
Survey on status and government solution on landslide in Vietnam

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I am from

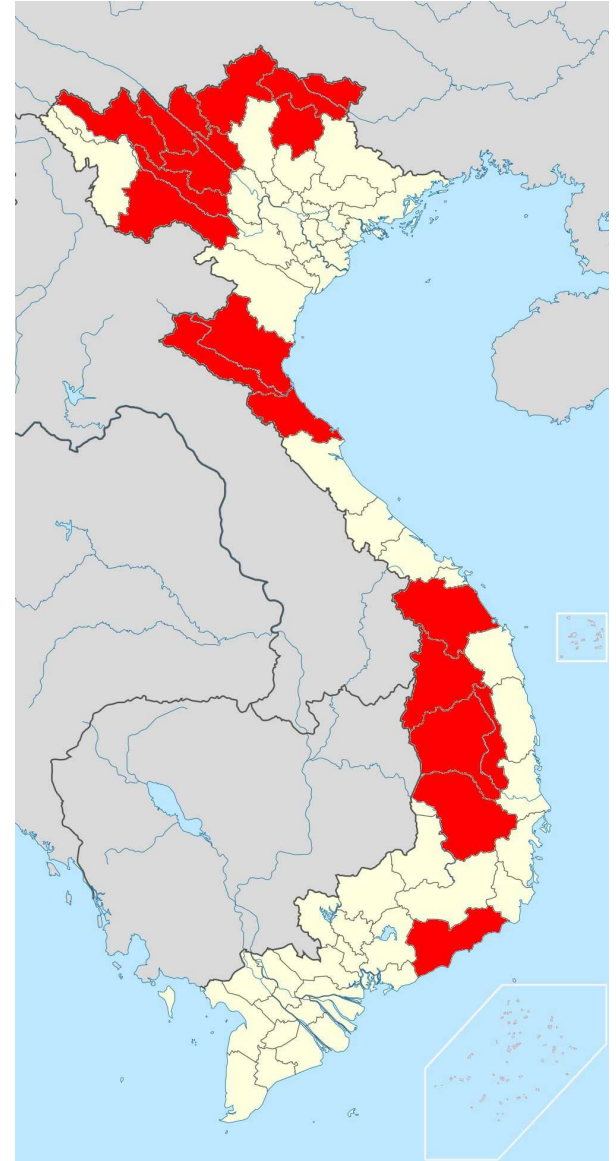


Outline

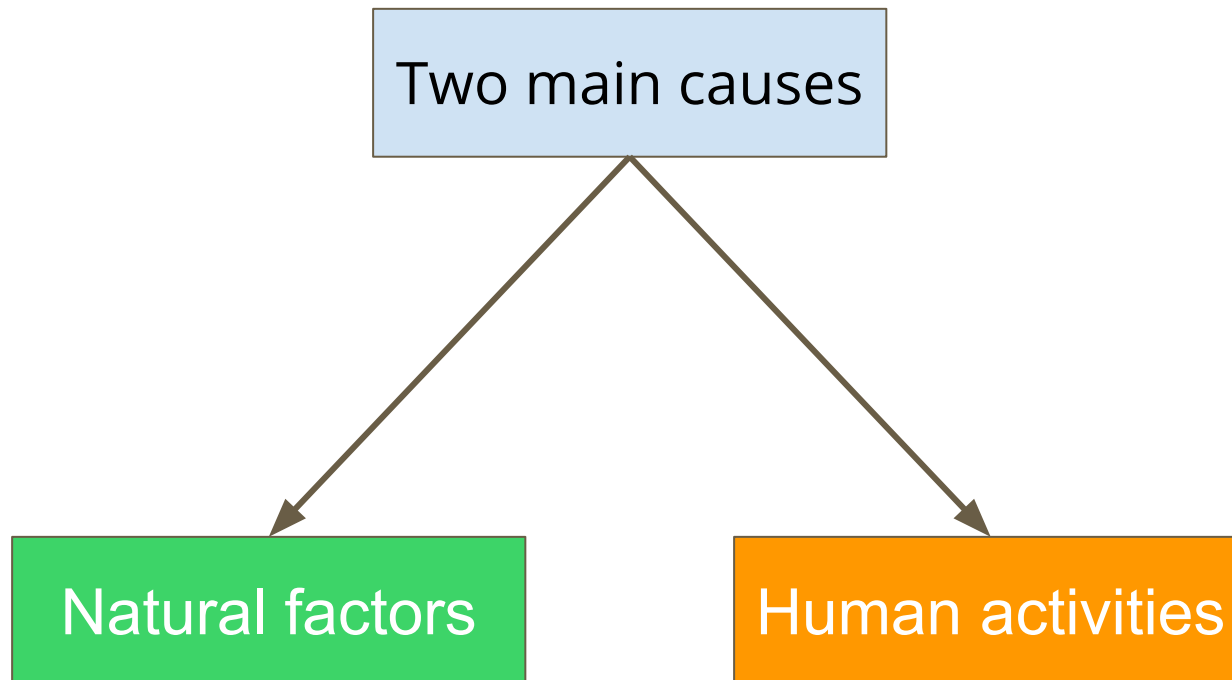
- How is current situation of landslide in Vietnam?
- What causes landslide in Vietnam?
- How does it affect to human life?
- What signs to recognize landslide?
- What solution does Vietnamese government take?

Current situation

- Location:
 - Most northwestern provinces
 - Several north central provinces
 - Highlands provinces
 - Coastal provinces
- Season:
 - Rainy season
- Kinds of damage
 - Human lives
 - Houses
 - Highway, constructions, crops

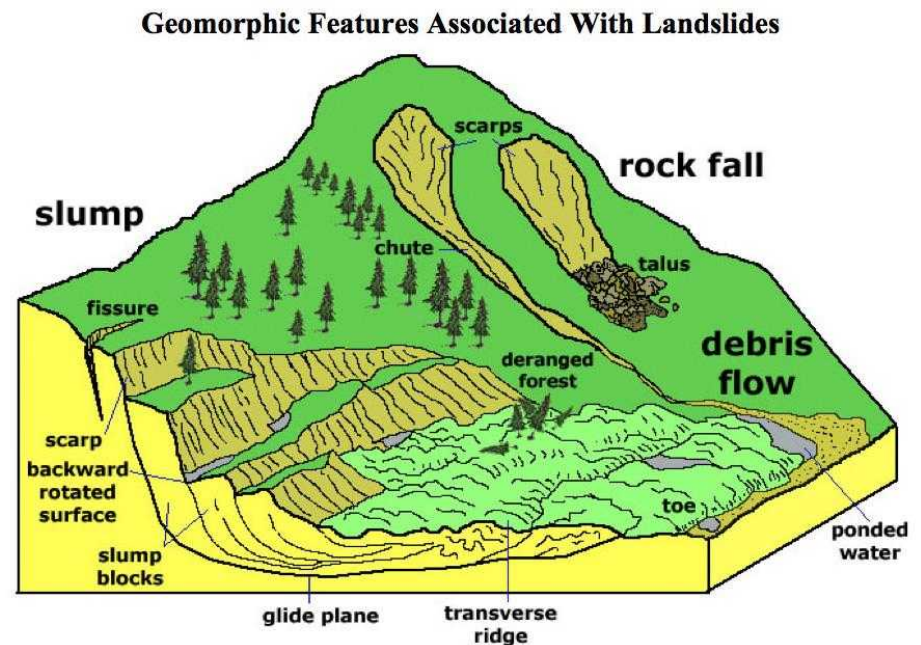


What causes landslide in Vietnam?



Causes - natural factors

- Geological structure
 - Loose connection, especially at the North
 - Many hills
 - Slope gradient
- Rainfall
- Climate change
- Storm
- Forest fire



Causes - human activities

- Mineral mining
- Road construction through mountainside
- Deforestation
- Leveling rivers for construction
- Land management
 - Constructions at loosely structured area
 - E.g.: canyon, coastal side, river side



Effect

- Human death and injury
- House damage
- Construction damage
- Transportation damage
- Loss of crops and fields



Landslide events

- When: Oct 2012
- Location: Dak Nong province
- How:
 - Spread 300m in length from the height of 10m
 - Mass of land and rocks 20,000 m³
- Damage:
 - 15 houses were damaged



Landslide events

- When: Sept 2012
- Location: Yen Bai province
- How:
 - Spreading of rocks
 - Near mineral mine
- Damage:
 - 8 human death
 - 3 injured
 - 9 lost



Landslide events

- When: Sept 2014
- Location: Lang Son province
- How:
 - Heavy rain
 - Spreading of tenth m³ of soils
- Damage:
 - 6 human death, 4 injured



Landslide events

- When: July 2015
- Location: Quang Ninh province
- How:
 - Heavy rain
 - Spreading of tenth thousand m³ of soils
- Damage:
 - 40 houses lost
 - 8 human death, 1 injured



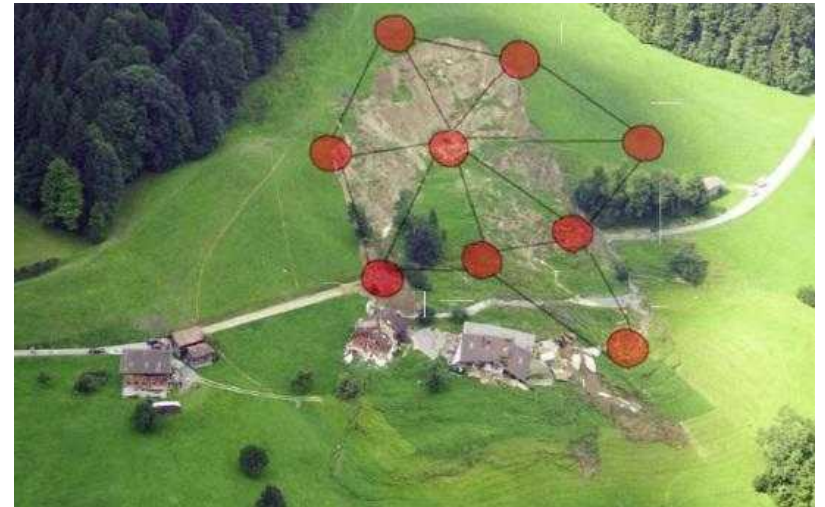
Signs forecasting landslide

- Doors or windows are stuck, cannot be opened
- Walls, ceilings or floors are cracked
- Ground become bumpy
- Underground water spraying at strange location
- Poles or trees are tilted or moved



Government solutions

- Plant tree across slope
- Building tilted walls across rivers
- Land management
 - Restrict buildings near slope, mountain, and hills
- Researches on long-time monitoring and warning system
- Educate citizen about landslide disasters
- Building maps of
 - Landslide areas
 - Geological structure
 - Rainy areas



Thank you for attention