

Fact Sheet - Where the Rain Falls: Climate Change, Food and Livelihood Security, and Migration

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1. About the Where the Rain Falls project

a) *What is the purpose of the study and what is the key research question?*

- ✓ “Under what circumstances do households use migration as a risk management strategy in response to increasing rainfall variability and food insecurity?”
- ✓ This question was asked in a diverse set of research sites in eight countries across three continents: Asia (Bangladesh, India, Thailand, and Viet Nam), Africa (Ghana, Tanzania) and Latin America (Guatemala, Peru).
- ✓ The study isolates rainfall variability and food insecurity as key drivers in migration and by doing so, allows analysis of household characteristics and answers the key research question in response to these two drivers. The Rainfalls research expands insights into how human mobility may develop in the context of a changing climate where rainfall patterns are expected to shift notably in timing (seasonality), quality (extreme events, intensity of rainfall), and distribution (geographically) in coming decades.
- ✓ In other words, the question is not whether environmental drivers are the sole factors causing mobility, but instead how multiple factors interact to shape migration choices.
- ✓ A more nuanced understanding of how climatic factors affect migration choices will help shape adaptation investments and policies that help ensure that whatever strategies households use – including migration – contribute to increased resilience to climate change.
- ✓ Human mobility related to changing rainfall and food and livelihood insecurity can only be successfully addressed if seen as global processes and not just local crises. The burden of assisting and protecting vulnerable populations cannot be borne by the most affected states and communities alone.

b) *Why is this important and why should I care?*

- ✓ It is expected that the world could warm 3.5°- 6° C by 2100. Even after mitigation actions have been taken and adaptation choices have been made, climate impacts are likely to outstrip the options available to vulnerable countries, communities, and households. It is likely to worsen the situation in parts of the world that already experience high levels of food insecurity.

- ✓ The consequences of greater variability of rainfall conditions – less predictable seasons, more erratic rainfall, unseasonable events or the loss of transitional seasons – have significant repercussions for food security, the livelihoods of millions of people, and the migration decisions of vulnerable households. This may push some into a downward spiral of deteriorating livelihoods and food security, creating loss and damage to their well-being that exceeds in aggregate anything yet experienced.

c) *What is so special about the “Where the Rain Falls project?”*

- ✓ A research to action project: it provides a platform for stakeholders, including southern civil society organizations, to contribute in policy plans and practical interventions at national, regional and local levels. The findings further contribute to global policy discussions, such as climate change adaptation, resilience and food security;
- ✓ Produces practical knowledge through the implementation of Community-Based Adaptation (CBA) projects in four of the eight case study countries (India, Tanzania, Thailand and Peru).

2. Field Research

a) *Why is this piece of research new? Or just another piece on environmental migration?*

- ✓ New empirical evidence: Teams of national and international researchers gathered a large volume of quantitative and qualitative data on historical rainfall patterns, household food security conditions, and human mobility patterns.
- ✓ Analytical framework: To bring coherence to the evidence generated from eight very diverse research sites, an analytical framework is put forward to highlight key considerations at national, site, and household levels. This combination of methods has been used for the first time in a multi-country fieldwork based project on this research topic.
- ✓ Maps: Original maps have been developed to provide a visual representation of key data related to rainfall patterns, agriculture, and food security, as well as current migration patterns from the research villages.
- ✓ Future scenarios through Agent Based Modeling: Using the data gathered through the field research, the project has developed a Rainfalls Agent-Based Migration Model (RABMM), which offers insights into potential future household migration decisions. The results are presented for the research site in Tanzania.

b) *What is the asset of the methodological approach?*

- ✓ Participatory Research Approaches (PRA).
- ✓ Household (HH) survey in the communities (general HH demographic information, economic activities, livelihood-related issues, rainfall changes/ patterns, food security and consumption, migration, coping strategies, HH assets and resources).

- ✓ Interviews with experts at local, regional and national levels (academia, policy makers, field of environment, climate change and migration; two way approach between experts and communities).
- ✓ Literature reviews for each case.
- ✓ Review and analysis of local meteorological data.

c) *What are the limitations of the research at hand?*

- ✓ In terms methodology: language, availability of experts, HH heads etc., stratified random sampling, length of questionnaire, documentation, data entry.

For further information please see the “Research Protocol” at: <http://www.ehs.unu.edu/article/read/intersections-no-10-rainfall-variability-food-security>

3. Key Findings

a) *What are the most important findings?*

Rainfall, food & livelihood security

- ✓ Rural people in the eight research locations overwhelmingly **perceive climatic changes happening today** in the form of rainfall variability, and these perceptions shape household risk management decisions.
- ✓ The most common changes reported relate to the **timing, quality, quantity, and overall predictability of rainfall**. In many cases, these perceived changes correlate with an analysis of local meteorological data over the last several decades.
- ✓ The largely agriculture-based households in the research sites overwhelmingly report that **rainfall variability is already negatively affecting** production and contributing to food and livelihood insecurity.
- ✓ Levels of food insecurity varied significantly across the eight sites depending on such factors as: the total amount and seasonality of rainfall; the degree of agricultural intensification; the extent of livelihoods diversification; and the access of poor households to social safety net and other support services.

Links between variables

- ✓ No direct relationship between rainfall variability and migration was found. However, rainfall was observed to have a more direct relationship via food insecurity with household migration decisions in research sites where the dependence on rain-fed agriculture was high and local livelihood diversification options were low.
- ✓ Households with more **diverse assets** and access to a variety of adaptation, livelihood diversification, or risk management options can use migration in ways that enhance resilience.

- ✓ Those households which have the least access to such options use (usually) internal migration during the hunger season as a **survival strategy** in an overall setting of erosive coping measures which leave or trap such households at the margins of decent existence.

Migration

- ✓ Migration – seasonal, temporal, and permanent – plays an important part in many families' struggle to deal with rainfall variability and food & livelihood insecurity.
- ✓ Migration was found to have increased in recent decades in a number of the research sites.
- ✓ Households with more diverse assets and access to a variety of adaptation, livelihood diversification, or risk management options can use migration in ways that enhance resilience.
- ✓ Almost entirely within national borders.
- ✓ Predominantly **male**, but with growing participation by women in a number of countries (with India as the exception where entire nuclear families moved together);
- ✓ Seasonal, temporal or permanent migration patterns;
- ✓ Largely by **individual** household members (except in the India research site);
- ✓ Largely driven by **livelihood-related needs** (household income) in most countries, but with a growing number of migrants seeking improved skill sets (e.g. through education) in countries like Thailand, Vietnam and Peru;
- ✓ A mix of **rural-rural** and **rural-urban**, with more productive agricultural areas (Ghana, Bangladesh, Tanzania), nearby urban centers (Peru, India), mining areas (Ghana), and industrial estates (Thailand, Vietnam) as the most common destinations.

For further information please see Global Policy Report page 44 available at: <http://www.ehs.unu.edu/file/get/10569.pdf>

Households profiles

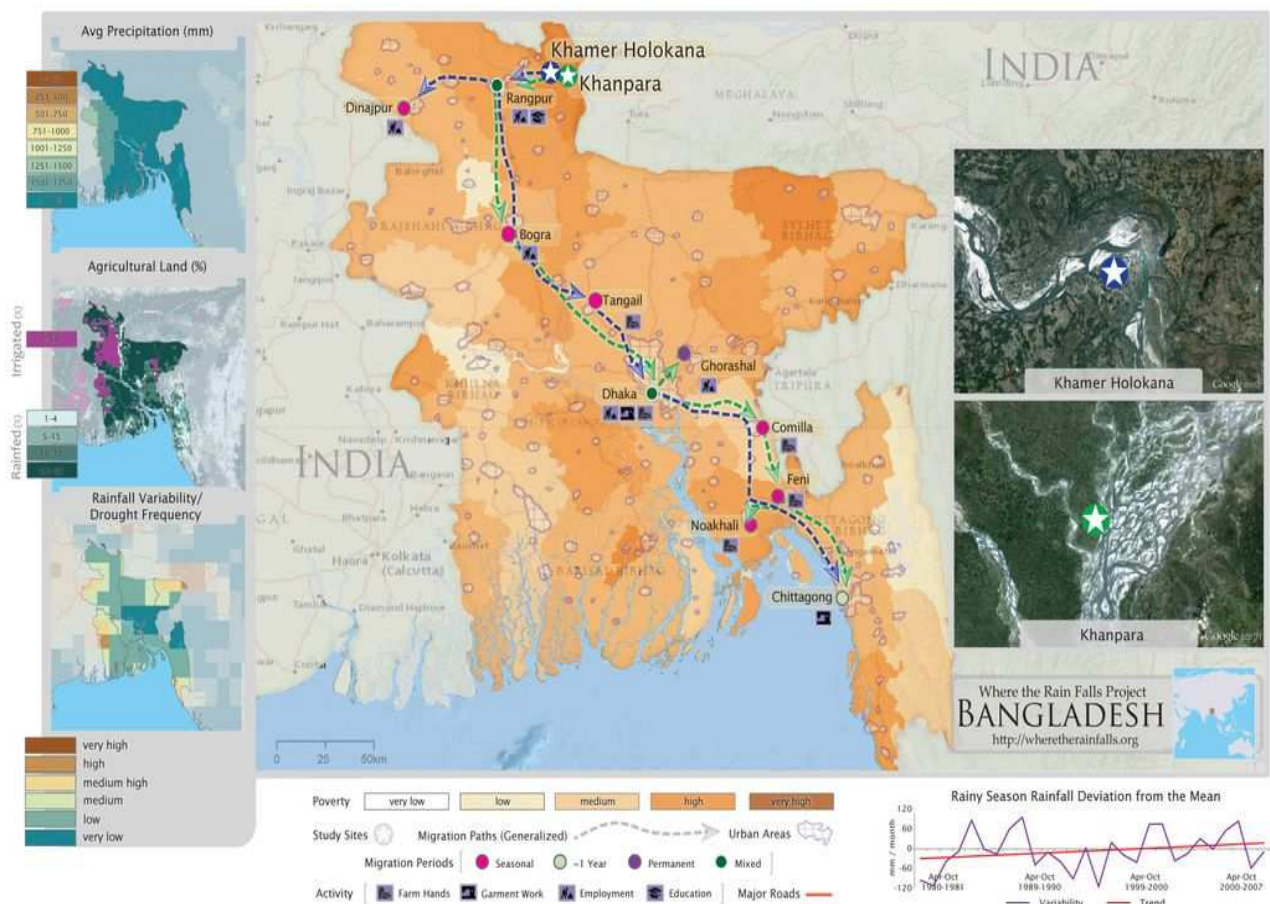
- ✓ The research has provided for four distinct household profiles using migration as a risk management strategy. These profiles represent a spectrum with households within a profile being closer to one or the other of the profiles on either side. They are thus not mutually exclusive and serve as a point of departure for further research to refine key explanatory variables.
- ✓ **Households that use migration to improve their resilience:** The households use migration in ways which improve their resilience, such as investing in Education, health, and climate-resilient livelihood opportunities. These households use migration as one of a variety of adaptation strategies, moving seasonally or temporally, often to non-agricultural jobs in cities or internationally.
- ✓ **Households that use migration to survive, but not flourish:** The second group is often in countries with less food security and fewer options for diversifying livelihoods. These households use migration to survive, but not flourish. They move seasonally in their countries to find work, often as agricultural labour in other rural areas.

- ✓ **Households that use migration as a last resort and erosive coping strategy:** The third group is found where food security is even more tenuous and where adaptation options are fewer or not pursued vigorously. These households see migration as a matter of human security in what can be seen as an erosive coping strategy. This group often moves during the hunger season to other rural areas in their regions in search of food, or work to buy food for their families.
- ✓ **Households that cannot use migration and are struggling to survive in their areas of origin:** The final group appeared to be “trapped populations” that struggle to survive in their areas of origin and cannot easily use migration to adapt to the negative impacts of rainfall stressors.

For further information please see Global Policy Report page 98 at: <http://www.ehs.unu.edu/file/get/10569.pdf>

4. Research Site Specific Findings

a) Bangladesh – Kurigram District (Khanpara, Khamar Holokhana, Arazi Khodomtola and Doalipara)

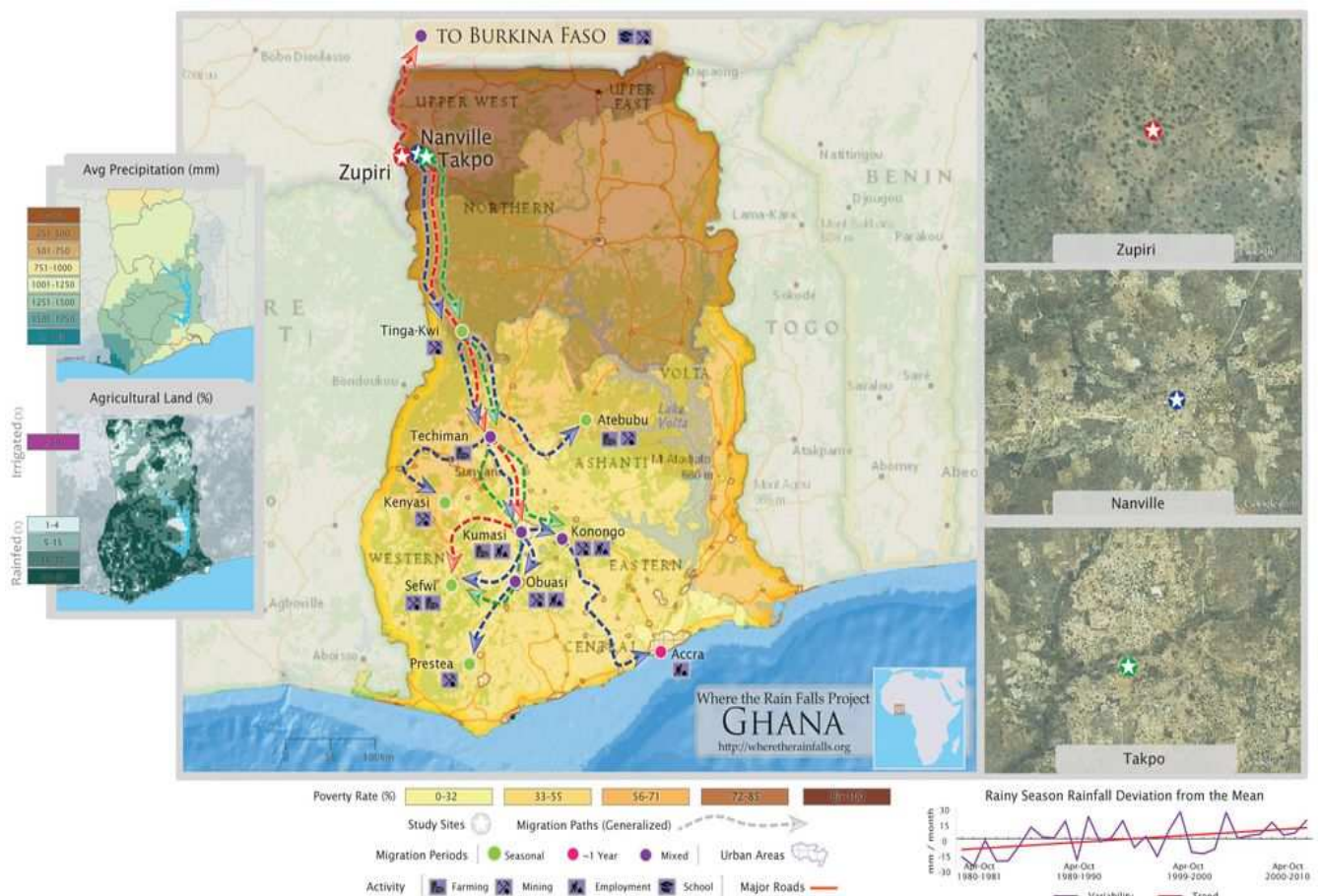


Key findings:

- ✓ Migration is a major ‘coping strategy’ to address unfavourable economic and unexpected environmental conditions, including the local implications of rainfall variability;
- ✓ 89% of households affected economically by prevailing weather patterns and rainfall variability;
- ✓ Longer dry spells and frequent droughts are a ‘very important’ migration reason for 39% and 36% of households, respectively;
- ✓ Both of these climatic variations have severe impacts on local agricultural production and thus on people’s livelihoods;
- ✓ Landless, low-skilled and poor households (depending on rain-fed agriculture for both their livelihoods and food security) are most sensitive to rainfall variability. Also often trapped due to lack of resources.

For further information please see country specific report on Bangladesh:
<http://wheretherainfalls.org/overview/bangladesh/>

b) Ghana- Nadowli District (Mantari, Nanville, Takpo and Zupiri)

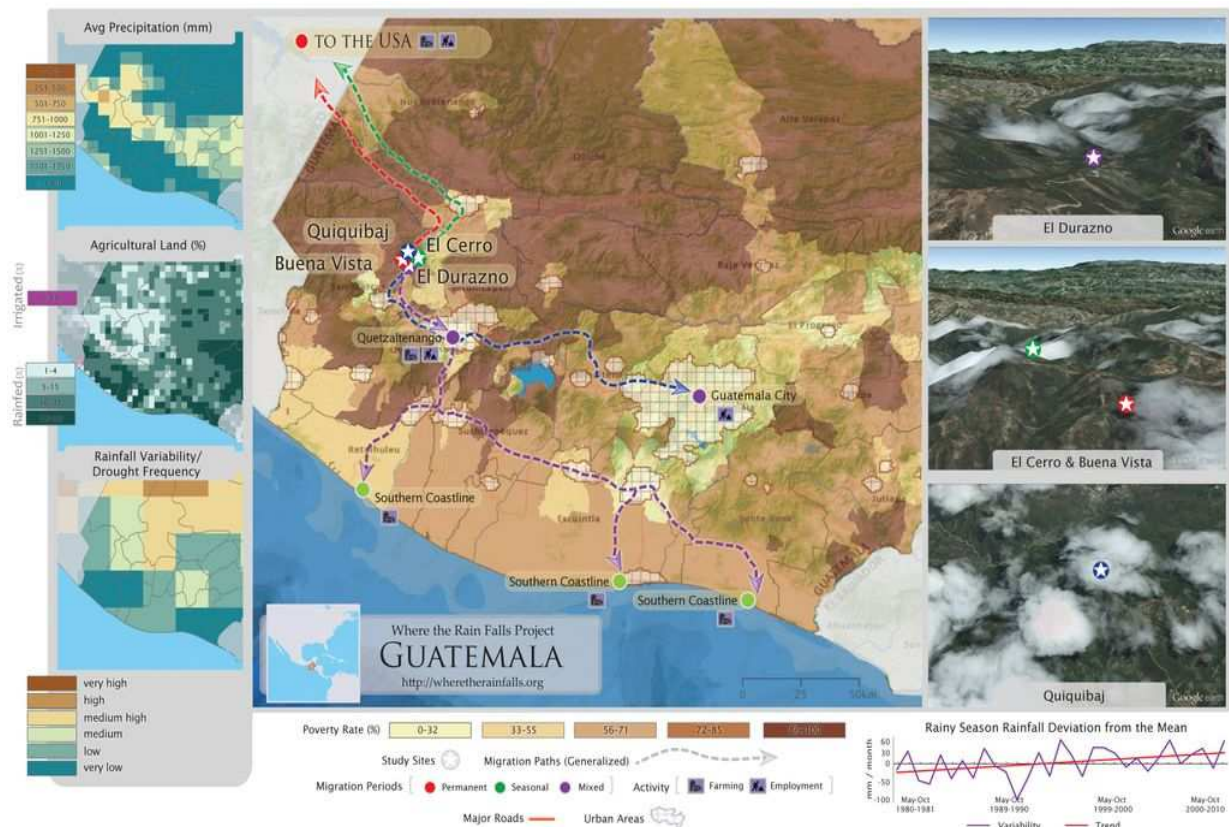


Key findings:

- ✓ Migration mainly due to livelihood and food insecurity linked to climatic and environmental factors affecting rain-fed agriculture;
- ✓ Most important triggers of migration among households are crop production decline; rainy season shifts; unemployment; longer drought periods causing unreliable harvest; increased drought frequency;
- ✓ Migration bridging income gaps but not improving overall well-being (household member left behind);
- ✓ Female-headed households more vulnerable, facing a higher degree of food insecurity, having fewer members of working age, possessing less land, and engaging slightly less in migration than male-headed households.

For further information please see county specific report on Ghana:
<http://wheretherainfalls.org/overview/ghana/>

c) Guatemala- Cabricán (El Cerro, Buena Vista, El Durazno and Quiquibaj)



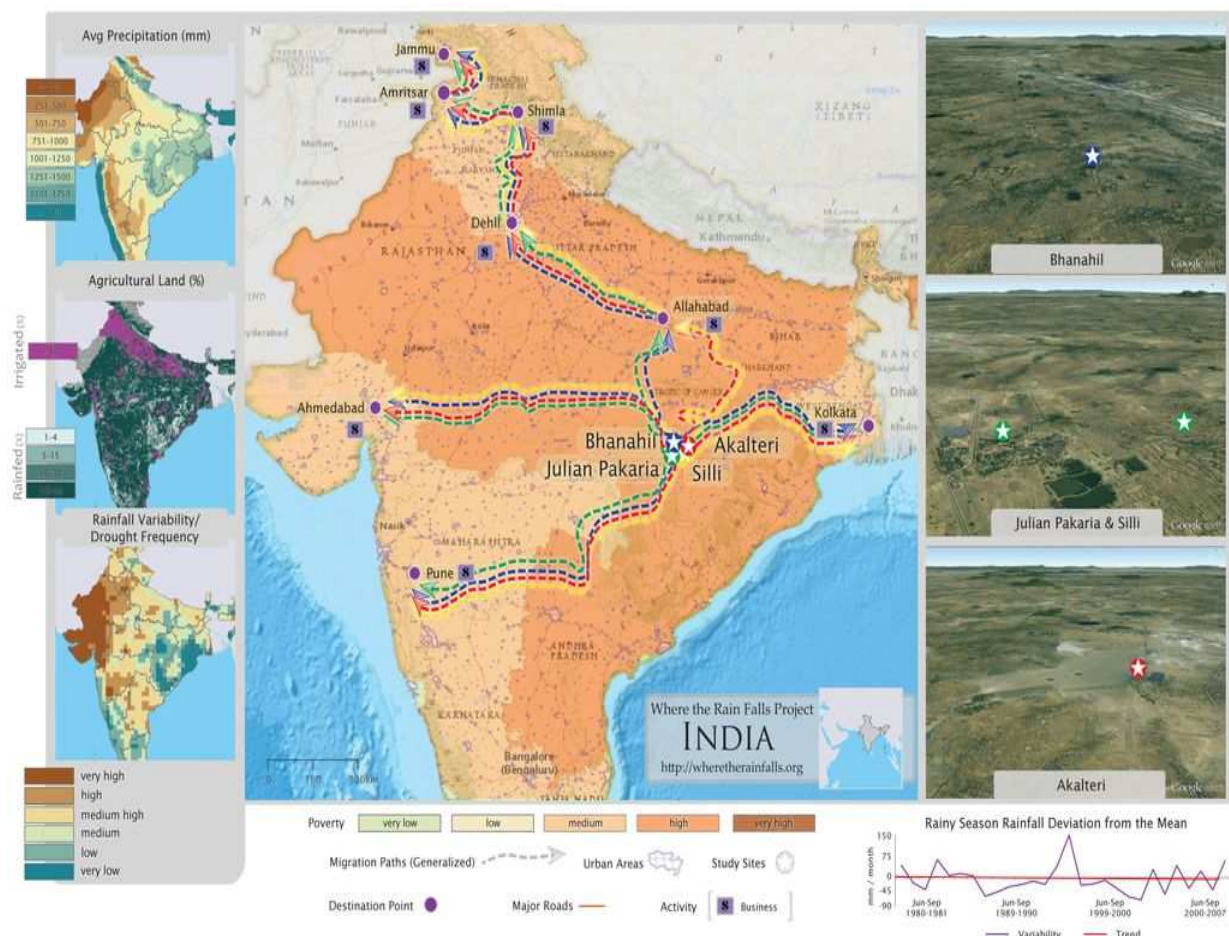
Key findings:

- ✓ 97% of migration motivated by attempts to secure stable household consumption and income generated by rain-fed agriculture;
- ✓ Males make up 77% of migrants;
- ✓ Migration opportunities (seasonal in Guatemala and long-term to the USA) are decreasing due to decreased demand for labour and difficulties in reaching destinations;

- ✓ Rainfall affects food production of 68% of households;
- ✓ Households reported concerns about the long-term viability of their farming systems and food availability.

For further information please see country specific report on Guatemala:
<http://wheretherainfalls.org/guatemala/>

d) India- Jangir District, Chhattisgarh State (Jullan Pakaria, Akalteri, Banahil and Silli)

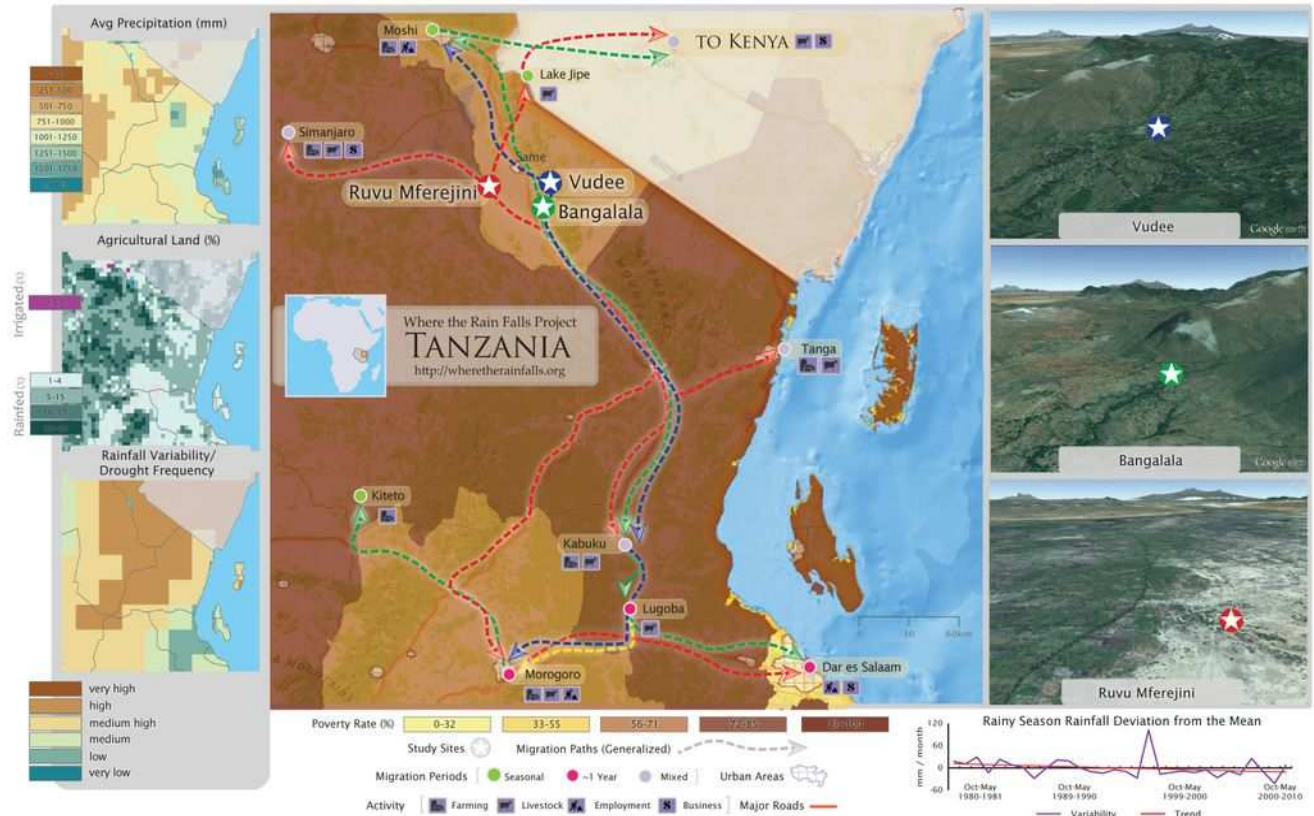


Key findings:

- ✓ Migration is one of the most important strategies employed by the residents of the research villages to cope with rainfall variations/climatic changes and food insecurity;
- ✓ Migration often the last resort for resource-poor and landless households, especially when they are unable to access or benefit from livelihood options in situ;
- ✓ Migration does not increase resilience or provide better long-term opportunities;
- ✓ Migration in families keeps households intact but increases negative effects on schooling, education and skill building.

For further information please see country specific report on India:
<http://wheretherainfalls.org/overview/india/>

e) *Tanzania- Same District (Bangalala, Ruvu Mferejini and Vudee)*



Key findings:

- ✓ Rainfalls variability translates directly into impacts on food security;
- ✓ Drought identified as the major hazard to household livelihoods;
- ✓ Rainfall affects food production of more than 80% of households 'a lot';
- ✓ Strong linkages between unpredictable and changing weather patterns and the decision to migrate;
- ✓ Top three factors affecting household migration decisions are: (1) increased drought frequency; (2) longer drought periods; and (3) water shortage;
- ✓ While the majority of migrants are male and young, women now represent one-third of the total;
- ✓ Out-migration from Same District is a mix of rural-rural and rural-urban migration.

For further information please see country specific report on Tanzania:
<http://wheretherainfalls.org/overview/tanzania/>

f) Peru- Huancayo Province (Acopalca, Paccha and Chamisería)

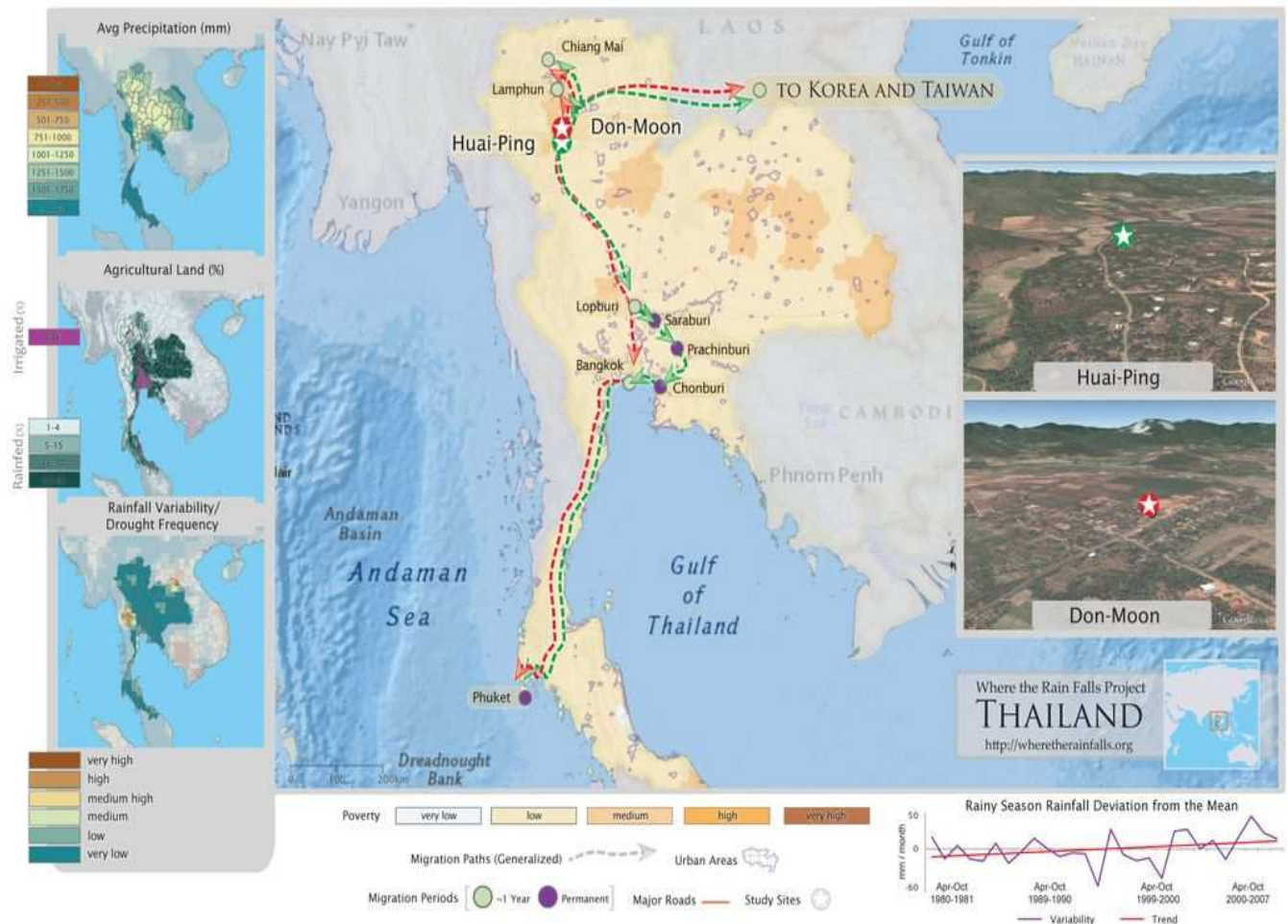


Key findings:

- ✓ Livelihood options and migration strategies vary by elevation and proximity to urban centres;
- ✓ Impact of changing rainfall on food production severe for 53% of households;
- ✓ 2/3 of households sustain crop damage and lower crop yields;
- ✓ 42 per cent experience substantial negative impacts on household income;
- ✓ Rainfall changes affect the ability of households to feed themselves and earn livelihoods;
- ✓ Lesser dependence on agriculture-based livelihoods and expanded employment opportunities in non-farming activities in urban areas.

For further information please see country specific report on Peru: <http://wheretherainfalls.org/overview/peru/>

g) Thailand- Lamphun Province (Don-Moon, Sandonhom, Maebon-Tai and Huai-Ping)

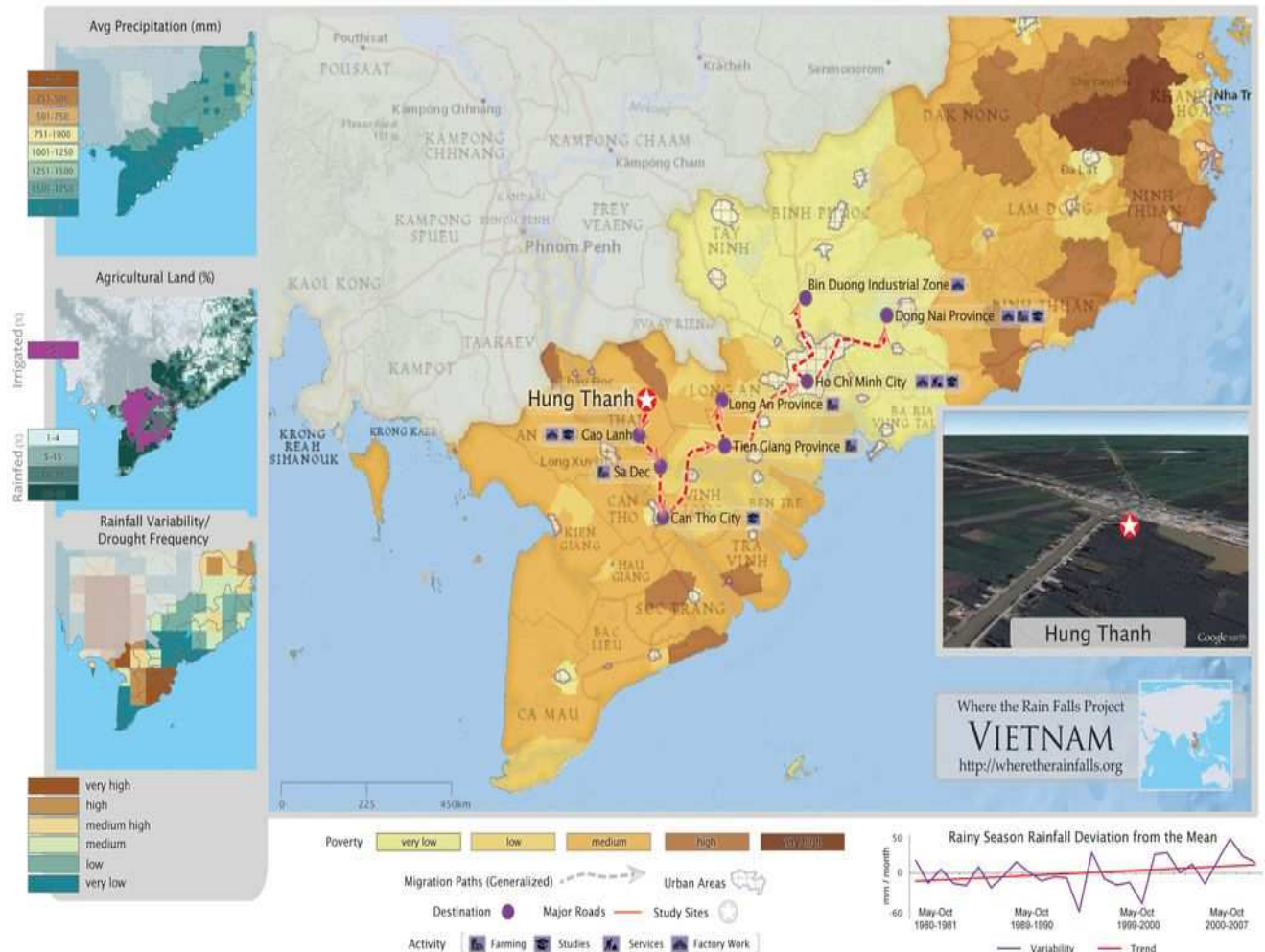


Key findings:

- ✓ 51% of households considered the impact of rainfall-related environmental stress on their livelihoods to be significant;
- ✓ 3/4 of households suffer from lower income due to declining crop yields and decreasing income from agriculture as a result of the exposure to environmental stress;
- ✓ Diversified on- and off-farm (less sensitive to rainfall variability) income generation activities, access to financial resources through community funds, and assistance from the local government reduce vulnerability to rainfall-related stress and food insecurity;
- ✓ Diverse livelihoods and access to assets and services make migration a matter of choice.

For further information please see country specific report on Thailand:
<http://wheretherainfalls.org/overview/thailand/>

h) Viet Nam- Thap Muoi District, Dong Thap Province (Hung Thanh Commune)



Key findings:

- ✓ Majority noted adverse effects of heavy rainfall, shifting seasonality of rainfall and a higher frequency of rainy days on crop yields and non-farm income sources;
- ✓ 89.5% of households economies negatively affected by changing rainfall patterns;
- ✓ Migration as a risk management strategy (short run only), if households face difficulties attaining livelihood security locally;
- ✓ However, impact on longer-term resilience can be very negative;
- ✓ For landless and low-skilled households, migration can help fill household income gaps if successful, but can also interrupt skill-building and education.

For further information please see country specific report on Viet Nam:
<http://wheretherainfalls.org/overview/vietnam/>

5. The Research Site

Research site	Geography
Northern Bangladesh (Kurigram District)	Riverine lowland
Northern Ghana (Nadowli District, Upper West Region)	Savannah woodland
Guatemala Western Highlands (Cabricán Municipality)	Highland
Central India (Janjgir District, Chhattisgarh)	Irrigated lowland
Peru Central Andes (Huancayo Province)	Highland
Northern Tanzania (Same District, Kilimanjaro Region)	Upland and riverine lowland
Northern Thailand (Lamphun Province)	Upland and riverine
Vietnam Mekong Delta (Dong Thap Province)	Delta lowland

a) Why were these eight countries selected? What were the selection criteria?

- Broad representation of different eco-agricultural systems in countries affected by climate change in Asia, Africa and Latin America;
- Specific selection criteria included:
 - Rainfall importance (seasonality, dependence on rain-fed agriculture);
 - Rainfall-related events (droughts, floods etc.);
 - Significant levels of poverty and food insecurity;
 - Recorded history of migration;
 - Purported linkages between changing rainfall patterns, food insecurity and human mobility.

b) What does this mean for the future?

- ✓ A Rainfalls Agent-Based Migration Model (RABMM) was designed to represent the level of vulnerability of households to rainfall variability-induced changes in livelihood and food security, and their subsequent impact on the migration of household members. Within the Global Policy Report, the RABMM was used in the analysis of the case of Tanzania and can be applied to the rest of the case studies.
- ✓ Modelling, based on the survey data, has shown that migration from vulnerable households in the Tanzania is sensitive to changes in rainfall patterns, especially under extreme drying (scenario 4). By contrast, extreme wetting (Scenario 3) results in the lowest numbers of migrants from vulnerable households.

For further information please see Global Policy Report page 102 at:
<http://www.ehs.unu.edu/file/get/10569.pdf>

c) What are the policy recommendations?

- Commit to an equitable approach to reduce greenhouse gas emissions in line with what science says.
- Increase commitments and agree on innovative sources to ensure delivery of adequate, sustainable, predictable, new and additional adaptation finance that promotes transparency, participatory approaches, and accountability.
- Facilitate global and regional coordination through the Adaptation Committee to enable developing countries to access support and undertake national adaptation planning.
- Assess and address loss and damage through the UN Framework Convention and the loss and damage work programme and mechanism in ways that meet the needs of the most vulnerable people.
- Reinforce the call to tackle the climate crisis and integrate climate change and gender considerations into global food and nutrition security efforts.
- Craft goals for the post-Millennium Development Goal period that support the right of all people to sustainable development.
- Support, promote, and implement comprehensive, participatory national and local plans in order to anticipate and plan for potential food and livelihood security issues and human mobility related to climatic stressors.
- Address trans-boundary challenges and opportunities related to adaptation and human mobility.
- Support and promote resilient livelihoods and food security.
- Strengthen and expand disaster risk reduction and links with long-term development.
- Integrate gender considerations.
- Prioritize and engage vulnerable populations.

d) What are the products available?

- Research Protocol
- Seven Case Study Reports
- Global Policy Report
- Summary of the Global Policy Report
- Press release
- Fact sheet

All material available under: www.wheretherainfalls.org

6) About the Project

Who are the partners and donors of this project?

The research project « Where the Rain Falls : Climate Change, Food and Livelihood Security, and Migration » (« Rainfalls ») was undertaken in partnership between CARE International and the United Nations University Institute for Environment and Human Security (UNU-EHS), with the financial support of the AXA Group and the John D. and Catherine T. MacArthur Foundation.