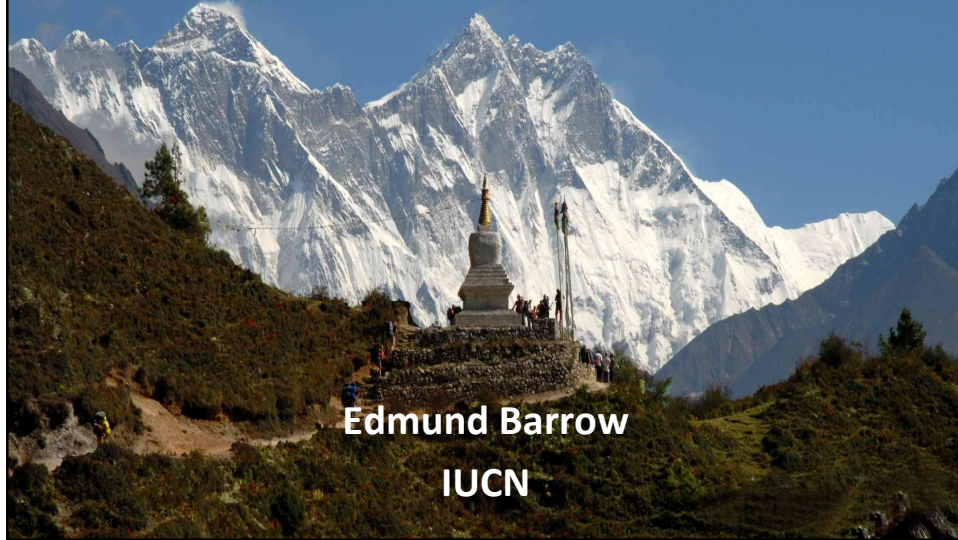


# Resilience, Adaptation & Mountain Ecosystems



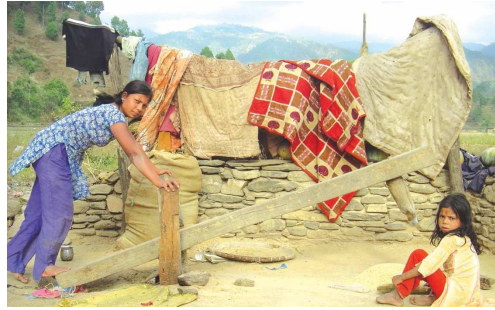
## Resilience & Mountain systems

- Resilience – capacity to absorb disturbance & still retain basic functions & structure
- What disturbances to be expected? (& due to CC?)-
  - Mud/snow/land slides
  - Floods - too much rain/water
  - Warming & drying (too little, too warm)
  - Glacial melts



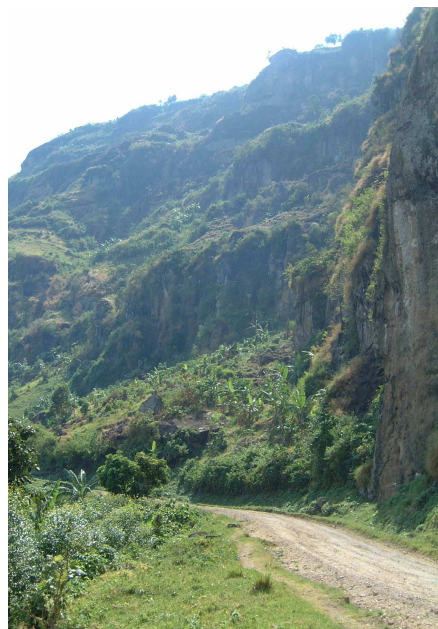
## Resilient Mountain Communities

- Resilient, but enough? & what have they lost?
- In risk prone environments – deep knowledge base on resilience
- Risk spreading (multiple & different opportunities)
  - Farming (if appropriate, multi-crops, trees terracing, irrigation)
  - Other lands – grazing, use – but sustainable basis
  - Areas not to be disturbed (steep tree filled Mt. slopes)
  - Institutions of management
  - Detailed knowledge about species

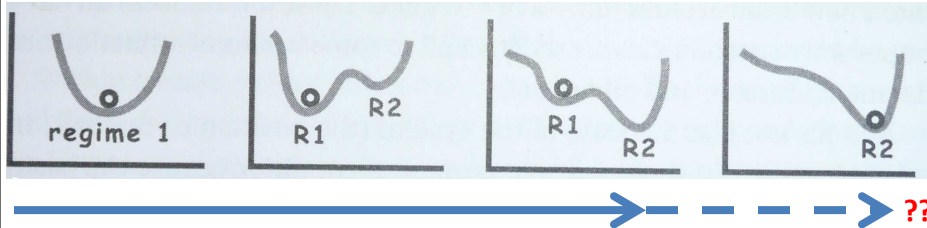


## What's gone/going wrong

- CC exacerbates!
- In-appropriate land use (crops, land management); clearing of forests on steep slopes; increases in degradation – all reduce resilience
- Breakdown of local coping, & institutions
- CC – warms – glacial melts, plants no longer grow where they are supposed to, extreme events increase



## Are we at a Mountain Tipping Point??




1. R1: Original State, before CC – stable (broadly)
2. Changes starting to happen – glacial melts, warming, degradation, inappropriate land use
3. Approaching a tipping point – what is it, why, what will it result in???
4. R2: New different State to which we are moving (have moved??)

## What can we do about it?

- Build on local knowledge & institutions – not perfect, may not be resilient enough – but the foundation
- Sustainable land use – central
- But at **larger landscape** (upstream/down stream) levels – integrated planning/use – do what is supposed to be done properly (catchment, sustainable agriculture, NRM)
- Integrate for warming – plants moving up; more effort on terracing, use of natural solutions (restoration with appropriate spp.)





So...

- Resilience not new, sustainable land & Mt. management not new
- CC exacerbates what we have done badly – degradation, mono-cropping, deforestation etc.
- Resilience (communities & ecosystems) can help us manage CC – do what we should do better, integrate for CC; or
- We face a grim future!!!