Institutionalizing Geological Considerations for Development Planning –Need for Disaster Management Plan

Geological Society of Zimbabwe Presentation

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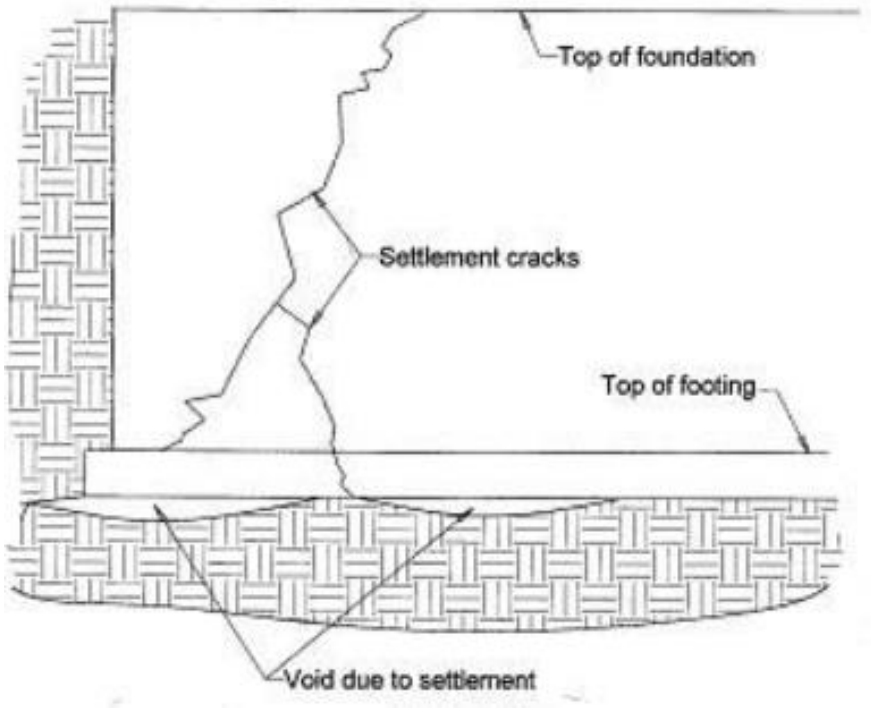
What Can Go Wrong-

- Land is overburdened in many cases and fails
- Hillsides erode and slump- slope failures
- Wells foul (pollution) or dry up,
- Homes collapse into the earth from
  - Subsidence of shafts developers never knew
  - Subsidence of aquifers
  - Sinkholes in Karstic Terrains
- Shrink/Swell Challenges Ground cracks, house crack



-Geo-hazard

- Baseline geological conditions that may expose people or property to damage or risk destruction or injury
- Geological processes- Long-term or short-term
- Natural or Man made (in terms of triggers)
  - Spoteneous (slope failure/ sinkhole failure/ earth tremours)
  - Slow onset (pollution)
- Global Warming –
  - Unusually high rainfall events
  - Flush floods,

What can go wrong

House Cracking: distortion and cracking of on-grade ‘floor’ slabs; cracks in grade beams, walls, jammed or misaligned doors and windows; and failure of steel or concrete plinths (or blocks) supporting grade beams (in foundations).

Ground Cracks- Tectonically induced

Shrink/ Swell Soils- differential rather than total movements

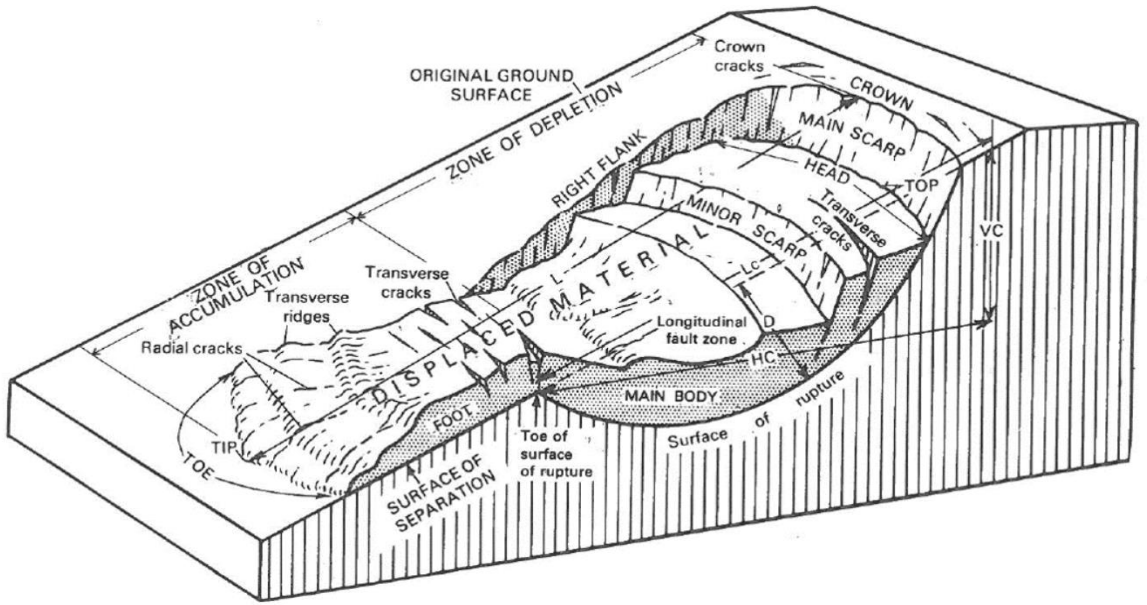
Subsidence induced-groundwater overpumping

What can go wrong

Common modes of slope failure in soils are by

- Translation,
- Rotation,
- Flow, and
- Block movements.

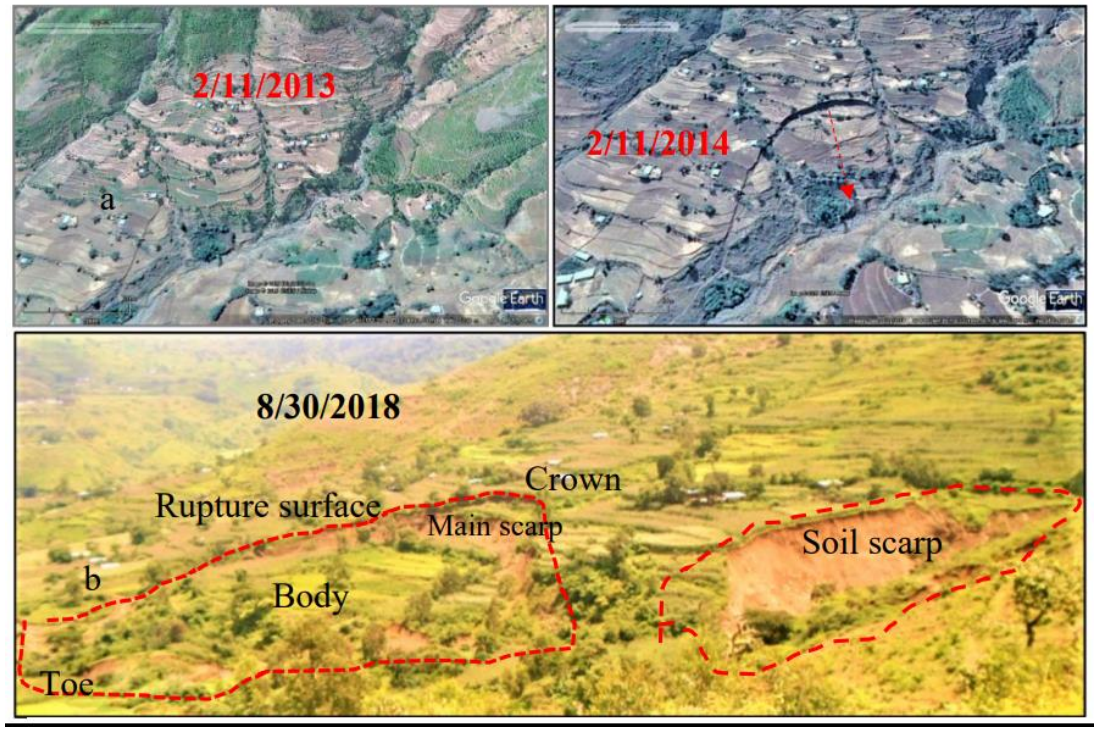
SLOPE FAILUREs



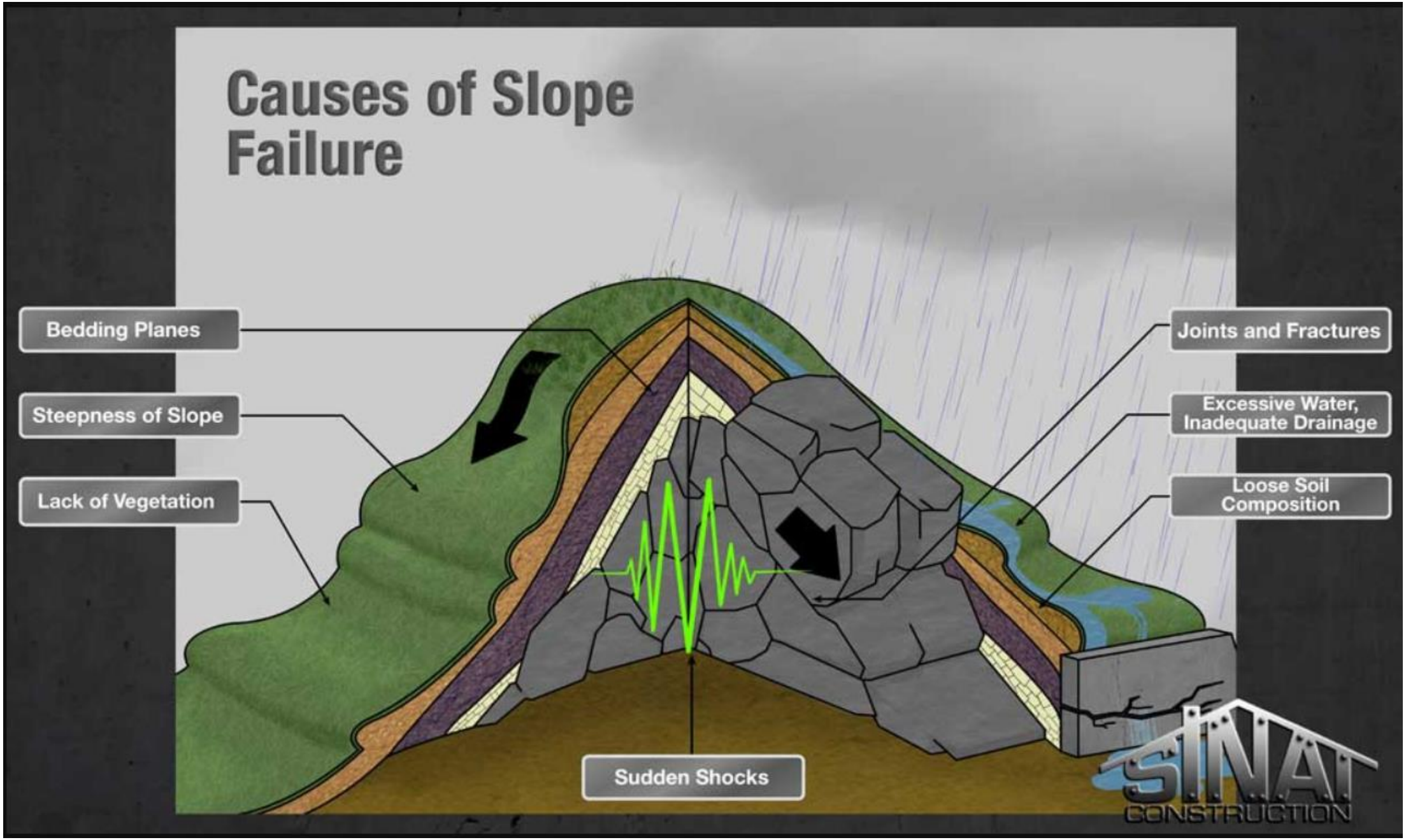
Examples -ground failures in some hilly terrain

Hazard Risk to ecological settings Property owners/ developers

Intertwining of landuse and implcations for geological settings & need for geologis to continue research monitoring



Causes of Slope Failure

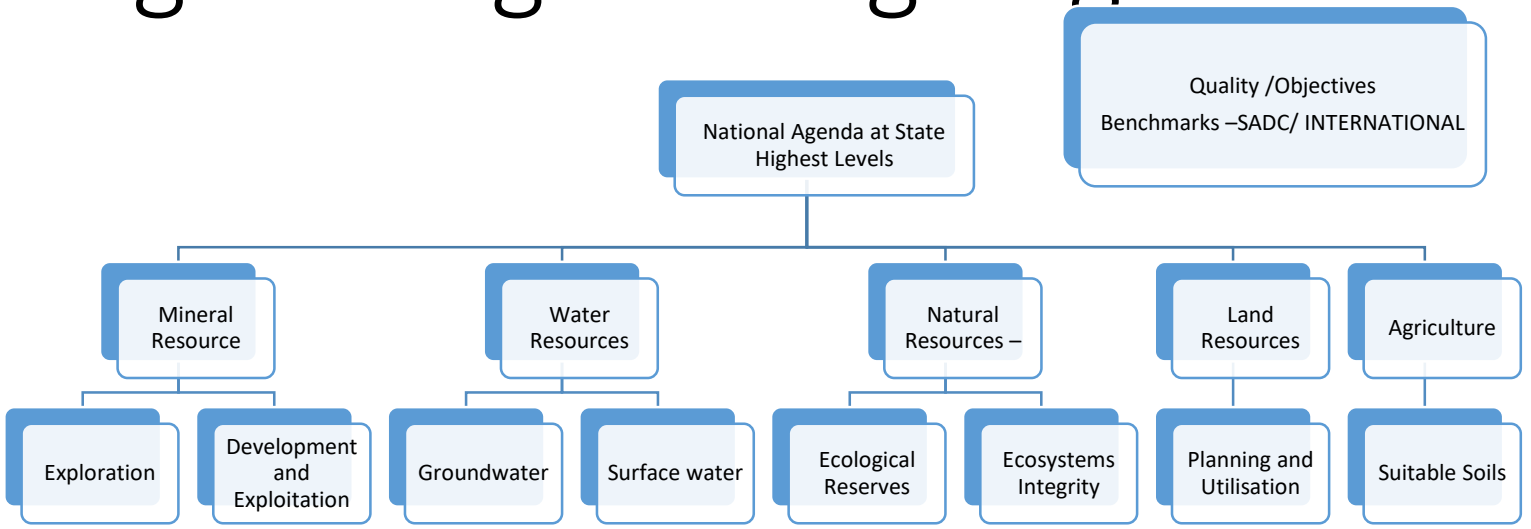


Why They Go Wrong

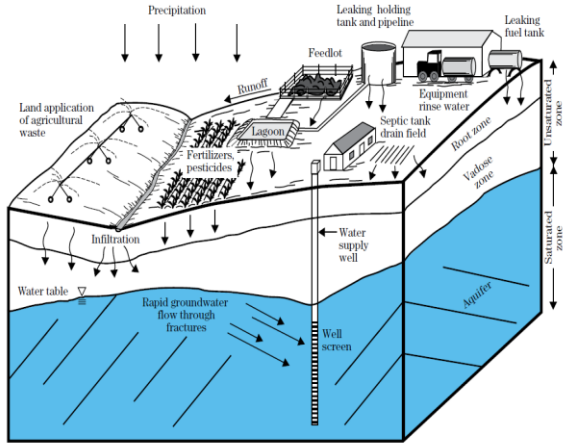
- Planners and Geologists have not cooperated satisfactorily
  - To ensure that cities were well locate
- Numerous factors have contributed to the rift between two sciences
  - Silo mentality –lack of integration
    - None cooperation (at University, Gov Depts, NGOs, regionally, lack of international participation)
  - Geological (fraternity)- not being customer centric when it comes to land use planning issues –no products for land use planners & other consumers
  - Legislative & Policy framework to support mandatory considerations of geologic issues
  - Not enough research priority and funding support
  - Institutional –no drive/driver

- *foolish man, which built his house upon the sands And the rain descended, and the floods came, and the winds blew, and beat upon that house; and it fells and great was the fall of it. St. Matthew, 7s24-27*

Setting the Agenda –going FORWARD



Social & Economic Goals
Sustainable Development goals (SDGs) e.g.
SDG#11 sustainable cities
SDG# 9 (building resilient infrastructure)



Geo-hazard Disaster Management Planning

Response.

Actions taken to decrease mortality and morbidity, and to prevent further property damage when the hazard occurs. (first responders emergency services)

Recovery

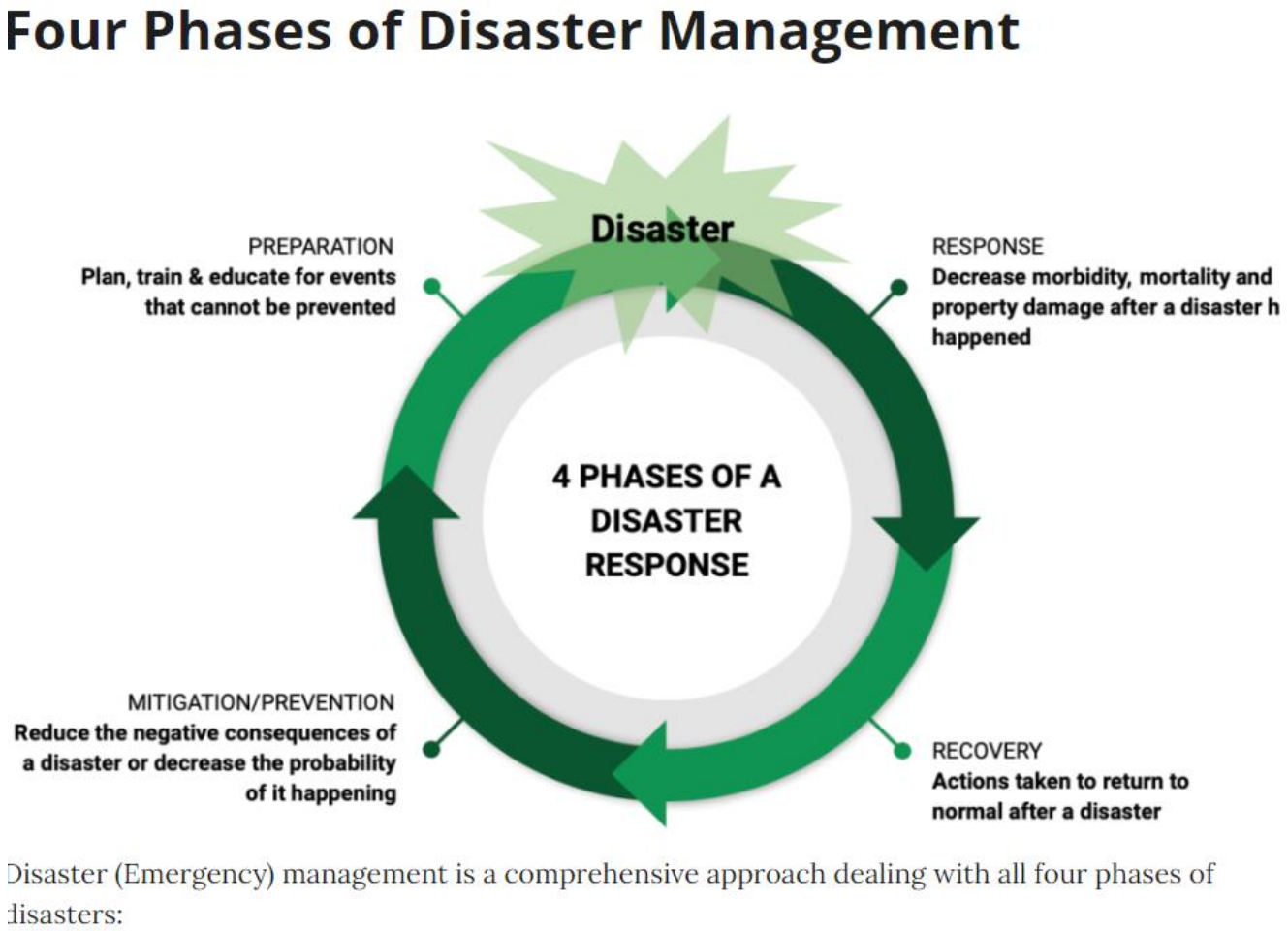
Actions taken to return to normal following an event. Medium to long term again responsive

Prevention/Mitigation. decrease

sustained actions that the risk of a hazard (probability of occurrence) of a hazard, or to reduce the potential negative consequences suffered by people and/or property

Preparedness

plans or procedures designed to minimize physical and property damage when an event occurs.



-it is part of ‘greater national disaster management plan’’
-cascades down to provincial, district and sometimes village levels

-Infusion of Geological Considerations – & geologists roles

- Participate in
- Initiating the **laws and regulations** restricting deforestation to prevent mudslides-vulnerable areas mapped
- Relocating or elevating structures to minimize the effects of floods
  - Chimanimani case in hand –mapping return flood lines in consunjunction with hydrologists
- Contributing to the Development of, adoption and enforcing **building codes and standards**
- Securing shelves and hot water heaters to walls in earthquake zones
- **Engineering interventions** civil structure-roads and bridges to withstand earthquakes/ tremors

What to draw upon -international

- **SDGs & International Frameworks**
- **Natinal Disaster Management Plans**
- **Regional SADC Protocols**
- **SENDAI Framework example**
  - Priority 2. Strengthening disaster risk governance to manage disaster risk
  - Priority 3. Investing in disaster risk reduction for resilience
    - Disaster risk governance at the national, regional and global levels is very important for prevention, mitigation, preparedness, response, recovery, and rehabilitation. It fosters collaboration and partnership.

Conclusions & Recommendations

Relevant examples exist for Geological considerations to be mainstreamed into decision support for development planning as a broader strategy for disaster preparedness and disaster risk reduction

Lets be customer centric- to landuse planning we know they need our produce lets go and sell or provide the products.

Lets not stand by or critique from our arm chairs

Rally the correct stake holders, initiate the legal/ policy framework, awareness campaigns at the highest level possible

Institutional realignment perhaps needed (a division dealing with this in Geological survey,

Having geologist representation at all institutions requiring them with support from policy/ regulations etc