

DPRI International Forum
Kyoto, 11-13 March 2013



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Institute for Environment
and Human Security

Disaster Risk Research

**at United Nations University
Institute for Environment and
Human Security**

*Jakob Rhyner,
Director UNU-EHS and Vice Rector in Europe*

UN-UNIVERSITY

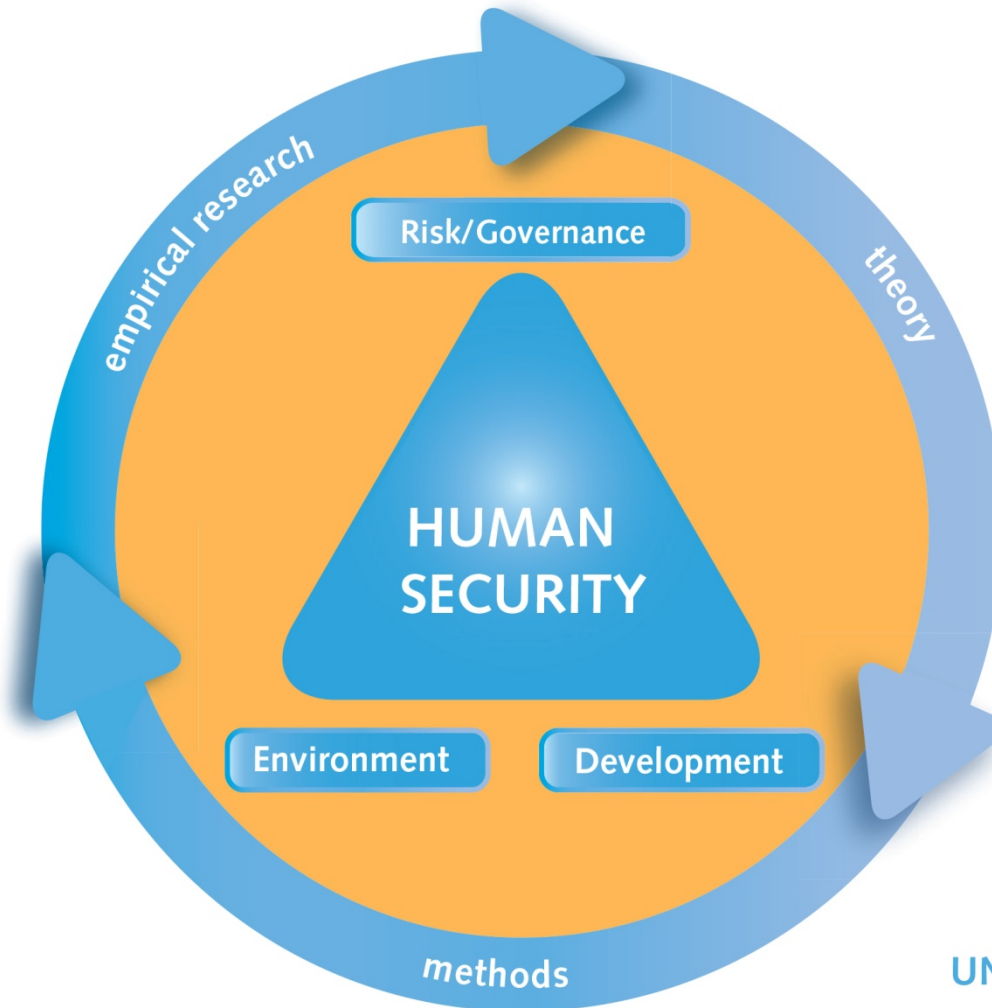
Focus of UNU-EHS



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Project „Loss & Damage“



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Partners:

- CDKN
- Germanwatch
- MunichRe
- ICCCAD, Dhaka
- UNECA
- ACPC
- UNU-EHS

Loss & Damage Programme

5 important points



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- 1. What causes it loss and damage ?** Climate change/variability impacts interacting with social vulnerability
- 2. Loss & Damage continuum:** Loss and damage impacts fall along a continuum, ranging from “events” associated with variability around current climatic norms (e.g. weather-related natural hazards) to “processes” associated with future anticipated changes in climatic norms in different parts of the world
- 3. Working Definition:** Loss and damage refers to negative effects of climate change/variability that people have not been able to cope with or adapt to
- 4. Its happening now:** Loss and damage is already a significant – and in some places growing – consequence of inadequate ability to adapt to changes in climate patterns across the world.
- 5. Mitigation can stem loss and damage:** But failure to mitigate GHG will drive loss & damage to as-yet unimaginable scenarios

- Existing coping/adaptation to biophysical impact is not enough to avoid loss and damage

- Measures have costs (economic, social, cultural, health, etc.) that are not regained

Adaptation happens but is not enough

Adaptation getting more costly

Loss and damage occurs when...

Getting by, but losing ground

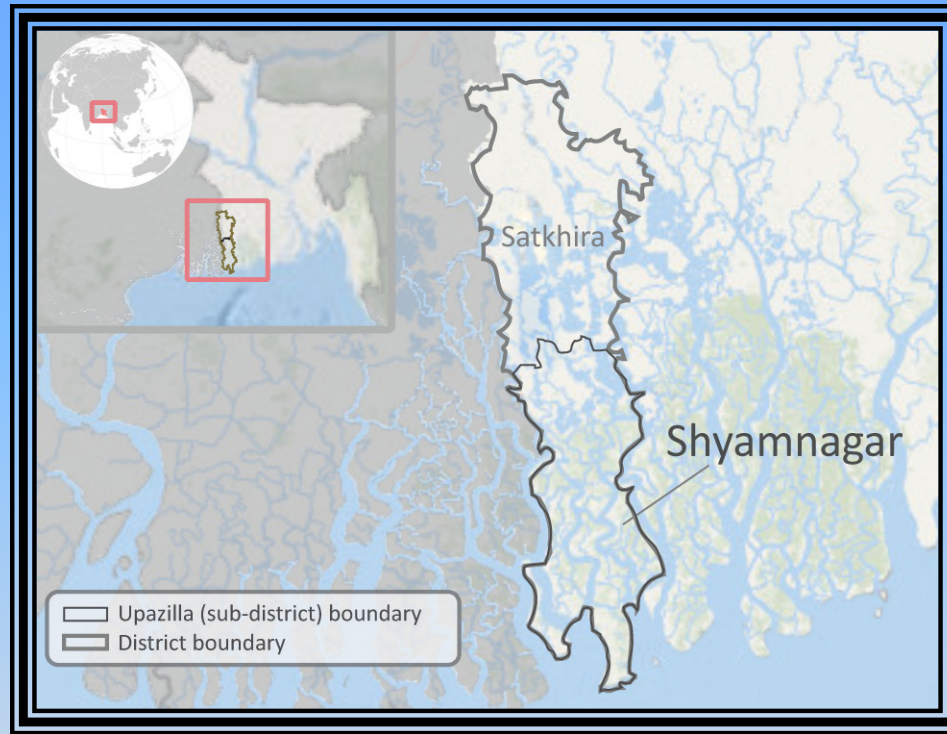
Adaptation is not happening

- Despite short-term merits, measures have negative effects in the longer term (erosive coping)

- No measures are adopted – or possible – at all

Bangladesh

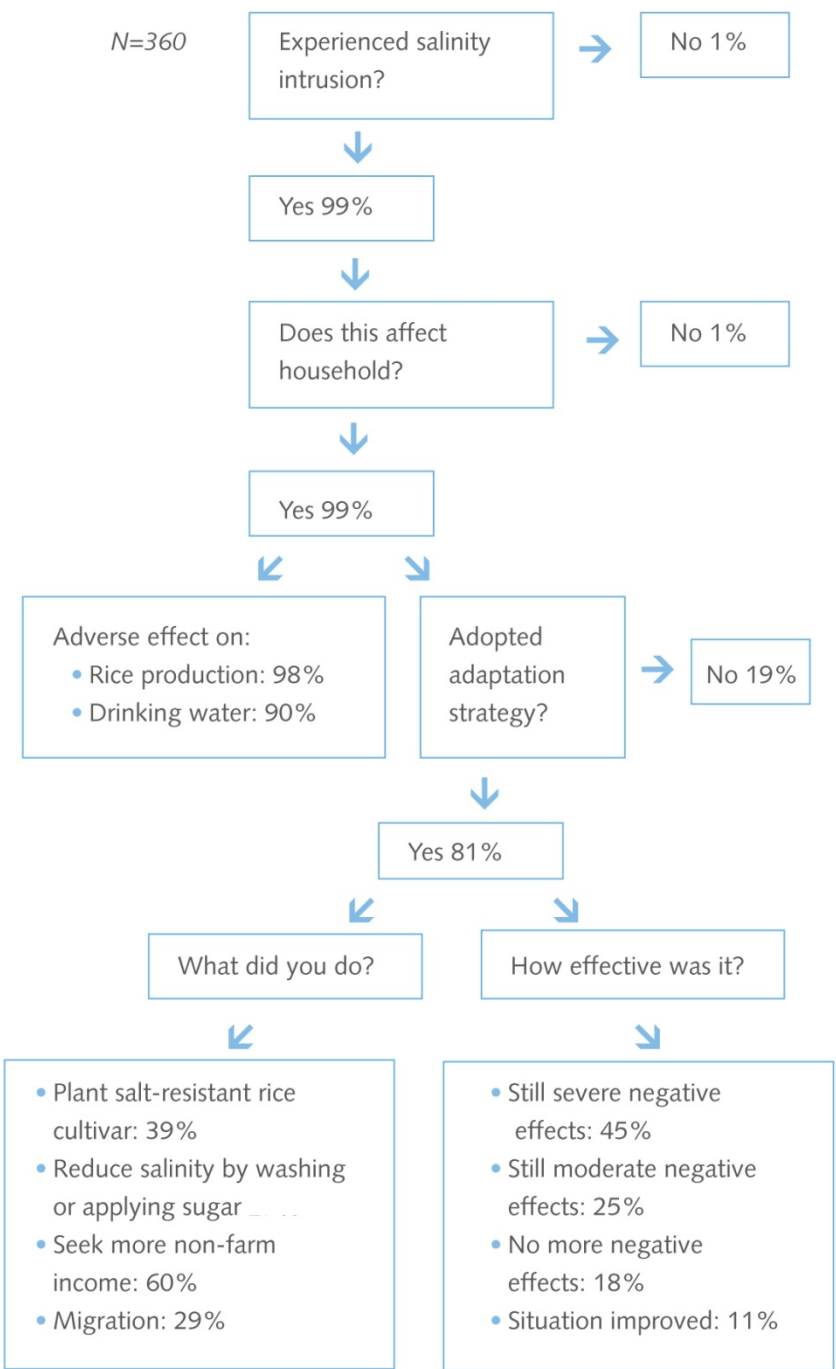
Golam Rabbani, BCAS



The limits of adaptation in Shyamnagar, Bangladesh:
loss and damage associated with salinity intrusion

Bangladesh

Golam Rabbani, BCAS



• Climatic stressors

- Salinity intrusion, cyclone Aila (2009)

• Impacts

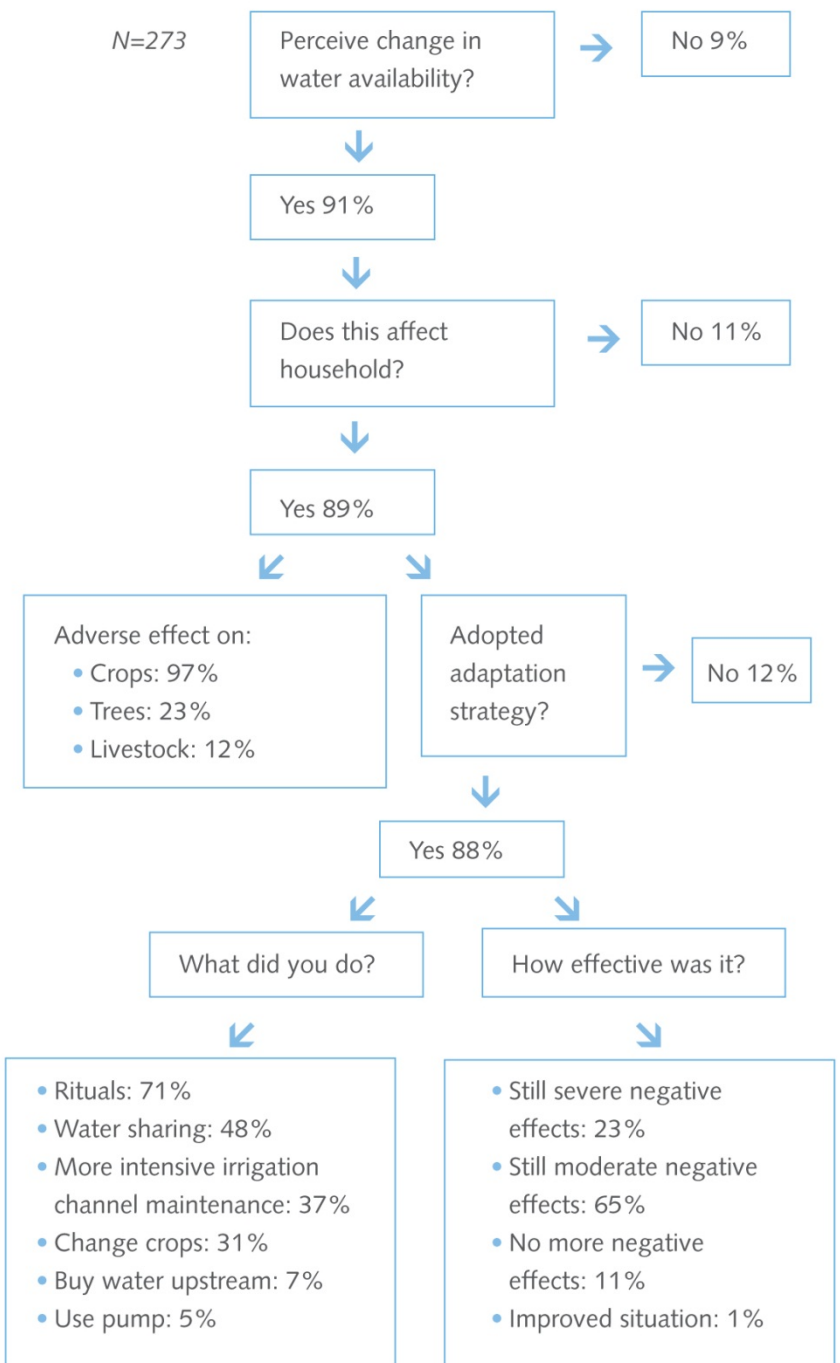
- Traditional rice varieties no longer grow well
- Health implications of salty drinking water

• Adaptation

- Saline tolerant rice varieties
- Efforts to reduce salinity in fields
- Increased reliance on non-farm income

• Loss & Damage

- Adaptations effective for gradual salinity increase, but could not prevent a 100% rice crop failure after cyclone Aila in 2009.
- Estimated loss to rice production in 4 study villages: \$1.9 Million



Bhutan

Norbu Wangdi &
Koen Kusters

■ Climatic stressors

- Monsoon rains: Less rain and later onset

■ Impact on livelihoods

- Reduced water availability for paddy cultivation: impact on food and income security

■ Adaptation

- Adjustments to irrigation practices and access to water, changes in crop mix, from two to one harvest a year, buying pumps

■ Loss and Damage

- For 87%, the measures are not enough and/or entail extra costs that could not be regained

The Gambia

Dr. Sidat Yaffa

N=373

Did drought affect household?

No 3%

Yes 97%

Adverse effect on:

- Crops: 99%
- Food price: 89%
- Livestock: 74%
- Trees: 40%

Did you use coping strategy?

No 7%

Yes 93%

What did you do?

How effective was it?

- Alternative income to buy food: 58%
- Sale of properties to buy food: 58%
- Rely on aid: 55%
- Rely on social networks: 57%
- Temp. displacement / migration: 23%

- Still severe effects: 41%
- Still moderate effects: 25%
- No more negative effects: 32%
- Improved situation: 3%

• Climatic stressors

- Drought (2011)

• Impacts

- Low crop yields for some, complete crop failure for others

• Coping strategies

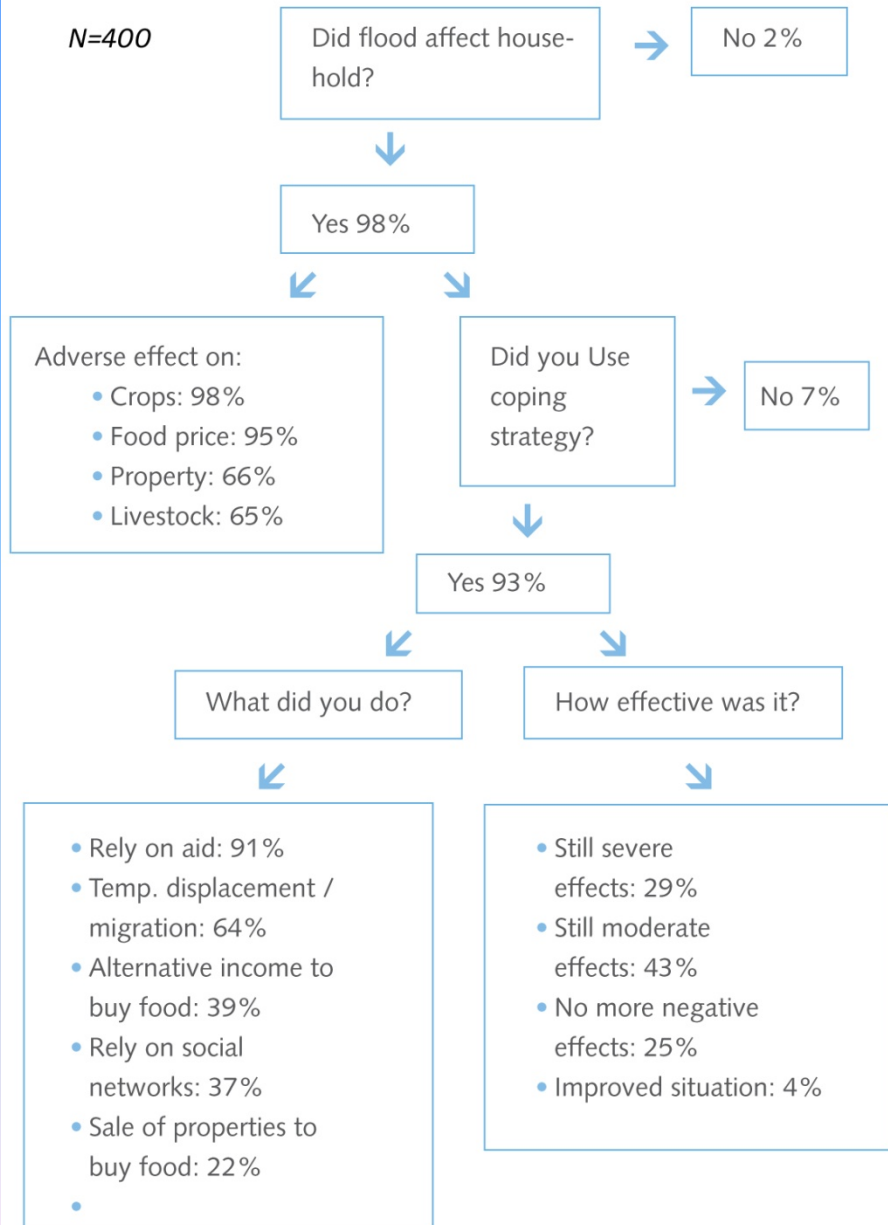
- Alternative sources of income to buy food, such as selling assets, and migration to urban centres
- Reliance on food aid and social networks

• Loss and Damage

- For 63%, coping strategies were not enough to avoid food insecurity

Kenya

Denis Opiyo Opono



• Climatic stressors

- Flood (2011)

• Impacts

- Damage to crops
- Destruction of properties
- Death of livestock
- Health problems

• Coping strategies

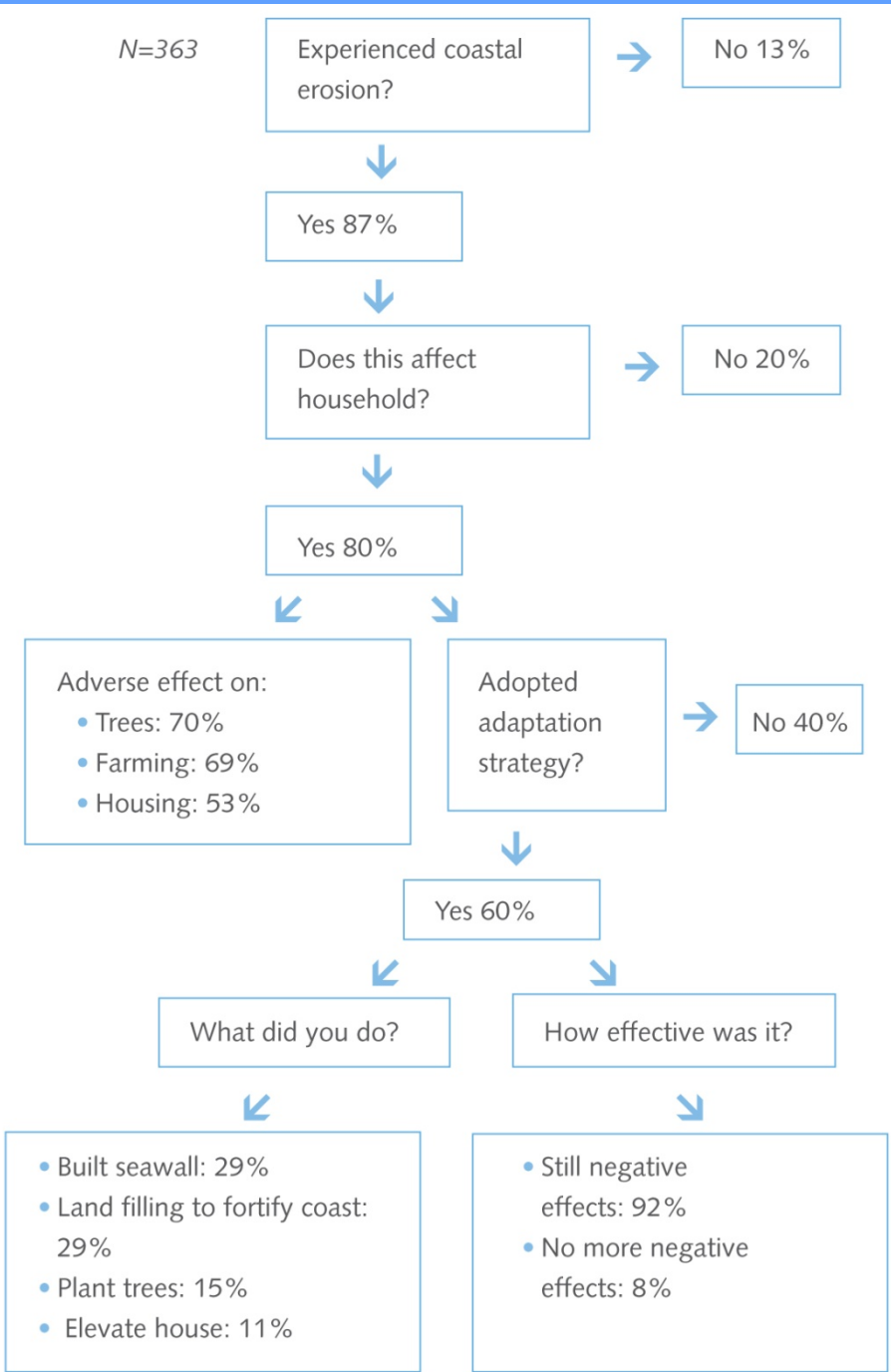
- Reliance on aid and social networks
- Look for alternative income to buy food

• Loss & Damage

- For 72%, coping strategies were not enough to avoid adverse effects.
- Many coping strategies were found to be *erosive*: They affect long-term livelihood sustainability.

Micronesia

Simpson Abraham & Iris Monnereau



• Climatic stressors

- Coastal erosion from sea level rise and storm surges

• Impacts

- Damage to houses and infrastructure
- Crops and trees affected
- Loss of beaches

• Adaptation

- Building seawalls, elevating or reinforcing houses, planting trees along the coastline and moving from the coast to upland areas

• Loss and damage

- For 92%, the measures are not enough and/or entail extra costs
- 40% did not adopt any adaptation measures. Many lacked resources or just didn't know what to do.



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Where the Rain Falls

Partners:

- CARE International
- UNU-EHS

Supported by:

- AXA
- MacArthur foundation

Project Objectives & Scope

OBJECTIVES

1. To understand how rainfall variability, food security and migration interact today
2. To understand how these factors might interact in coming decades as the impact of climate change begins to be felt more strongly
3. To work with communities to identify ways to manage rainfall variability, food and livelihood insecurity, and migration.



Focus group discussion, India.
Source: Afifi, 2011

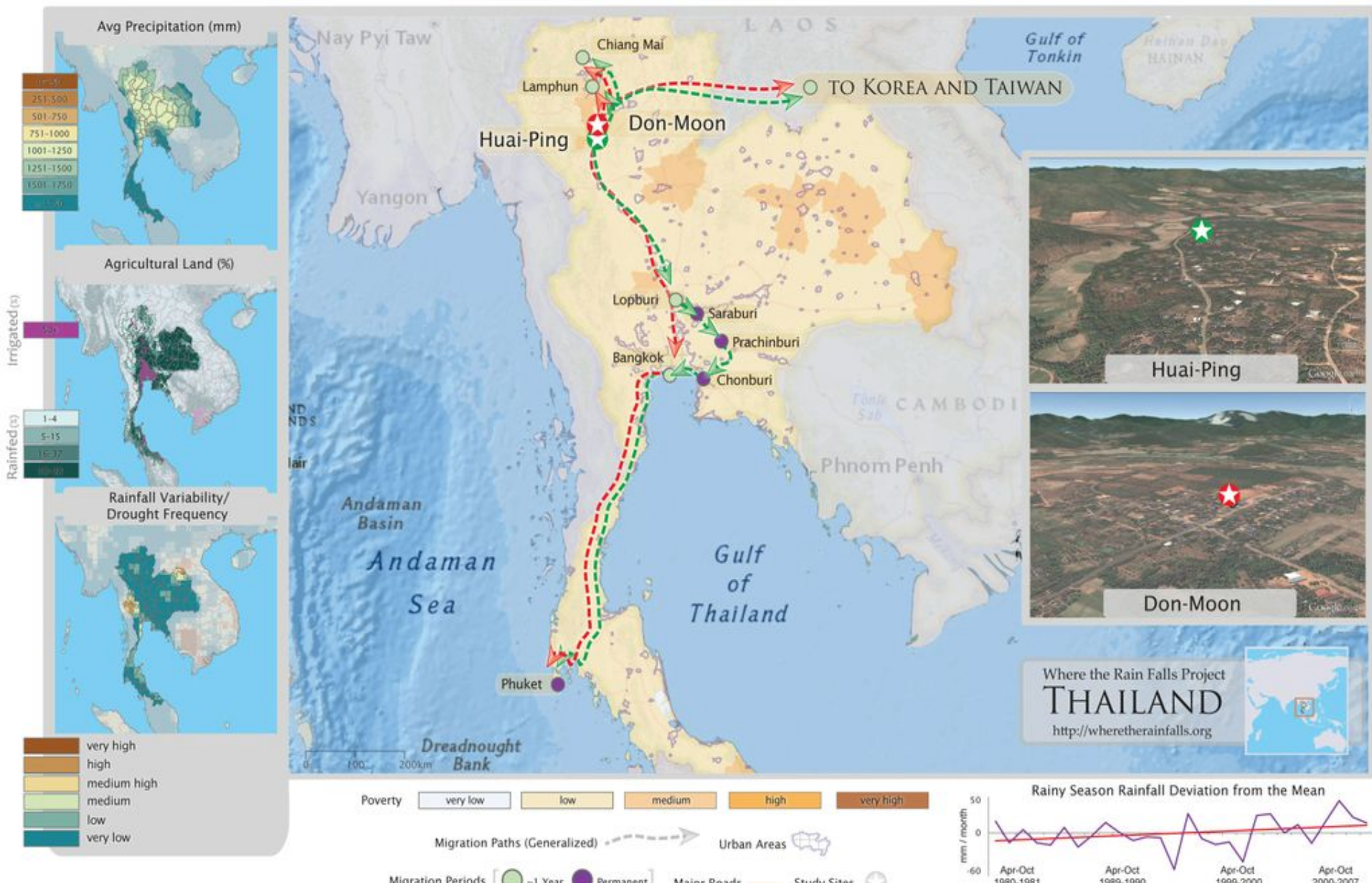
Geographic Diversity: 8 Countries



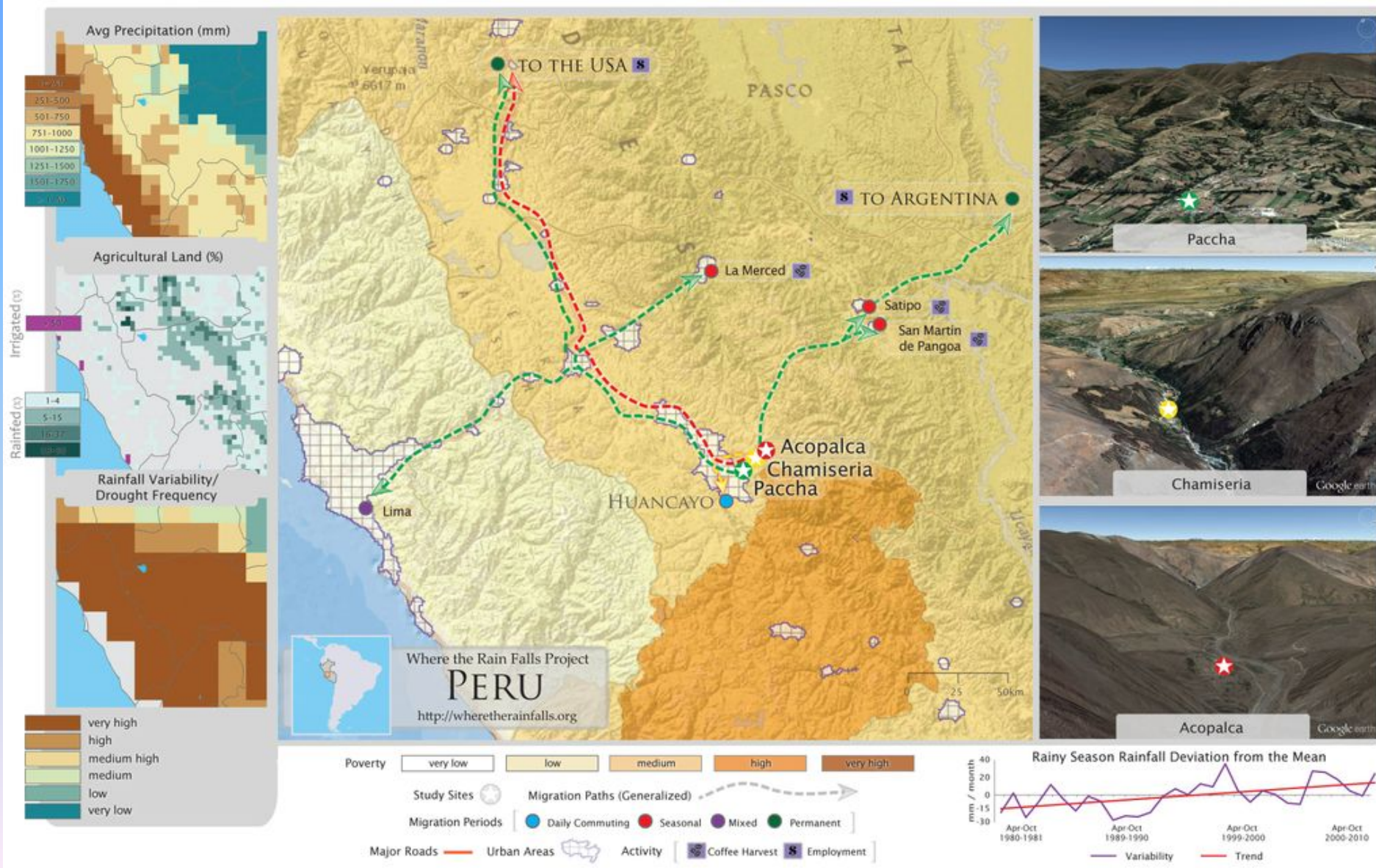
8 case studies

Source: CARE France

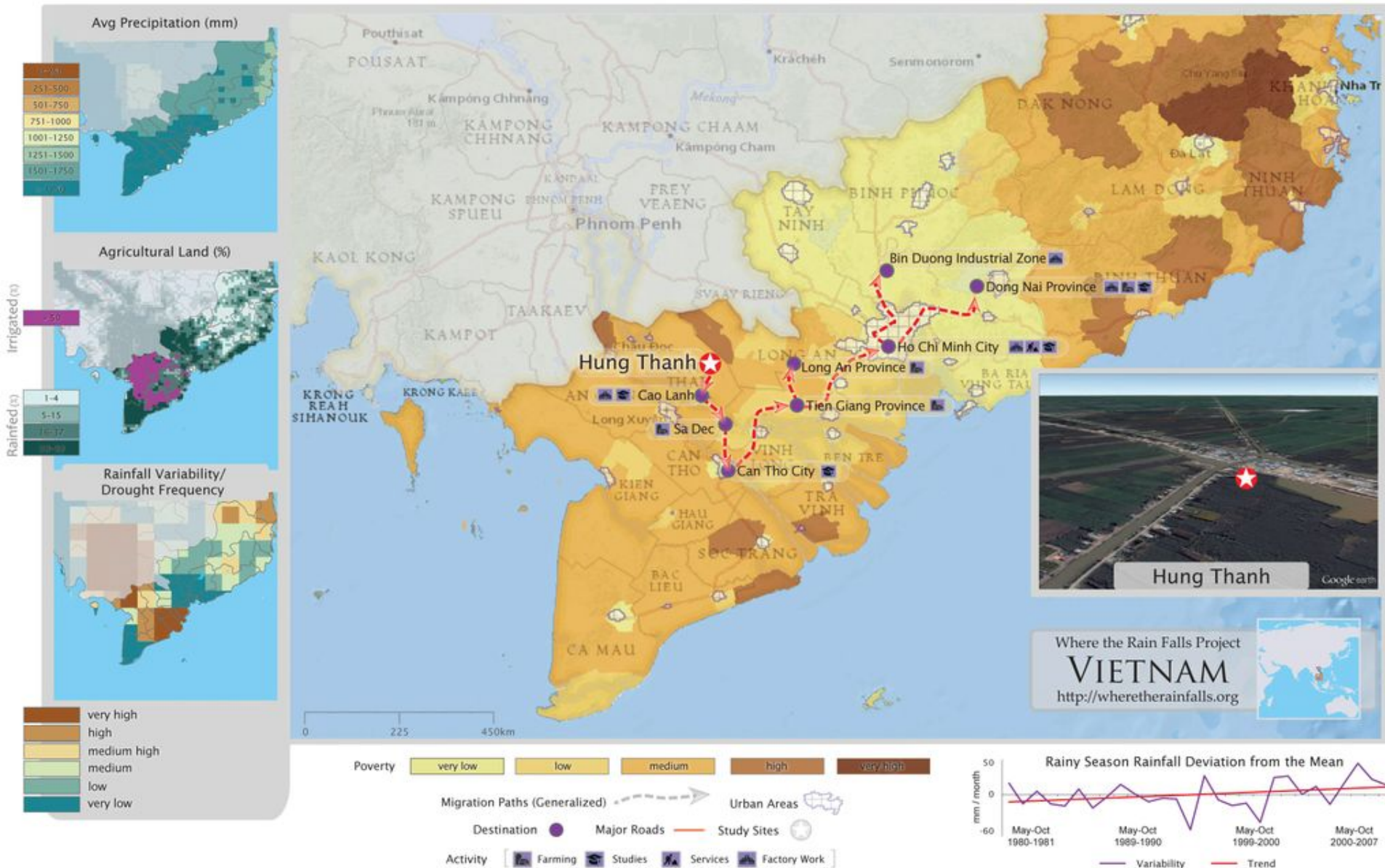
Thailand: Diverse livelihoods & access to assets & services make migration a matter of choice in Lamphun Province



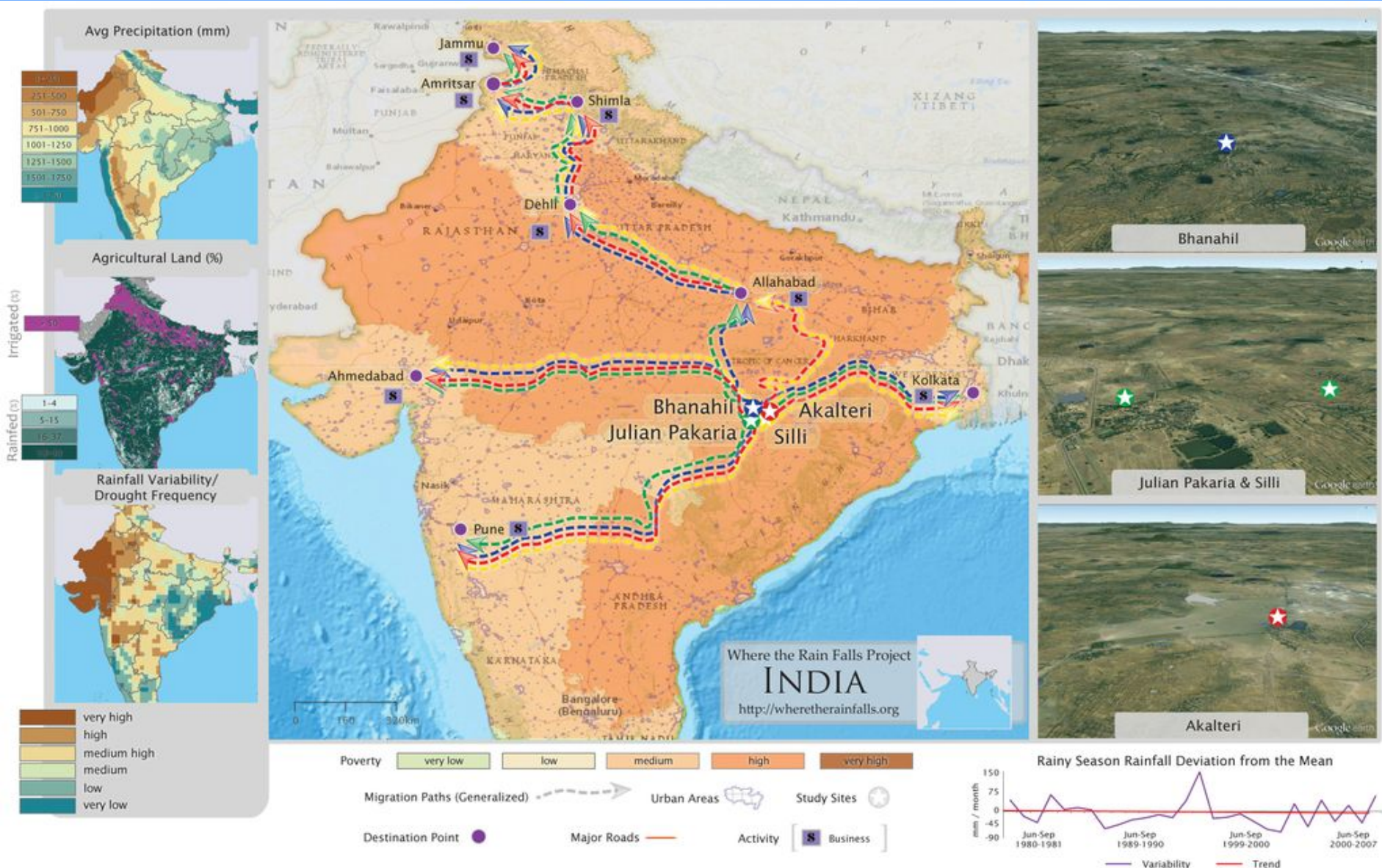
Peru: Livelihood & migration strategies in Huancayo Province vary by elevation & proximity to urban centres



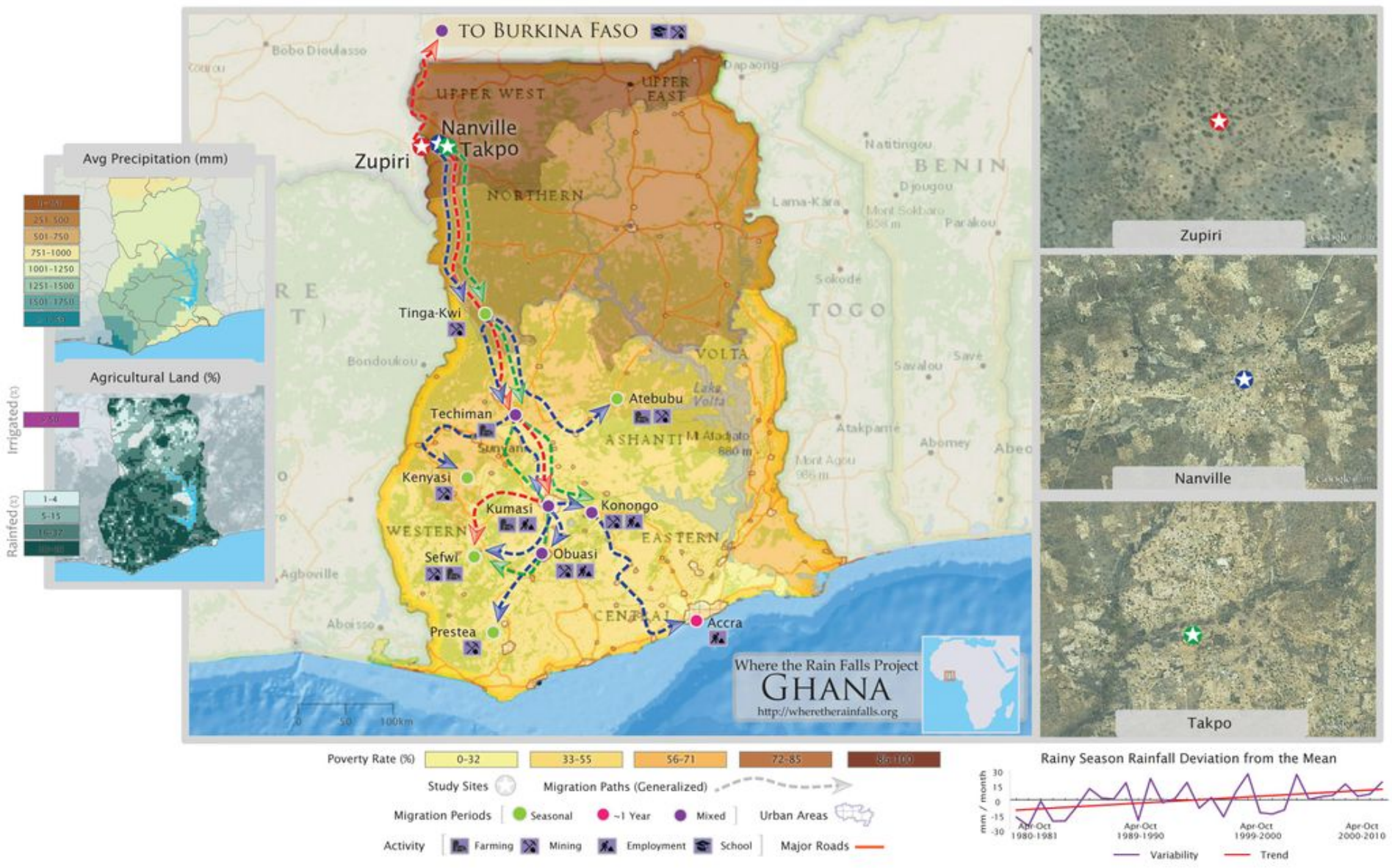
Vietnam: Landless, low-skilled poor of Hung Thanh Commune have few options, despite a rising economic tide



India: Poor households in Janjgir-Champa rely on seasonal migration for food security -- despite irrigation, industrialization & safety nets



Ghana: High dependence on rain-fed agriculture in Nadowli District contributes to reliance on seasonal migration as a coping strategy



World Risk Index

Co-funded by „Alliance Development Helps“



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Risk and Vulnerability Index

Exposure

Exposure to natural hazards

Susceptibility

Likelihood to suffer damage in an emergency

Coping Capacity

Capacity to reduce negative impacts in case of emergency

Adaptive Capacity

Capacity for long-term adaptation and change

---- Core components of vulnerability ----

NATURAL HAZARDS
SPHERE

SOCIETAL SPHERE

Global Index / Indicators with national scale resolution

Local Indicators und criteria with sub-national, local and household scale resolution

Indicators selected



1. Exposure

EXPOSED POPULATION IN REGARD TO

- A) Earthquakes
- B) Cyclones
- C) Floods
- D) Droughts
- E) Sea level rise

2. Susceptibility

NUTRITION

- A) Percentage of undernourished population

PUBLIC INFRASTRUCTURE

- B) Population without access to improved sanitation
- C) Population without access to clean water

HOUSING CONDITIONS

Proportion of population in slums;
proportion of semi-solid and fragile
houses
→ limited data availability

POVERTY AND DEPENDENCIES

- D) Dependency ratio (proportion of under 15 – and above 65-year-olds in relation to the working population)
- E) Extreme poverty (population living on less than 1.25 USD (live PPPs) per day)

ECONOMIC CAPACITY AND INCOME

- F) Gross Domestic Product per capita (Purchasing Power Parity)
- G) Gini-Index

3. Coping Capacity

GOVERNMENT AND AUTHORITIES

- A) Corruption Perception Index
- B) Failed States Index

DISASTER PREPAREDNESS AND EARLY WARNING

National disaster risk
management policy according
to the report of UN / ISDR

MEDICAL SERVICES

- C) Number of physicians per 10,000 population
- D) The number of hospital beds per 10,000 population

SOCIAL NETWORKS: NEIGHBORHOOD, FAMILY AND SELF-HELP

→ No data available

ECONOMIC COVERAGE

- E) Insurance (except life insurance)

4. Adaptive Capacity

EDUCATION AND RESEARCH

- A) Adult literacy rate
- B) Combined gross school enrolment (rate of school-aged children in primary, secondary and tertiary educational institutions)

GENDER EQUITY

- C) Gender parity in education (in primary, secondary and tertiary educational institutions)
- D) Percentage of female representatives in the National Parliament

ENVIRONMENTAL STATUS / ECOSYSTEM PROTECTION

- E) Water resources
- F) Protection of biodiversity and habitats
- G) Forest Management
- H) Agricultural Management

ADAPTATION STRATEGIES

Volume of National Adaptation
Programmes of Action to Climate
Change, Climate Change Convention
(available for 45 of the least developed
countries)

FINANCING

- I) Life expectancy at birth
- J) Private health expenditure
- K) Public health expenditure

Hazard Exposure (annual pop. exposed)



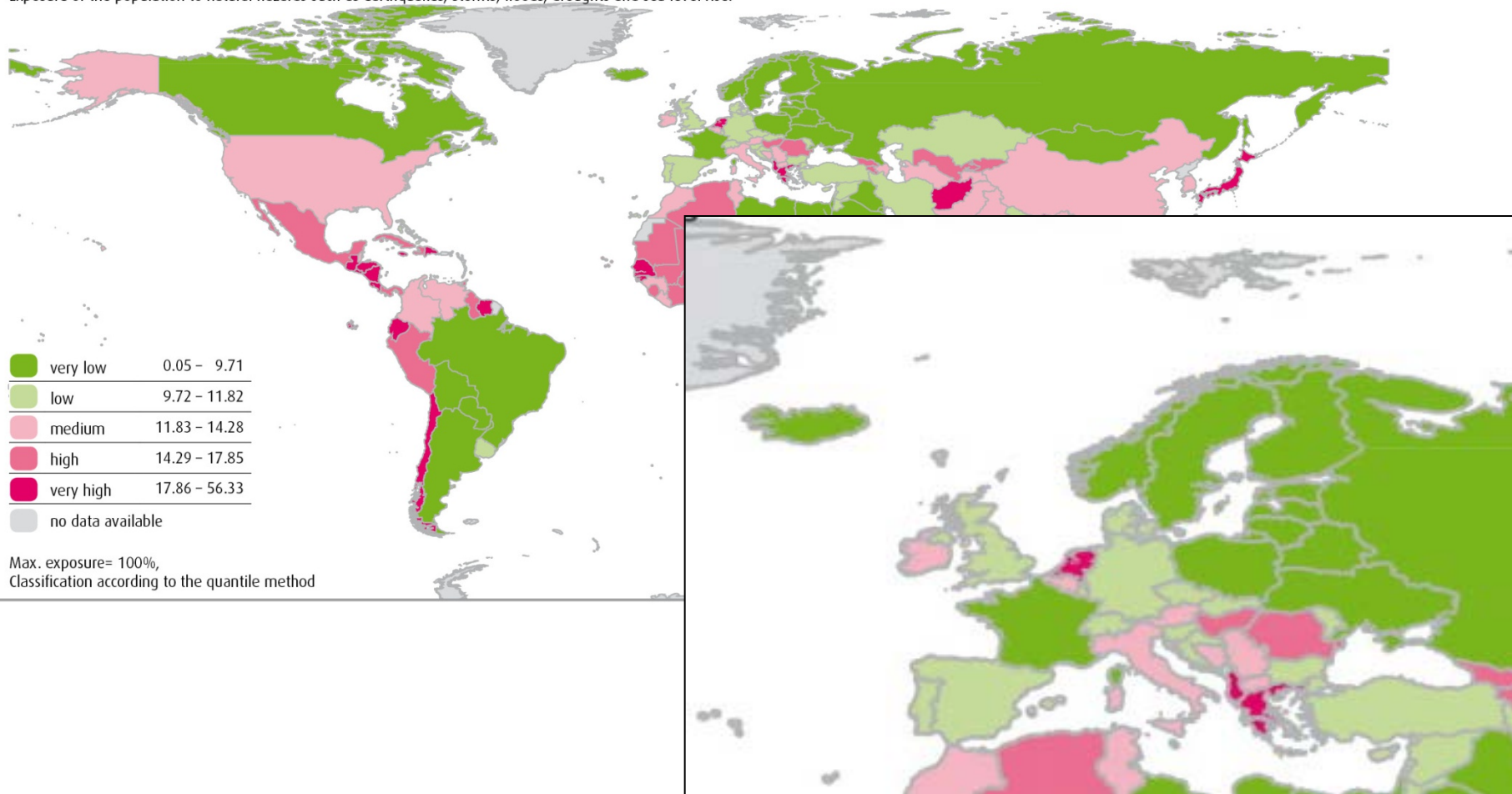
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Exposure

Exposure of the population to natural hazards such as earthquakes, storms, floods, droughts and sea level rise.

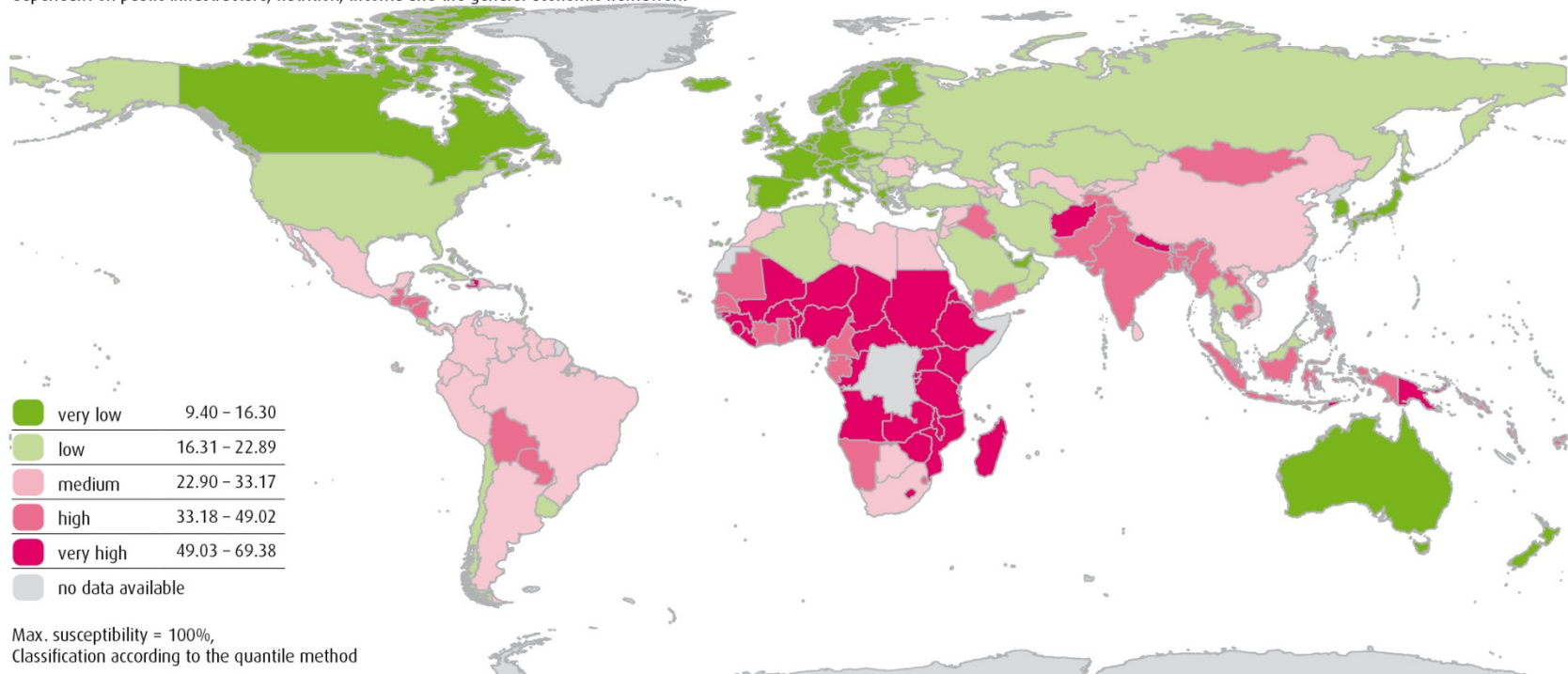




Susceptibility

Susceptibility

dependent on public infrastructure, nutrition, income and the general economic framework



Exposure, Susceptibility, Coping, Adaptation



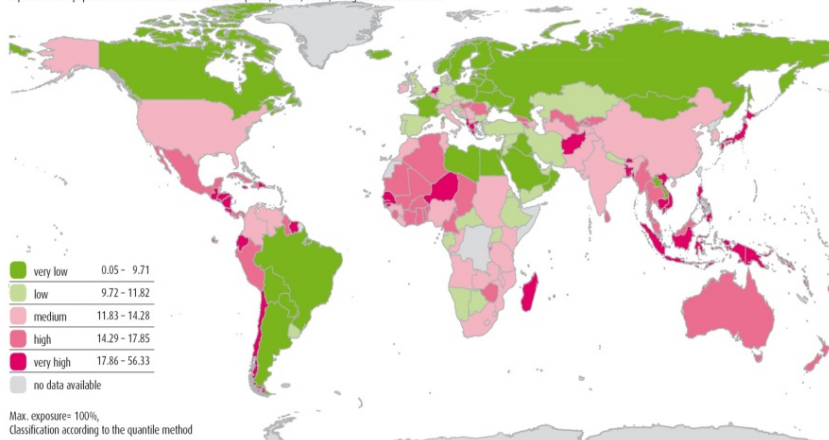
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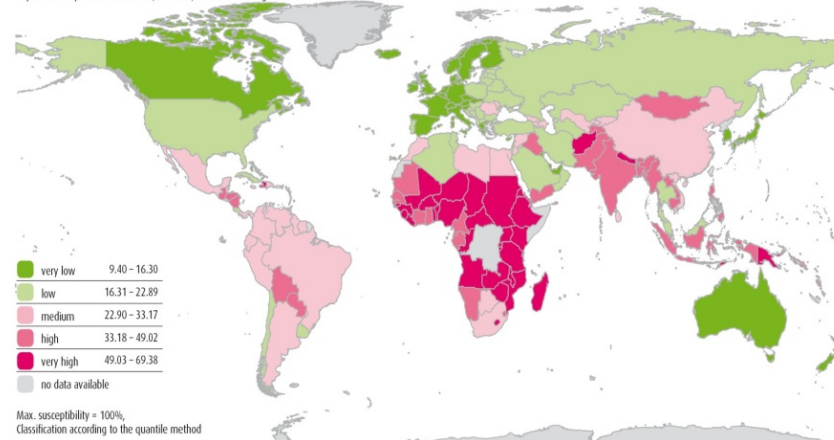
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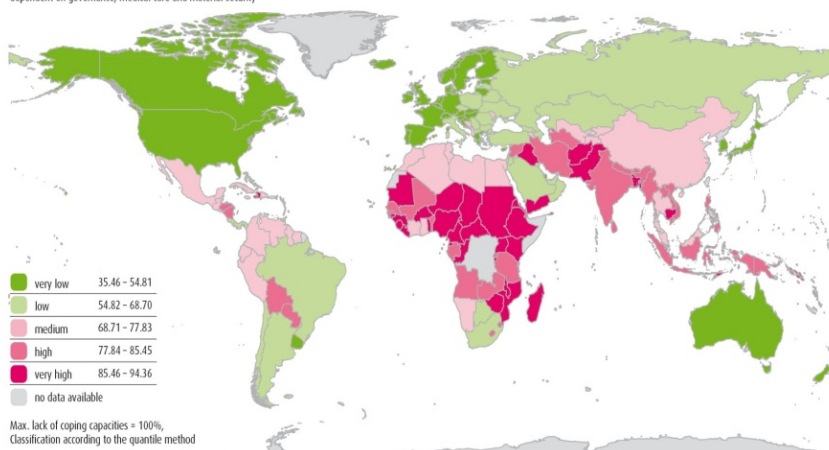
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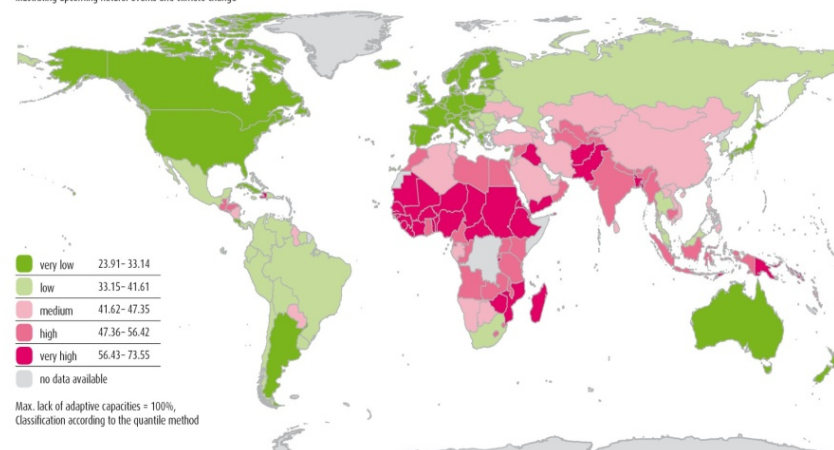
Lack of coping capacities

dependent on governance, medical care and material security



Lack of adaptive capacities

illustrating upcoming natural events and climate change



Data: UNU-EHS, based on the PEW Research Center, UNU-EHS, UNU-EHS and global indicators, Global Indicators of the World Development Report 2010

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A few conclusions

- Risks, loss and damage come in **different disguises** around the world
- Those associated with creeping processes are often particularly difficult for since
 - ...they are often associated with **large uncertainties**
 - ...there are often **no clear thresholds** for action
 - ...there is often not one dominant driver, but a **combination of drivers**
- Consequences of **social vulnerability** are still often underestimated, or not considered at all

Joint Master between UNU and University of Bonn



BONN



Master of Science (MSc):

“Geography of Environmental Risks and Human Security”

- start: autumn 2013
- duration: 2 years
- number of students: max 24

Joint Master: Curriculum



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Year 1		Year 2	
Fall	Spring	Fall	Spring
1. Introduction 14 CP	2. In-depth studies 24 CP		
3. Methods and skills 18 CP		4. Research project 6 CP	7. Master's thesis 30 CP
5. Linking Concepts 18 CP			
	6. Internship 10 CP		

THANK YOU FOR YOUR ATTENTION!



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For the World Risk Index: www.worldriskreport.org

For UNU projects in Africa: <http://www.vie.unu.edu/project/map/priority-africa>