock bolting / anchoring / netting/
Rock block removal???

Shifting of the village and school ??
Limitations-examples

Landslide did not occur this rainy season, so can we go back to our village?

Slope monitoring or visual evaluation?
Way Forward

• Harmonized methods for studying landslides comprehensively

• Training and capacity building programs for young professional

• Improvement of academic curriculum in universities

• Creation of data sharing platform for all of us

• Workshop contributes for exchange of knowledge, mutual cooperation and joint collaborative research for landslide study in Nepal
Thank you very much for your kind attention !!!