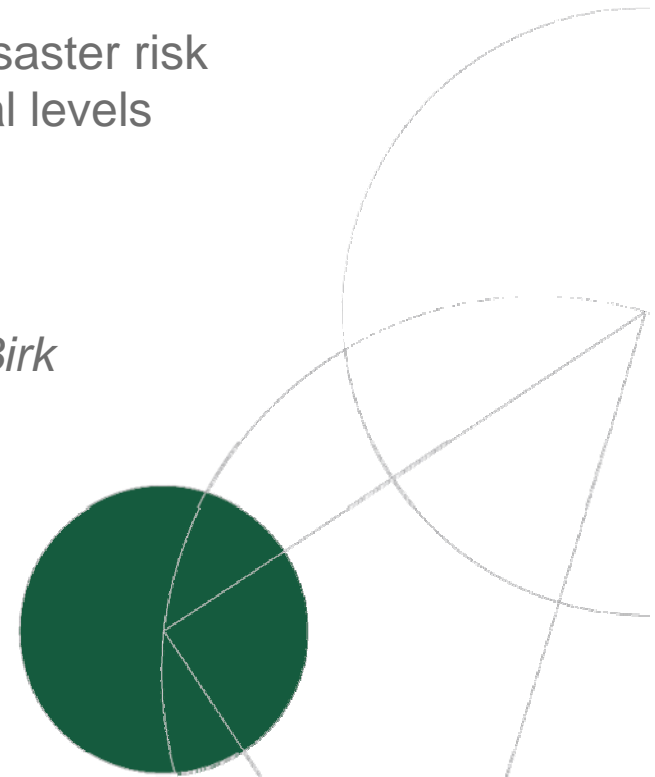




Adaptation challenges

Linking climate change, development, and disaster risk management – across spatial and institutional levels

Thomas Birk



Current work - from islands to highlands

10°S, 160°E



7°S, 35°E



Solomon Islands, Southwest Pacific

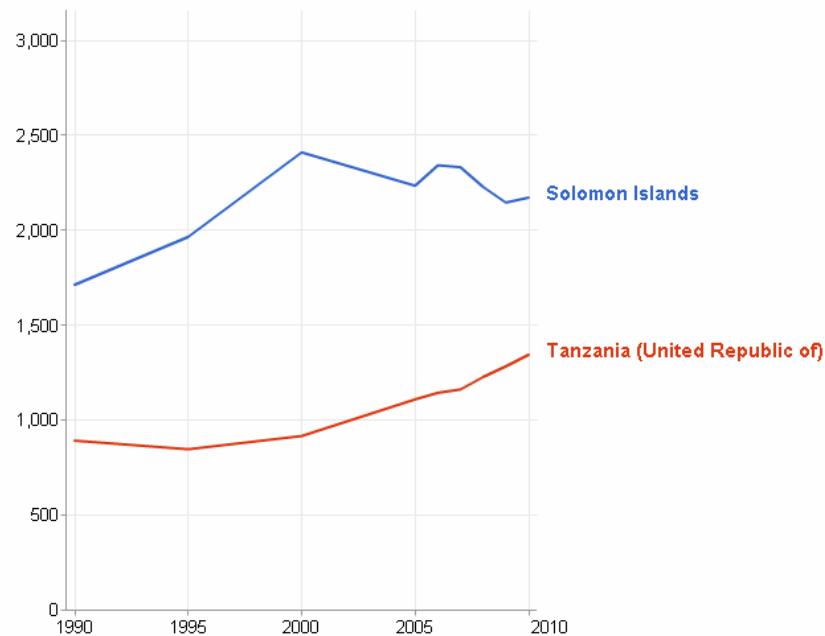


Tanzania, East Africa

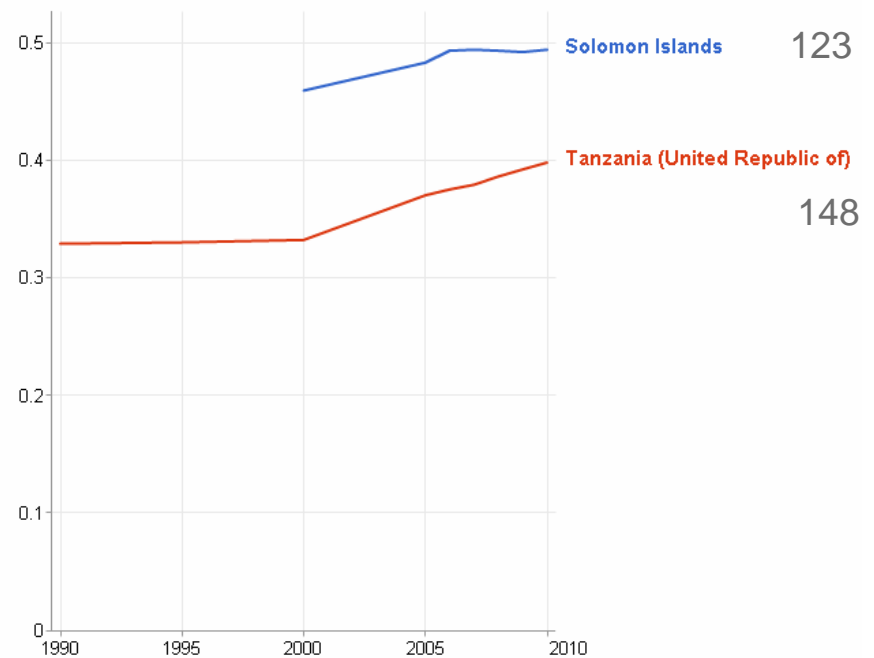


LDCs: vulnerability and adaptive capacity

GNI per capita (2008 PPP US\$) ?



HDI: Value ?



Developmental factors as **generic determinants of vulnerability** to various stressors & shocks



Climate change and water, Tanzania

The trend for annual rainfall differs within the country, and on a regional/local level CC is likely to be experienced predominantly as **increased inter-annual and intra-annual variability**.

How will this impact on:

- **Rain-fed agriculture?**
 - Change in rainfall patterns, intensity, dry-spells
- **Irrigated agriculture?**
 - Change in annual watercourses flows, but also minimum and peak flows

If climate changes are likely to exacerbate existing vulnerabilities to environmental and socio-economic stressors and shocks, then

- How to define and address these vulnerabilities via adaptive strategies/measures?



Concepts: Vulnerability and adaptation

Disaster literature:

- vulnerability as the characteristics of a person or a group and their situation that influence their capacity to anticipate, cope with, resist and recover from the impact of a natural hazard (Wisner *et al* 2004)

Climate change literature:

- vulnerability as a function of exposure, sensitivity and adaptive capacity (IPCC, 2007)

Development / livelihood literature:

- Vulnerability as a function of
 1. local assets/capitals/resources
 2. contextual factors (trends, shocks, changes) constraining people's room of accessing/using/developing their capitals

NB: Vulnerability is taken as the "starting point" assumed to be measurable based on attributes or determinants selected a priori.



Concepts: Vulnerability and adaptation

Coping with variability and extremes / shocks

- Timing: reactive, immediate, short-term
- Measure: draw on reserves, savings, relatives, aid etc.
- Strategy: survive, recover, return to 'normalcy', maintain the level of consumption

Adaptation to change + variability and extremes/shocks

- Timing: proactive, accumulative, short/long-term
- Measure: build capacity, increase assets, diversify, invest
- Strategy: improve well-being, reorganise/transform, anticipate stressors

An adaptive perspective on development will often require

- the willingness to experiment
- taking the risk of making mistakes
- making room for social and institutional learning

(Agrawal, 2008)



Adaptation by whom and to what

Scales of adaptation:

- National:
 - Existing policies on agriculture, forestry, health, energy, infrastructure, land use, population growth, met services etc.,
 - Additional CC adaptation (NAPA)
 - Disaster risk management, incl. relief supply and/or prevention measures
- River basin/regional/provincial:
 - Land use planning: user rights, tenure, settlement etc.
 - Infrastructure development: Irrigation schemes, roads, buildings, communication etc.
 - Disaster management
- Village and households
 - Changes in land use and crops
 - Investments, eg. in irrigation, water extraction
 - Livelihood diversification
 - Maintenance and development of social structures



Adaptation by whom and to what

CC and CC adaptation from a people's perspective:

- Perceptions of risks (Noah, PhD)
 - Awareness: Do farmers have a realistic idea about the risks, both for the past, present, and future
 - Response: Do farmers have identifiable coping and adaptation strategies
 - Limitations: Do farmers have identifiable constraints / barriers to their adaptation needs and options
- Adapting to what?
 - Changes in subsistence needs, household growth, health etc
 - Changes in market opportunities and prices
 - Changes in infrastructure: Roads, dams, irrigation systems
 - Changes in government policies, eg. concerning land use
 - Climate variability and change, including hazards/extremes



Suggestions for research questions

Overall question for WG 3:

- Which are the most important CC impacts, at what scales should they be considered, and what are the appropriate responses ?

Specific questions (post-doc):

- How does vulnerability / adaptation / adaptive capacity interact across different institutional and spatial levels?
- What are the challenges/barriers of adaptation across the different levels?
- At what scale and administrative level should adaptive measures be taken?
- What are the readily available and/or appropriate measures to be implemented in a short-term, as well as long-term perspective
- How to mainstream CC aspects into development policies aiming at reducing poverty, environmental degradation etc.



Suggested research activities and output

Activities:

- Desk study: policy frameworks, literature review, examine adaptation options (e.g. similar cases)
- Field work: interview with key informants and institutions
 - Partly in collaboration with PhD

Output:

- 1-2 papers WG 3
- 1 paper on crosscutting issues
 - Impact and adaptation assessment
- Input for project report



Crosscutting water-related issues

How to identify the most pressing water-related problems within the study area?

- Impact of climate variability and change on water flow/availability and agricultural production throughout the system, now and in the future
- Impact of water extraction (irrigation, consumption) upstream, on agriculture and water use/access downstream, now and in the future

Response - twofold:

- How to enhance the access to / supply of water resources in a way that corresponds with the changing demand driven by environmental and socio-economic changes?, and
- How to address environmental and socioeconomic changes in ways that will reduce the pressure on water resources?

