



Remote geohazards and climate change:

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Remote geohazards and climate change: Challenges for a sustainable development of rural mountain communities

- > TajHaz Project, Remote Geohazards
- > Rural Mountain Communities
- > Climate Change
- > Hazard, Risk, Vulnerability
- > Sustainable Development
- > Social aspects
- > Concluding Remarks

TajHaz Assessment 2009/10

- > To identify **remote geohazards in high mountain** areas of Tajikistan (with particular emphasis on GLOFs)
- > To assess the **impact scenarios** (inkl. worst case) connected to selected hazards
- > To give **recommendations how to mitigate** the hazards identified at source or impact area



From assessment... ...to mitigation



IAG-BOKU,
GIUZ

**Hazard
Assessment**

Recommendations

**Risk
Assessment**

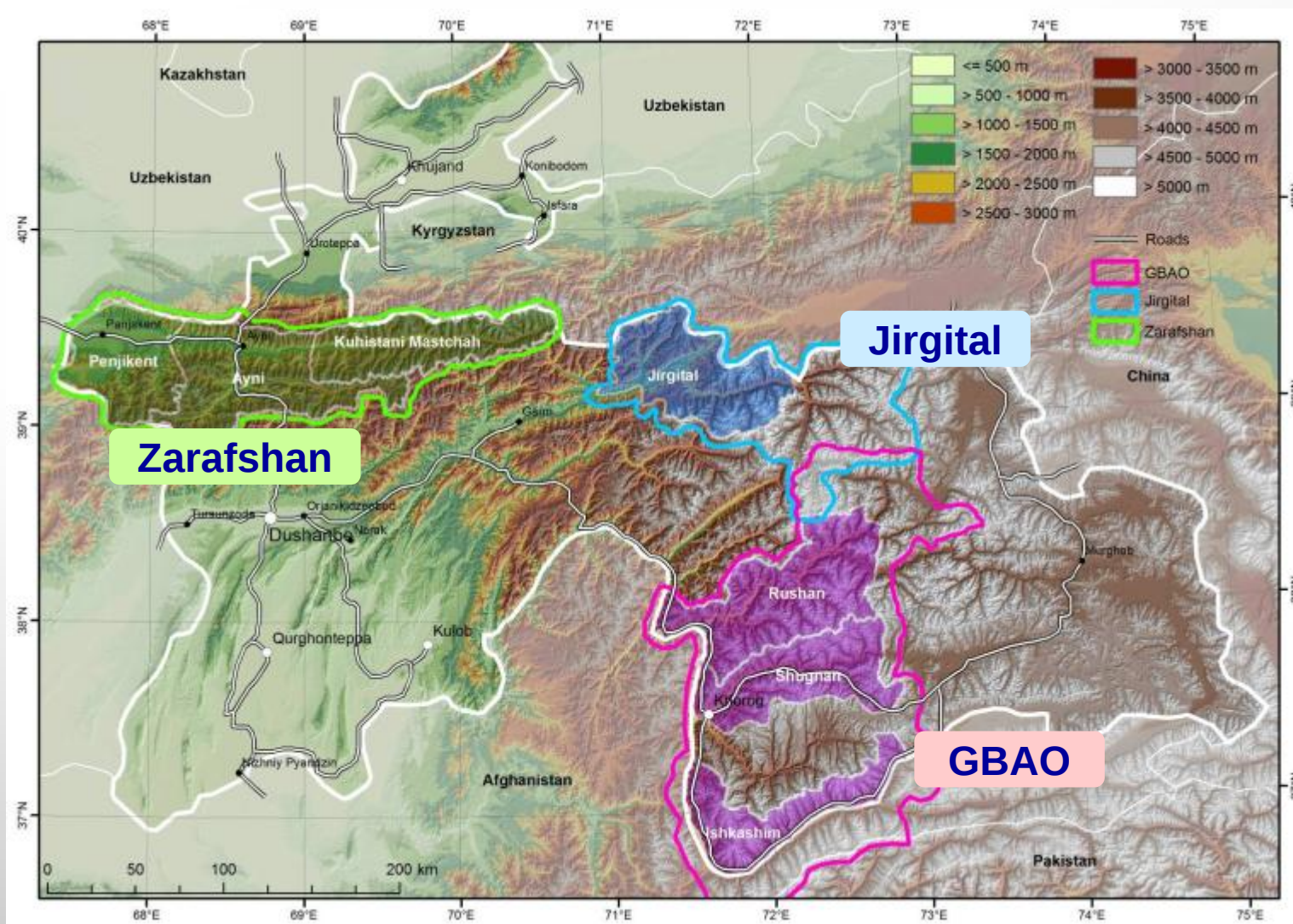
**Risk
Reduction
Proposals**



**Handing over Responsibility to
Stakeholders, Communities**

Mitigation Results

Study areas of TajHaz





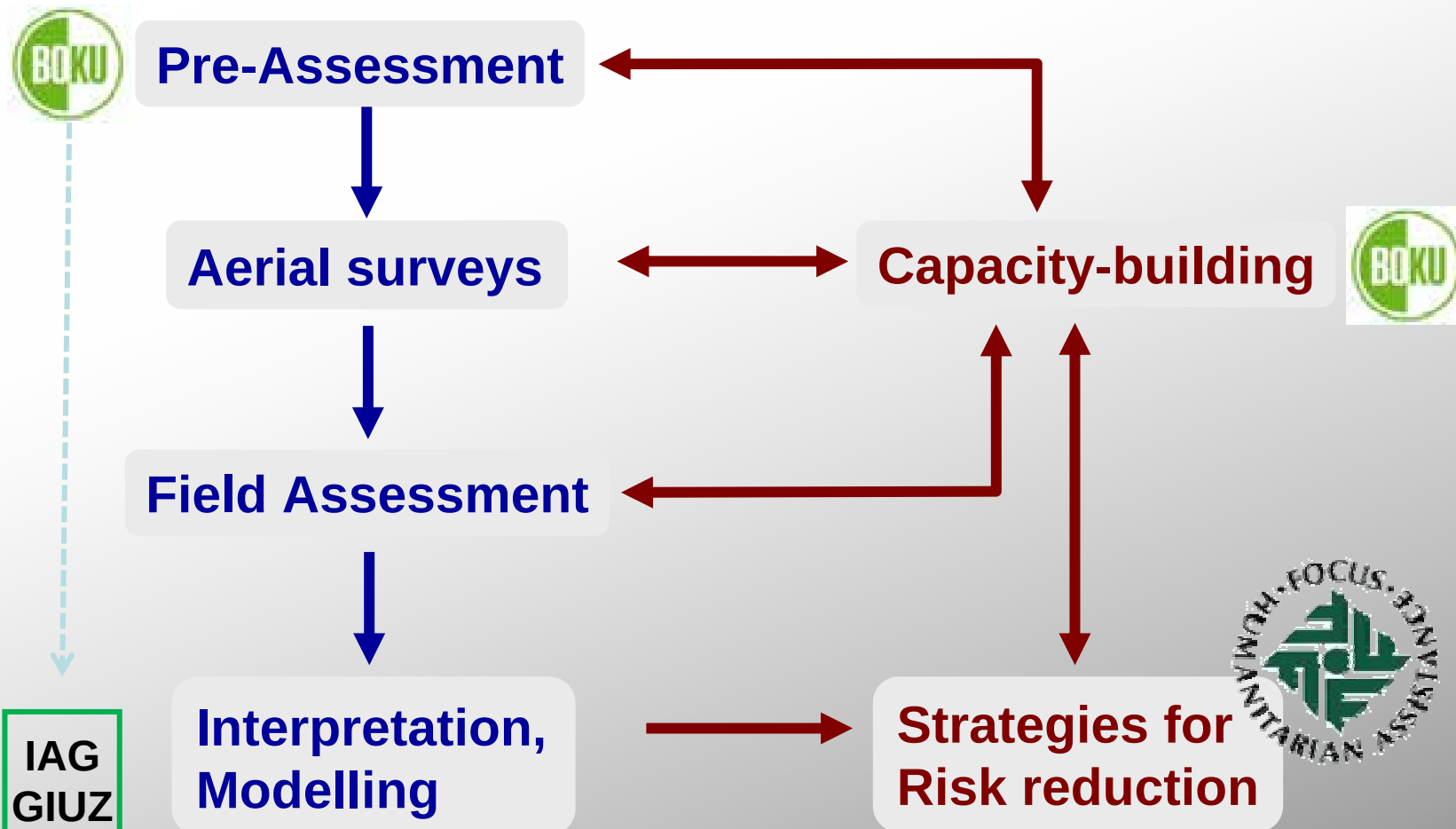
IAG

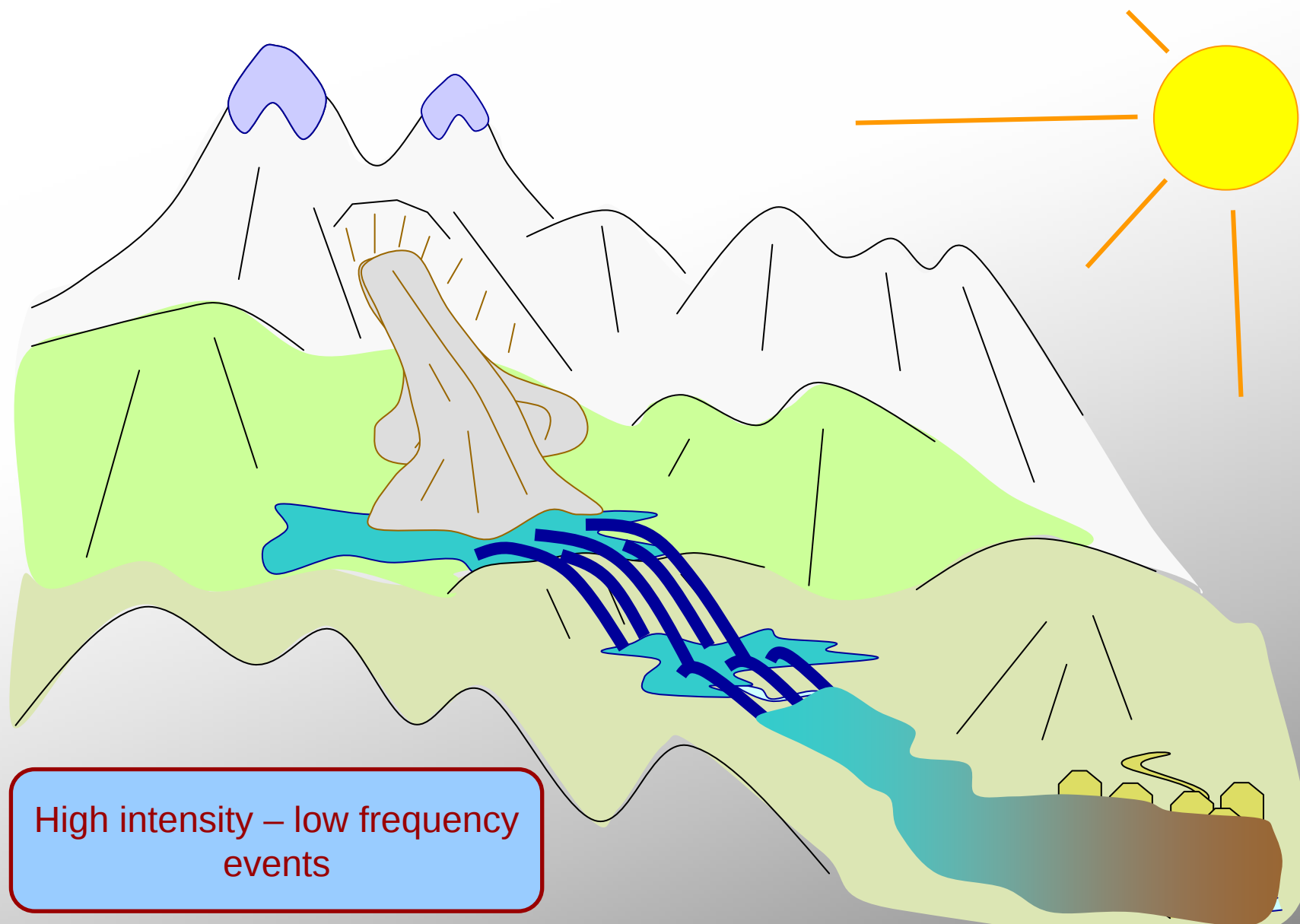
Work Flow

GIUZ



Work flow of TajHaz Project

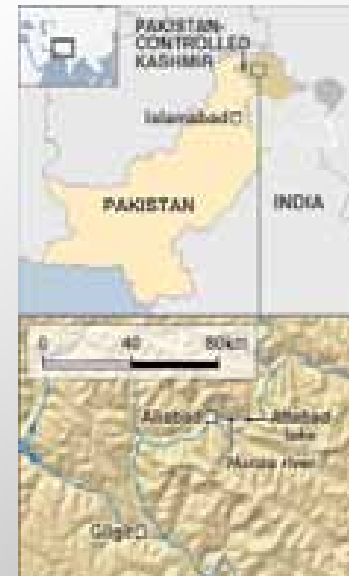


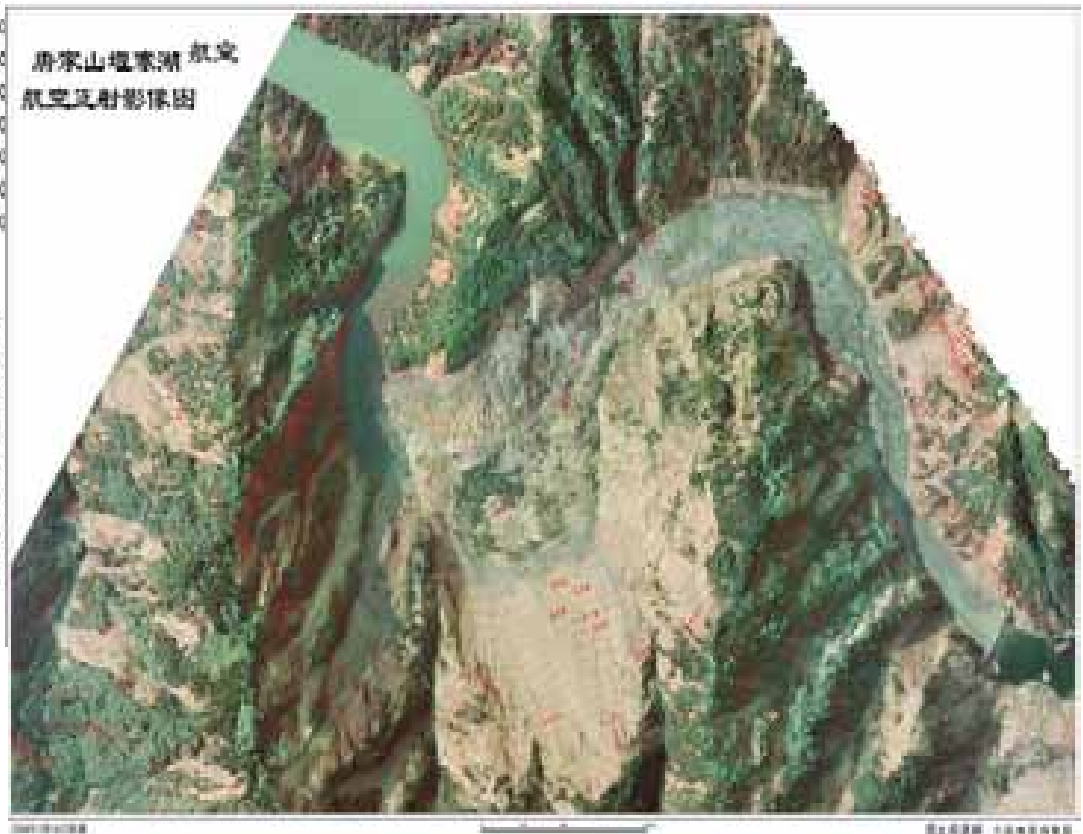
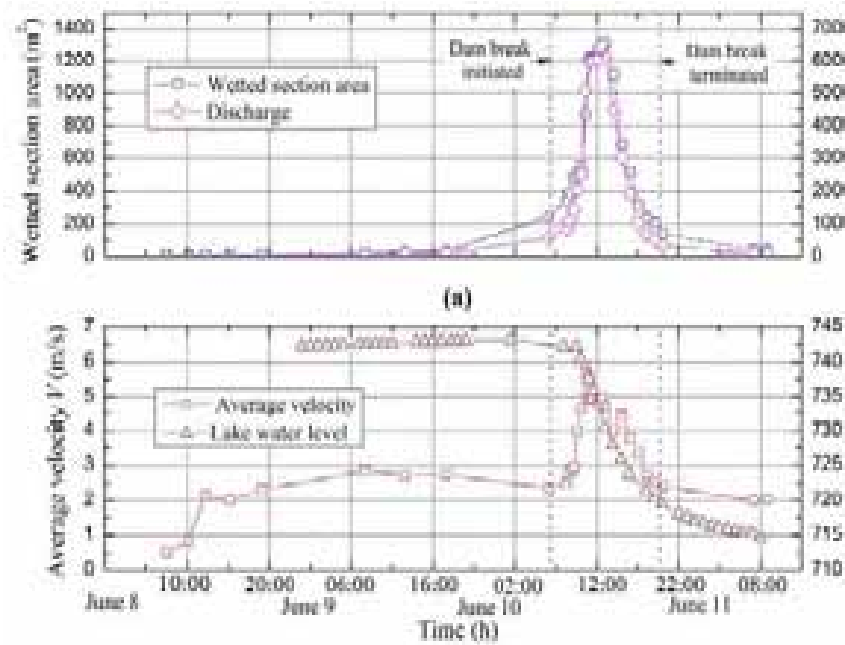


High intensity – low frequency
events



**Atta Abad,
Hunza Valley
30. May 2010**

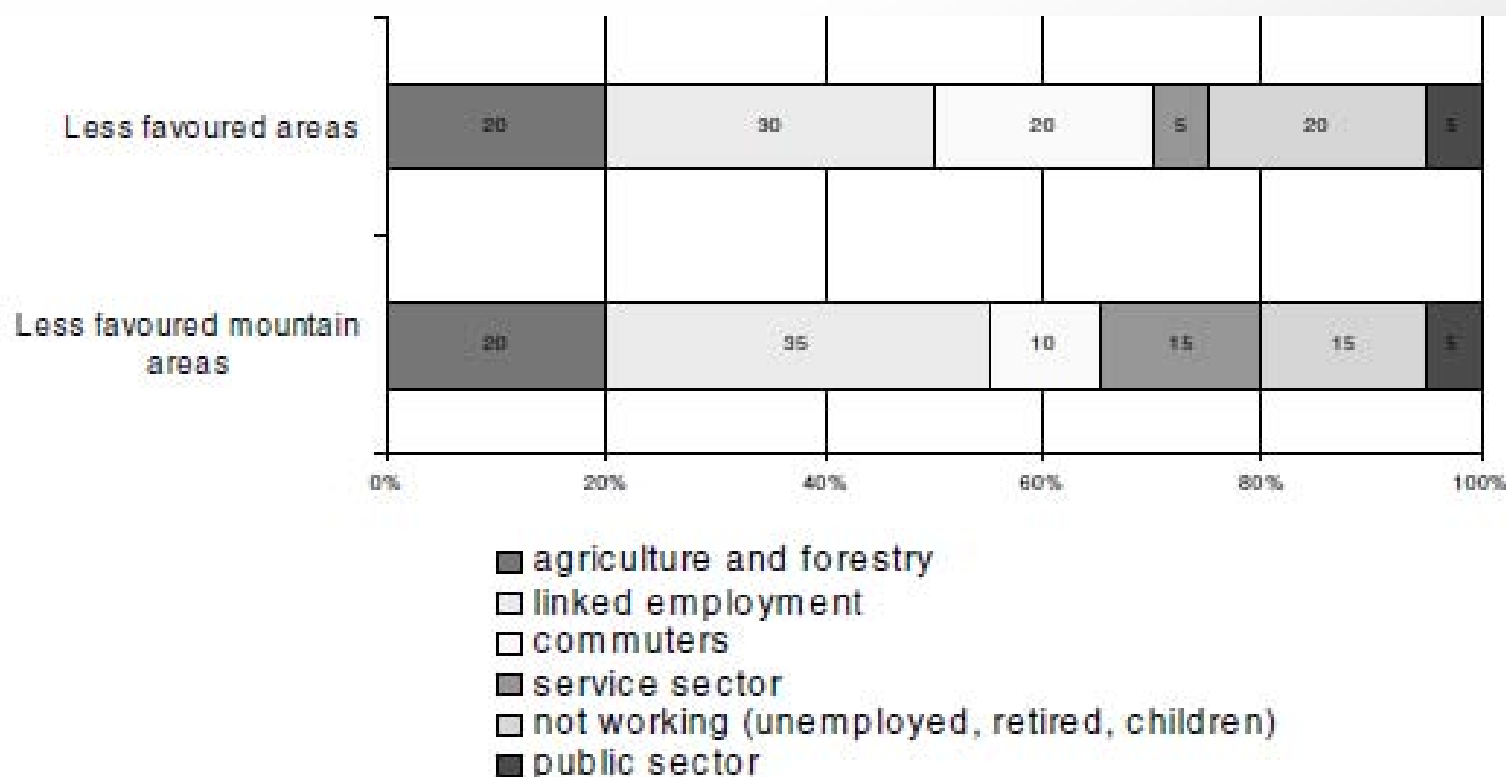




**Tangjiashan ,
Beichuan
Sichuan Earthquake 2008**



- Diversity of social actors in rural areas in Austria => Pamir?



Source: Lukesch@ eunet.at





Problems/Solutions concerning Geohazards

- - Lack of interest and capacities
- - Risk aversion, risk perception, awareness?
- - Understanding of hazards, vulnerabilities, risks?
- - Low quality housing / infrastructure
- + Learning from past events / disasters
- + Understanding processes, mitigating damages
- + Maintaining and upgrading critical infrastructure
- + Managing future long-term processes

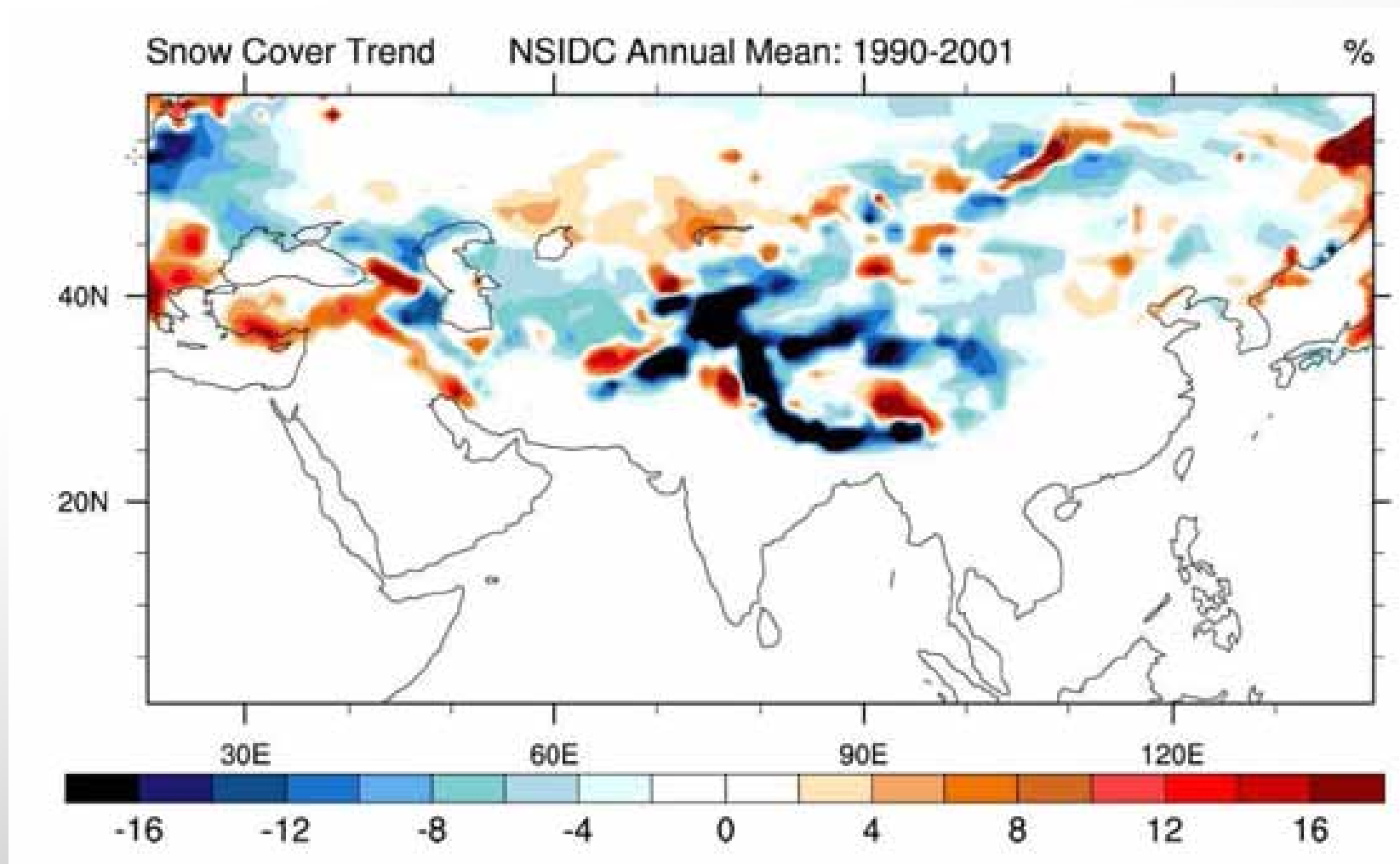
=> **Climate change / global change?**



Retreat of Gangotri Glacier, Uttarakand 1780 - 2001

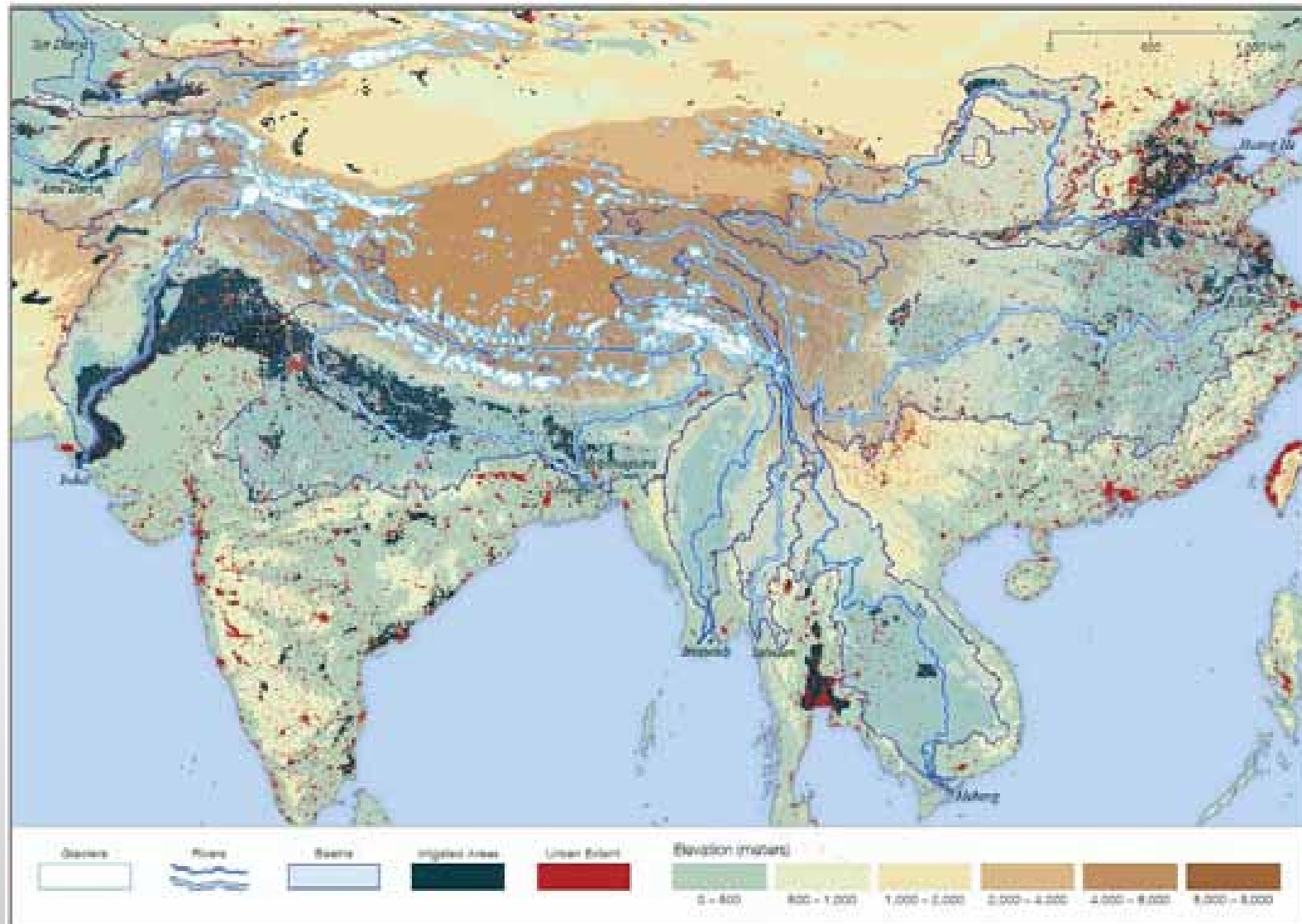


Snow cover trend in Asia

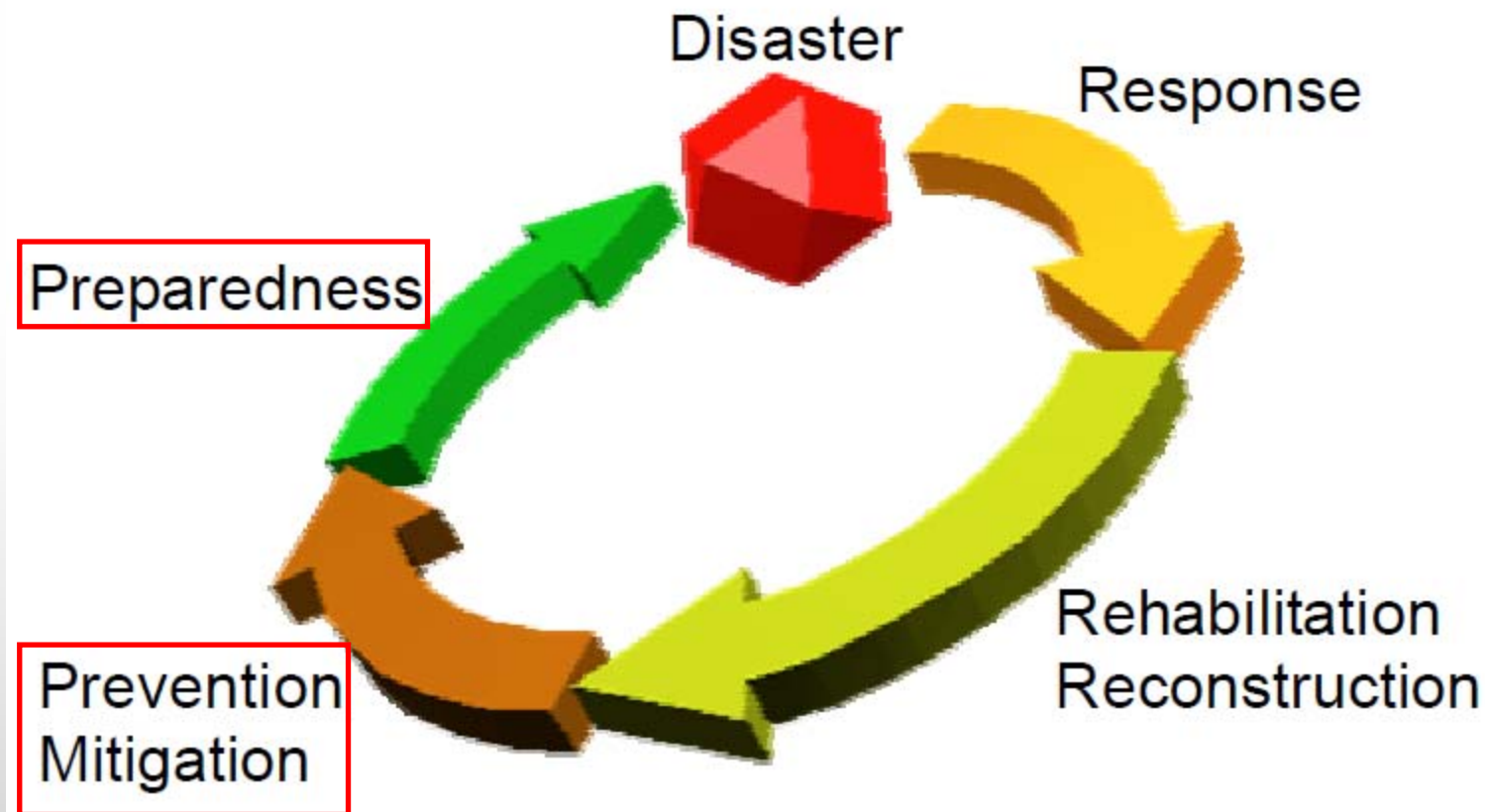


Source NSIDC, 2003

Population pressure / water use in Asia



Disaster Risk Management Cycle

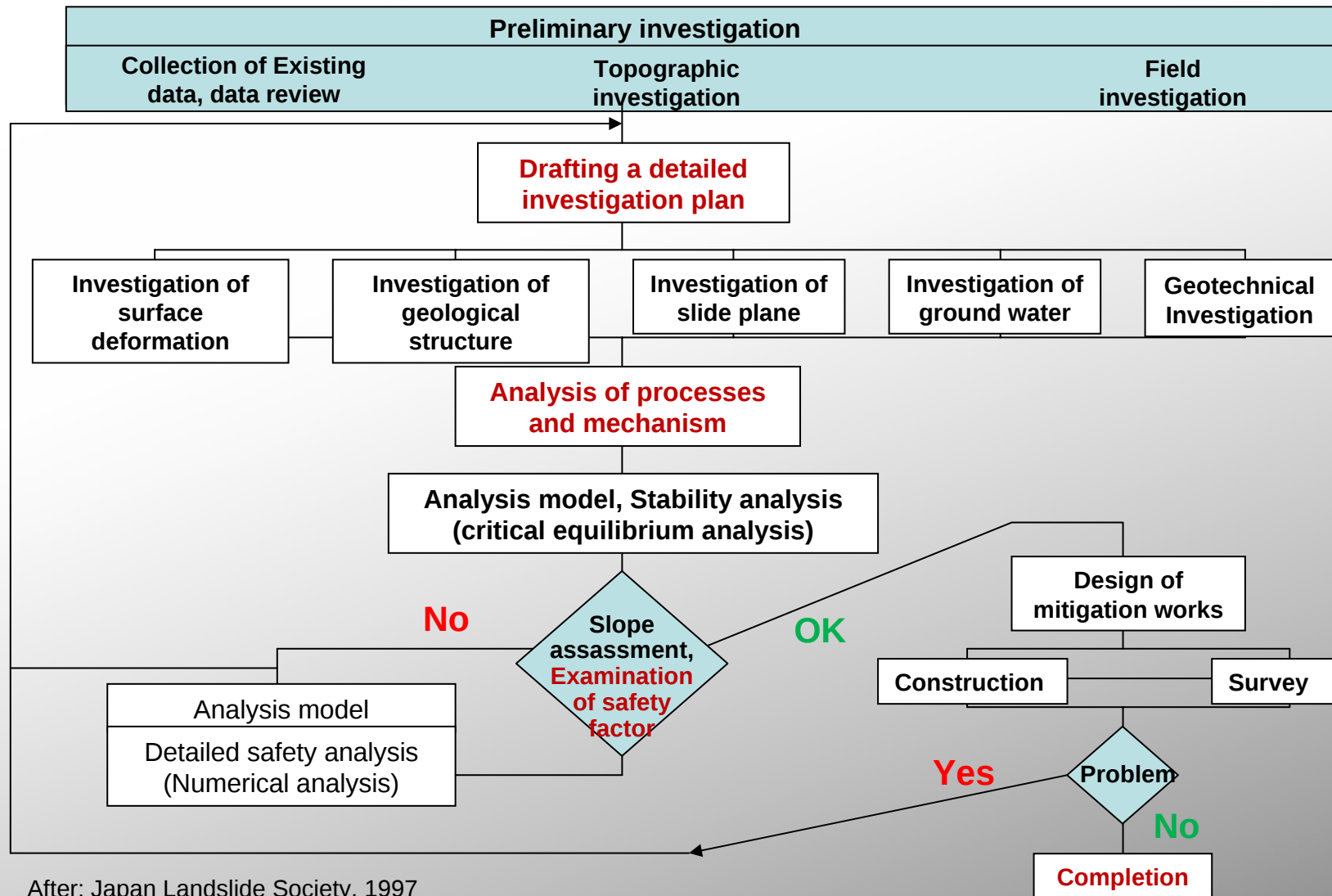


How to assess the risks

- Identify local and remote hazards
- Determine who might be harmed and how (vulnerability)
- Evaluate the risks and decide on precautions
- Record your findings and implement them (mitigation)
- Review your assessment and update periodically



Investigation of landslide hazards



After: Japan Landslide Society, 1997



Possible consequences of disasters

- **Morbidity and mortality:**
 - Injury, suffering, disease, starvation, death
- **Material losses:**
 - Damage, distraction , pollution, resource depletion, loss of settlement / infrastructure, economic loss
- **Social Disruption:**
 - Change of activities, homelessness, unemployment
 - => Antisocial behaviour, civil unrest
- **Psychological Distress:**
 - Help- and hopelessness, grief/guilt/stress

After Bryce, PAHO 2001

Disasters and development:

- Only 11 % of the people exposed to natural hazards live in lesser developed countries, but they account for more than 53 % of recorded deaths.

=> **Development status and disaster risks are closely linked...**

- Natural disasters destroy development gains, but development processes themselves play a role in driving disaster risks... The roots of much disaster risk can be traced to historical development decisions ...

=> **Disaster risk reduction often falls in the gaps between development planning and disaster response**

After UNDP, 2004



Rural Development Cycle

– Normal conditions

- Investment and development.
- Is threat known? => Warning, preparedness?

– Impact phase

- Effects of disaster => break, consternation

– Post disaster recovery

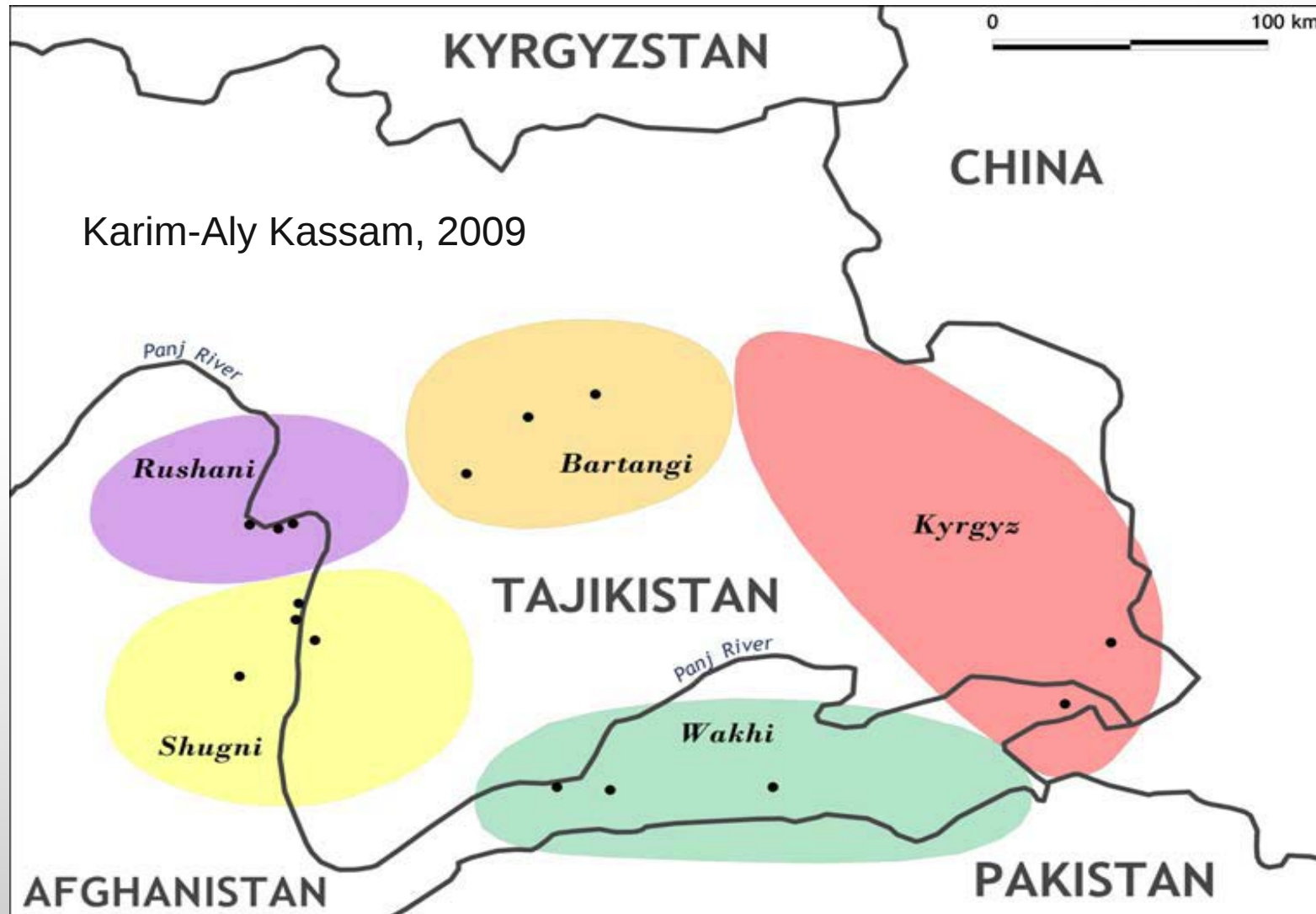
- Early recovery, consolidation
- Rebuilding, positive effect!
- New risk aversion «live goes on» ...

Social view of risk and disasters

- Who is at risk? Who is loosing what?
- Social order, land use, settlements, ...
- Gender, age, status, religion, ...
- Structures, resources, capacities, ...

=> Aspects for amount of loss and survival

Ethnic Groups in Pamir



- **Data presented by WB, UN are:**

- Demographic, economic statistics
- Rough, impersonal estimates

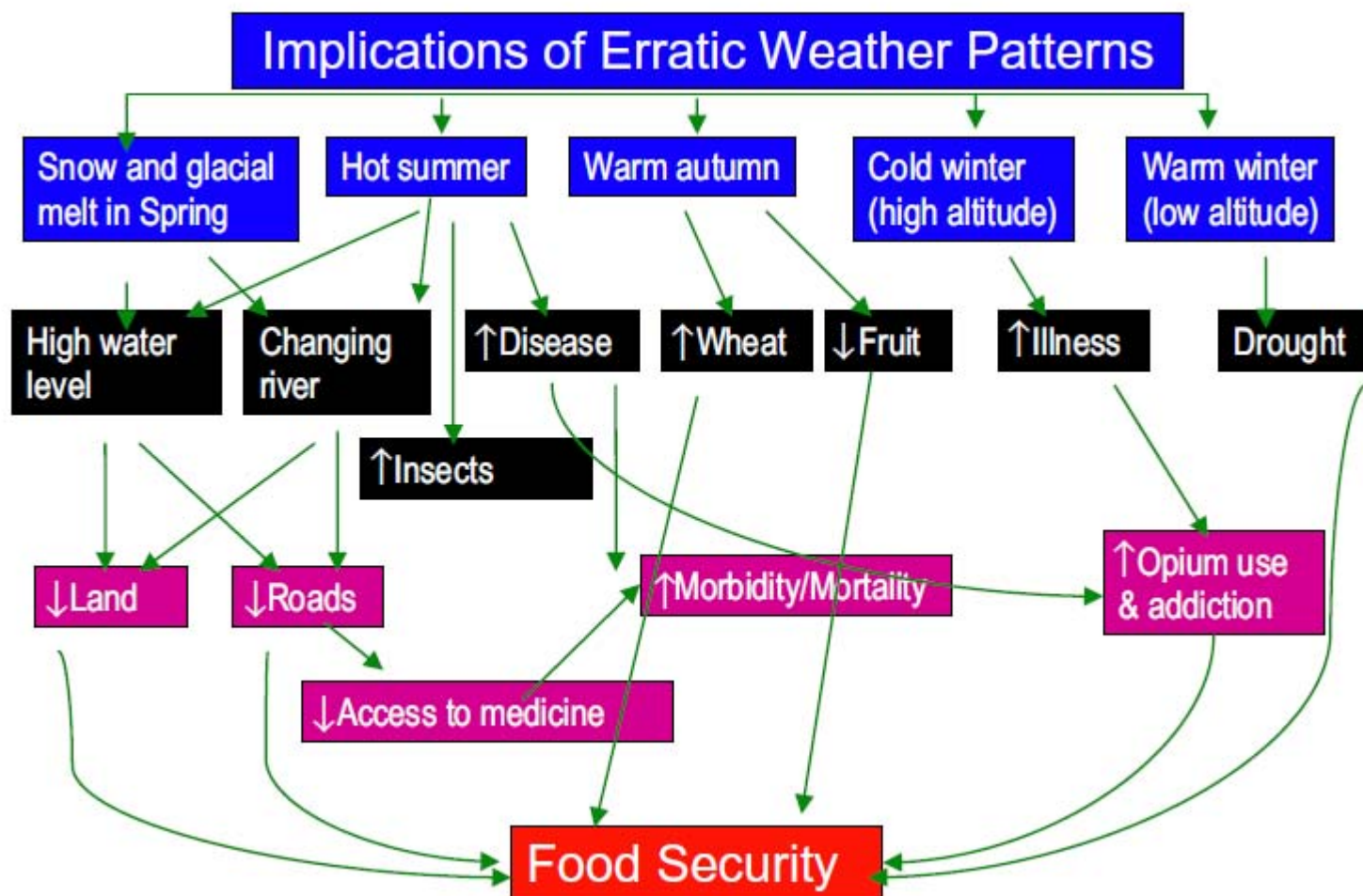
⇒ **Who is usually behind those figures?**

- Least wealthy and influential groups
- Forced to live in unsafe places / houses
- Engaged in dangerous activities
- Exposed to higher risks

⇒ **People living in rural
high mountain areas!**

See also Hewitt 2009

Social implications of climate change



Karim-Aly Kassam, 2009

Main impacts of Geohazards:

Land loss, damage to infrastructure, access to resources.

=> We can describe, monitor, model, also forecast geohazards; we can perhaps reduce, but not stop them.

But, outside villages, even more land has been abandoned recently than is lost to the landslides.

=> There is land available for reclamation and water to irrigate it –but that is men's work.

=> Potential for NGOs (Food for work)

Indios in Peru trying to stop glacier melting





In high mountain ecosystems, hazards threaten the environment, population, and infrastructure disproportionately, therefore:

- **Identifying gradual or sudden changes, especially in the cryosphere is essential.**
- **Assessment and early recognition of possible local and remote geohazards is of great importance.**
- **Awareness building, knowledge and knowhow transfer are crucial elements for the mitigation of potential losses.**
- **=> TajHaz Project is a further step to this goal.**

Thank you!



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