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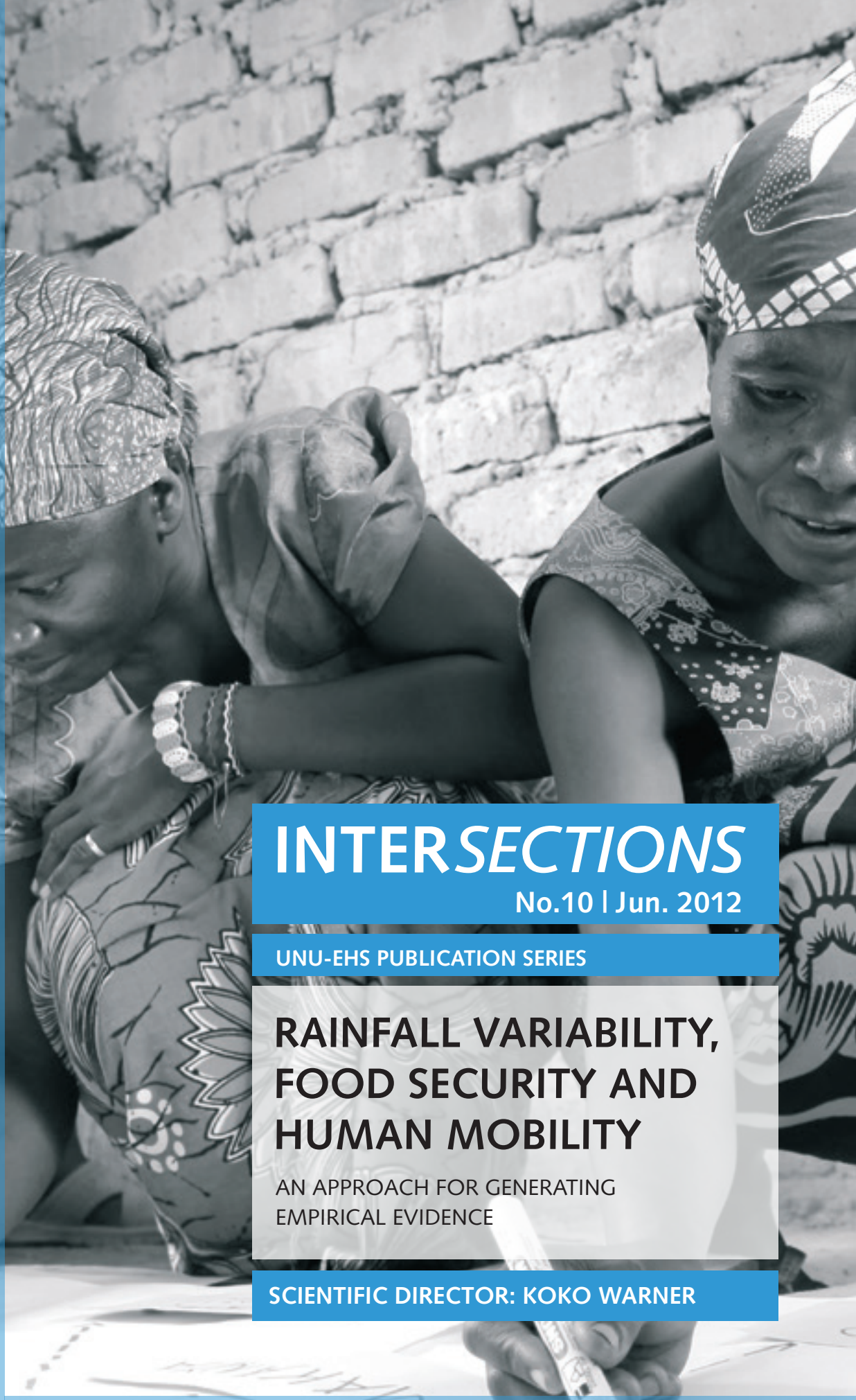

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RAINFALL VARIABILITY, FOOD SECURITY AND HUMAN MOBILITY

AN APPROACH FOR GENERATING EMPIRICAL EVIDENCE

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UNITED NATIONS UNIVERSITY
UNU-EHS

WHERE the RAIN FALLS

A project of care and

UNITED NATIONS UNIVERSITY
UNU-EHS
Institute for Environment and Human Security

UNITED NATIONS UNIVERSITY
INSTITUTE FOR ENVIRONMENT AND HUMAN SECURITY
(UNU-EHS)

INTERSECTIONS No. 10

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Rainfall variability, food security and human mobility

An approach for generating empirical evidence

Research protocol and field guide for the UNU-EHS and CARE International project

"Where the rain falls"

Funded by AXA Group and MacArthur Foundation

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Purpose of this document

This research protocol and field guide was originally designed to serve as a reference for UNU-EHS and CARE working in the Rainfalls project. The protocol was designed for the entire research team and especially for the young researchers from the case study countries as a practical handbook. This protocol should be looked at as a first generation effort to develop methodologies for field research and as work in progress as this handbook's methodology will be further refined through future research. We now share the research method with a broader audience to foster exchange of experience and further refinement in methodologies to research the interactions of environmental change and human mobility. We encourage others to use our protocol as a template, and refine this methodology to create comparative data in different cases worldwide.

Part I briefly explains the rationale behind the research methods chosen for the Rainfalls project.

Parts II – IV provide guidelines for the training workshops which preceded fieldwork in each case study country (Guatemala, Peru, Tanzania, Ghana, India, Bangladesh, Thailand and Vietnam). The overarching purpose of Parts II–IV is to help Rainfalls researchers maintain consistent approaches and undertake "trouble-shooting" that minimize threats to the validity of research findings.

Parts II – IV of this document also explain the entire research process from preparation, data gathering, and data analysis, to reporting.

PART I: OVERVIEW OF THE RAINFALLS PROJECT

1.1 Introduction: Objectives of the Rainfalls research project

The research project "Where the rain falls: climate change, hunger and human mobility" ("Rainfalls"), is undertaken in partnership between the *United Nations University Institute for Environment and Human Security (UNU-EHS)* and *CARE International* and is financially supported by the *AXA Group Research Fund* and the *John D. and Catherine T. MacArthur Foundation*. It aims to improve the understanding about how rainfall variability affects food and livelihood security, and how these factors interact with household decisions about mobility/migration among groups of people particularly vulnerable to the impacts of climate change. The research focuses on perceived as well as measured changes in rainfall (e.g., extended dry or wet periods, droughts or floods, erratic rainfall) and shifting seasons. These rainfall changes influence crop yields and livestock rearing, which may impact local food production, food availability and prices; contributing in turn to food insecurity and shortages. People have developed different strategies to cope with stress and variability related to food and livelihood security. The Rainfalls project is interested in understanding why people react differently to stress caused by changing weather patterns and food insecurity and explores to what extent changing weather patterns influence people's migration decision, as one of the mechanisms used by people experiencing this kind of stress.

The project has three objectives: I) to understand how rainfall variability, food and livelihood security, and migration interact today; II) to understand how these factors might interact in coming decades as the impact of climate change begins to be felt more noticeably; and III) to work with communities to identify ways to manage rainfall variability, food and livelihood security, and migration.

The project investigates the following three questions (related to the three research objectives above):

1. Under what circumstances do households use migration as a risk management strategy in response to increasing rainfall variability and food insecurity?
2. Under what scenarios do rainfall variability and food security have the potential to become significant drivers of human mobility in particular regions of the world in the next two to three decades?
3. In the context of climate change, what combination of policies can increase the likelihood that human mobility remains a matter of choice among a broader range of measures to manage risks associated with changing climatic conditions, rather than "merely" a survival strategy after other pathways have been exhausted? The project explores such policy alternatives in hotspot areas of the world.

1.2 Justification for the Rainfalls project approach

Before outlining the methods used within the project, this section offers a background on the development of the Rainfalls research approach.

Human mobility in the context of climate change has come to the renewed attention of researchers and policymakers in recent years. According to scenarios in the International Panel on Climate Change (IPCC)'s Fourth Assessment Report (2007), climate change is likely to be an increasingly important variable in this equation. While there are no reliable estimates of the number of people who will move in relation to climate change induced events, the rise in the scale of population movement, in particular within countries, will be substantial.

In 2010, the media highlighted significant flooding events, such as the floods in Pakistan that inundated a large part of the country's valleys and left an estimated 20 million people temporarily homeless. Similarly, in early 2011, large floods in eastern Australia captured world attention as they inundated areas the size of France and Germany, leaving many towns stranded for several weeks. While these disastrous events are highly visible, what is equally compelling is the set of questions

surrounding the interaction between the spectrum of human mobility (ranging from migration to displacement) and environmental changes of a rapid-onset and slow-onset nature (Warner, 2010).

1.2.1 First generation of empirical research as a precursor for Rainfalls

The questions raised above challenge existing approaches to migration and displacement research and illustrate the need for innovative alternatives to understanding the impacts of changing environmental conditions, including climate change and human migration and displacement.

Specific references to environmental change and migration began appearing in scientific literature several decades ago, with occasional papers appearing in the 1970s and 1980s (El Hinnawi, 1985) and more regularly throughout the 1990s (Homer-Dixon, 1999; Lonergan, 1998). Major scientific reviews such as the IPCC have included mentions of environmentally induced migration since its first assessment report in 1990 (IPCC, 1990). The empirical base of investigations began to accelerate in the mid- to late-2000s as a crop of systematic investigation and case studies on environmental change and migration began to be published (Henry, 2004; Jäger et al., 2009; Kniveton et al., 2008; Massey, 2007; Warner et al., 2009a). These studies were complemented by methodological and conceptual development, as well as analyses of policy implications (Collinson, 2010; Laczko and Aghazarm, 2009; Leighton, 2010; Martin, P., 2010; Martin, S.F., 2010; Piguet, 2008, 2010; Warnecke et al., 2010; Warner, 2010; Warner et al., 2010; Zetter, 2008).

Today, new evidence-based research projects, methods and concepts are emerging to help address some of the most important knowledge gaps around environmental change, migration and displacement. One of the most significant of these empirical research projects was the Environmental Change and Forced Migration Scenarios Project (EACH-FOR) supported by the European Commission (EC) (2007–2009) (contract No. 044468). EACH-FOR was a multi-continent survey of environmental change and migration under the Sixth Framework Programme (FP6). It represented the first major and global attempt to explore a set of hypotheses with a fieldwork approach and provided a valuable point of departure for further research in the Rainfalls project. Some of the most significant results of the EACH-FOR project were that it created an overview of patterns of environmental change and migration in different types of ecosystems worldwide – from drylands and small island developing states, to deltas, mountain areas, and flood-prone areas (Jäger et al., 2009; Warner et al., 2009b). The 23 EACH-FOR case studies provided insights about ways that environmental factors affect human mobility – from sudden natural hazards, such as flooding and storms, to gradual phenomena, such as desertification, sea level rise and other forms of land and water degradation. The findings have been reported in Afifi and Jäger (2010), Jäger et al. (2009), Warner et al. (2009a), and numerous publications which can be found on the project website www.each-for.eu.

As of 2011, several projects are in different phases of completion, which will continue to expand the knowledge base and provide a more refined understanding of how environmental factors, including current weather extremes and the potential for significant longer-term changes in climatic systems, affect human mobility. Other work has documented frequently asked questions about migration and displacement in the context of environmental change, reflecting the current state of knowledge (Narusova et al., 2010). Similarly, other research has documented some of the major gaps in knowledge and possible ways to address these gaps (Piguet, 2008, 2010; Stal and Warner, 2009; Warner et al., 2009a).

1.2.2 Climate adaptation policy and framing for Rainfalls project

The EACH-FOR research findings were first reported to climate negotiators in a submission to the United Nations Framework Convention on Climate Change (UNFCCC) in August 2008 in the Accra/Ghana session of the Ad Hoc Working Group on Long-term Cooperative Action (AWG-LCA) (UNFCCC, MISC 3,2008a; UNU, 2008). Subsequently, the issue was published in a UNU-EHS and CARE policy brief for the June 2009 climate talks (Warner et al., 2009a) which contributed

to migration and displacement being featured in the draft negotiating adaptation text 15th Conference of the Parties (COP15) in Copenhagen, and in the Cancun Adaptation Framework as paragraph 14(f) at COP16 in December 2010. Furthermore, the IPCC plans a chapter on the topic in its fifth assessment report which will appear in 2014 (Chapter 12, Working Group 2). The topic will also be addressed in several other chapters, particularly regional chapters, as a cross-cutting issue.

Lessons learned from the EACH-FOR project – the first-time ever global field-based survey of environmental change and migration – directly inform the methods of the Rainfalls project. The Scientific Director of the Rainfalls Project helped develop the EACH-FOR methodology which included semi-structured expert interviews and a questionnaire for migrants and non-migrants in the 23 case study countries.

1.2.3 Rainfalls methods development

It was realized at the close of the EACH-FOR project that more work was needed to isolate independent environmental variables, develop indicators, improve methods and find evidence to support policy around climate change, migration and displacement. The Rainfalls method is a significant next-generation approach to help fill these policy relevant knowledge gaps.

EACH-FOR gathered field-based observations and contributed to the building of a research agenda for investigating the complex relationships between environmental factors and migration (Stal and Warner, 2009; Warner and Laczko, 2008). A spectrum of emerging tools for further research – from macrolevel to microlevel approaches – may be used to build on the evidence base provided by EACH-FOR. To gain a global or regional overview, Perch-Nielsen et al. (2008) and others have illustrated the possibility of linking climate and environmental models with migration models. Other researchers have begun introducing environmental variables into geographic regression models (Afifi and Warner, 2008; Barrios et al. 2006; Neumayer, 2005), including a multilevel approach that simultaneously uses area and individual data (Henry et al., 2004). A particularly promising area appears to be a simulation with agent-based modelling (Kniveton et al., 2009; Smith, 2012). Rainfalls applies agent-based modelling in objective II, based on the results of the household survey that also supports objective I.

1.2.3.1 Methods for understanding environmental drivers (independent variables)

Combining socio-economic and environmental data helps augment the research methods of the study. Census data could be more extensively used and analysed with respect to the research questions. In addition, multilevel data based on specific areas are gathered in the Rainfalls project – something that – to the knowledge of the authors – has not been done before in a multi-country study of environmental change and migration. Improved local indicators of the environmental, climatic and economic situation in the area are needed. An integrated assessment of environmental impacts on migration behaviour could be attempted in scale- and context-dependent monitoring approaches.

The Rainfalls project builds upon the EACH-FOR approach by combining qualitative and quantitative data in different methodological approaches, such as multilevel statistical analysis, agent-based modelling, microsimulations or systems dynamics models. The research on environmental triggers and drivers that affect human mobility should improve the interpretation or understanding of the results through qualitative and quantitative work, working closely with local communities, collecting and sharing the gathered information.

1.2.3.2 Understanding migration in the context of environmental change (dependent variable)

The Rainfalls project is an opportunity to provide more nuanced understanding of the links between environment and migration. This understanding should involve the diverse impacts of migration in communities of origin, as well as the different impacts of migration on vulnerable groups, such as children, women and the elderly. Recent literature indicates that most people who become mobile in part because of environmental change will move internally and in short distances. Therefore, research and policy must devote more attention to internal migration and displacement.

Environmental migration might be short-term, long-term, seasonal or circular. Studies have identified that the most vulnerable people are the worst affected. Additionally, migration requires resources and financial means, hence the poorest are less able to migrate for long distances. There is still an absence of coherent information for modelling plausible future environmentally induced migration flows. Particularly, in regard to slow-onset processes such as desertification, a more refined understanding of the interactions is needed.

1.3 Rainfalls approach: In-depth case studies, hotspots analysis, policy alternatives

To raise awareness and support policymaking, research on the migration process for environmentally induced migrants needs to overcome barriers between different scientific fields. This need for multidisciplinary approaches should be incorporated into the analysis and interpretation within the data collection.

Several activities could provide decision makers with evidence-based insights about migration processes related to environmental change. Evidence-based scenarios provide one way to improve the understanding about trends of future environmentally induced migration flows. Since environmentally induced migration is mingled with other forms of mobility, research should focus on combinations of factors, not environmental drivers alone. Activities such as hotspots maps of vulnerable areas and populations could contribute to creating scenarios. Within this context, it is central to understand whether migration is an adaptation strategy or an inability to capture adaptation opportunities and whether/what other alternatives could be explored prior to the move.

To gain more comparable and geographically specific insights, longitudinal research needs to be undertaken with panel studies of the evolution of the environment and of migration behaviour (Massey et al., 2007). Looking back, historical analogues can provide insights into coping mechanisms and tipping points beyond which coupled human-ecological systems began to break down (McLeman and Smit, 2006; Piguet, 2008). Other authors have developed indices of vulnerability to localize "hotspots" of environmental change and migration (Dasgupta et al., 2007; Thow and De Blois, 2008). Finally, field-based research such as that performed by EACH-FOR, particularly using a combination of survey and qualitative study methods, provides detail and helps build hypotheses about the relationships between the multiple factors affecting migration.

The Rainfalls project undertakes more detailed case study work based on representative socio-geographic hotspots. The project time limit of 36 months does not allow for a longitudinal study, but the methods developed in the project allow other researchers to do so in the same or other research locations. Local stakeholders and representatives of poor and vulnerable groups are integrated in participatory exercises of the project (described in depth in section 9). Based on these case studies, the Rainfalls project develops scenarios for the future. These indicators of potential drivers of migration and their interactions with other factors help answer questions related to the relationship between migration and environmental factors.

As a starting point for future empirical evidence, a meta-analysis of existing literature could serve as a basis and be used to scale up good practices (Foresight, 2011). Additional evidence could also be used to develop and expand the treatment of environmental factors into new or existing migration theories. Within the analysis of quantitative and qualitative data, best practices of environment and migration processes should be identified in order to inform policymakers. Additionally, future research could focus on developing new methods to investigate migration and environment.

PART II: FIELDWORK APPROACH

2. Objectives covered in the field and research methods

2.1 Focusing on objective I: Understanding migration as a risk management strategy in response to rainfall variability and food insecurity

To find answers to the first of the Rainfalls research question – Under what circumstances do households use migration as a risk management strategy in response to increasing rainfall variability and food insecurity? – the Rainfalls project undertook research in eight case study countries. Objectives II and III and their corresponding research questions are explored using a different set of methods which are beyond the scope of this document.

2.2 Three research methods for understanding the current relationship between rainfall variability, food insecurity and migration

To address objective I and research question 1 of the Rainfalls project, three methods are used for field research in the eight case study countries:

1. Participatory Research Approach

2. Household survey

3. Expert interviews

Each method is described below. A research matrix that summarizes the methods is included in Annex 1. A list of the materials needed to carry out each method can be found in Annex 5.

2.2.1 Participatory Research Approach

The Participatory Research Approach (PRA) emerged in the field of development studies. These approaches are also called Participatory Rural Appraisal. The overall aim of PRA is to enable local people to express/phrase and analyse the realities of their lives and conditions, develop plans of actions that are suitable to them and critically discuss the outcomes of projects (Chambers, 1996). PRA methods are used in development projects, as well as in other applied research (like the Rainfalls project). PRA tools help researchers and local people generate important information that otherwise may not be available.

This approach involves local people actively participating in the planning, monitoring and evaluation of development programmes. Local people from different backgrounds, regardless of their social position in their communities, are asked to participate. By doing PRA, the local people meet development practitioners and government officials to articulate their livelihood conditions, their needs and their views so as to further develop their village or region. The voice of the local people is central, since they are the experts of their specific livelihood and social conditions and environment (Kumar, 2002; Narayanasamy, 2009).

PRA includes a cluster of approaches and tools to address different topics of interest. For example, if one aim is to detect which kinds of cereals and vegetables are grown locally during certain times of

the year, the choice would be the "seasonal calendar" method. A group of local people that are familiar with farming develops the seasonal calendar with the help of the researchers.

In the research component of the Rainfalls project, the PRA method goes in line with and complements the household (HH) survey by asking the interviewees open questions that are subject to more detailed and in-depth answers which would help the research team to better understand the dynamics between rainfall variability, food security and migration. The PRA considers the gender, age and livelihood aspects by having mixed but also separate groups for these different categories, in order to ensure a fair representation in the research and to ensure that people can express themselves freely.

A brief description and detailed guidelines for using PRA research methods can be found in Annex 5.

2.2.2 Household survey

As HHs can be perceived as "links" between individual perspectives and actions, and regional or even national structures, they are the ideal targets of a HH survey. A HH survey can be done with all members of the HH, or only with a few of them (depending on the topic of interest) or with the head of the HH only. The HH head may be male or female. Out of time consideration, it was decided to work with the HH head or his/her delegate. The selection of HHs is based on the sampling method that is included in Annex 3. The HH survey instrument can be found in Annex 6.

The main instrument to conduct a HH survey is a questionnaire. In a questionnaire, the wording and sequence of questions are given. The same course of action takes place for all interviewees during the data collection process. This structured form of the interview and its standardization is necessary to ensure valid quantification and comparability.

The HH survey includes precise questions about different topics, in this case about rainfall, food security and migration. Some of the questions are open-ended; others are close-ended and include different options.

Interviewers and interviewees meet in a face-to-face situation. The interviewer reads out each question in the exact wording. It is important to be exact here: the formulation of the question should be equal among the interviewees to ensure comparability. The interviewer writes down the answers of the interviewee in the questionnaire.

2.2.3 Expert interviews

Interviews of this type are held with different experts: Those at the national level as well as at the local and district levels. At the national level persons included are engaged in development policies, international organizations and NGOs, policymakers, academics/researchers in relevant sectors, and civil society representatives engaged in advocacy on environment and natural resource management issues. At the local level, they include local leaders, agricultural extension workers, representatives of community-based organizations such as farmers' groups or water committees, teachers and mayors. Interviews are semi-structured and are based on a set of questions that facilitate more in-depth discussions.

During the expert interviews, the Rainfalls researchers address questions presented in the guidelines in Annex 5 during expert interviews. Depending on the experts interviewed, the questions are either general about the whole country, regional or specific to the sites selected.

The main questions addressed to the experts are included in Annex 5.

3. Pre-testing methods

The pre-testing of the methods should be done under the same conditions the research teams experience when the main research is undertaken, but in different locations. In this type of research, a rural background is crucial, ideally close to the villages the research teams are working in. It is desirable not to do pre-testing in the selected research villages, since the target groups/ interviewees involved in pre-testing cannot be part of the main research again.

The Senior and Junior National Researchers conduct the pre-testing. After the pre-testing, the national teams come together with the International Researcher to gather views on how to further refine or adjust the PRAs and HH survey instrument. The pre-testing evaluation is described below.

Additionally, pre-testing can be done with a few knowledgeable informants who answer the survey questions and concentrate on the way questions are formulated, on the wording of the PRAs and the HH survey questions.

In the pre-testing, the following should always be considered: Ensuring balanced participation of women and men, ensuring participation of poor and vulnerable people, and estimating the average time for going through the PRA methods and filling in the HH survey.

The main aims of pre-testing are to:

- assess the understandability of questions (see details below) in the PRAs and HH survey;
- test the effects of question formulation in the PRAs and HH survey (appropriateness of questions in terms of sociocultural norms, livelihood styles, etc.);
- assess the cultural appropriateness of the PRAs and HH survey;
- appraise the time needed to conduct the PRAs and HH survey.

Annex 3 provides pre-testing details for each method to be used within the project.

3.1 Translation of questions for focus group discussions and household survey

Following the pre-testing of the three methods, the questions for the focus group discussions and HH survey are translated into the Lingua Franca of the respective case study countries. The following points shall be noted about translation of the methods:

- The methods are translated into Lingua Franca prior to pre-testing. The translation into Lingua Franca, for example Spanish, also serves as a pre-test, with two or more native Spanish-speaking peers helping to identify potential areas for translation error;
- Cross-check translation;
- If the expert interviews and the focus group sessions are recorded using technical media (e.g., voice recorders) where appropriate, it is a necessary step to transfer the recording into a text document (Flick, 2009, p. 299). Transcription of recorded materials (conversations, interviews, visual materials, etc.) into text (Flick, 2009, p. 475) is done by the Junior National Researchers. The Senior National Researcher, International Researcher and the translator coordinate among each other during fieldwork (e.g., in the evenings after PRAs and surveys) to validate the transcription.

During the field research, a field translator for translation from local language to English accompanies the International Researcher (and the team) each day to ensure that the International Researcher can follow PRA sessions and HH surveys. The translator summarizes daily communications from notes he/she was taking during the day to the Senior National and International Researchers each evening. This facilitates the research coordination between the Senior National and International Researchers.

4. Useful information for the field research

Detailed information about sampling and the number of desired observations, the steps to be followed in the field, and tables regarding the schedule of field teams can be found in Annex 3.

PART III: DATA MANAGEMENT, DRAFTING THE COUNTRY STUDY REPORTS AND FOLLOW-UP WORKSHOP

5. Data management

The International and Senior National Researchers are responsible for the data management in the field. They train, coordinate and supervise the Junior National Researchers in data entry every day after fieldwork is completed. Annex 6 provides detailed information about quality control procedures, data recording and processing, data validation, entry and analysis.

6. Report writing

Annex 7 includes the specific tasks of the researchers in drafting the reports of the project with detailed outlines of the respective reports.

7. National follow-up workshop

After the field research, the Senior National Researcher and the CARE country office (CO) of each research country organize a workshop and invite the various stakeholders to seek their input in the country report. The International Researcher is connected to the workshop from abroad, as long as this is technically possible. The workshops take place after all the field research is done and the corresponding case study report (CSR) is finalized. During the workshop, the Senior National Researcher presents the results of their respective CSR.

PART IV: RESEARCH METHODS

Annex 1
8. Research matrix

Research domain	Core questions (objectives I and II)	Method	Sampling: Who do we need to talk with?
Local context	*0.1 What are the spatial dimensions of people's realities?* *0.2 What are the main threats/ risks/problems that people face?* *0.3 What are the most important events that took place in the last 20 years in the village? And rainfall-related events?* *0.4 What are the most important trends and developments for the village in the last 20 years?*	*0.1-0.4 (Local) expert interviews* *0.1 PRA: Transect walk with resource mapping and wealth ranking* *0.2 PRA: Livelihood risk ranking* *0.3 UNU-EHS literature review (before field visits)* *0.3&0.4 PRA: Timeline on important Events and Rainfall & Trend Analysis*	*0.1 PRA: Done with the village head and person responsible from CARE* *0.2 PRA: Four groups (in the main village) of 5-6 persons each:* • *One group of persons whose main livelihood activity is natural resource based (agriculture, fishing, cattle herding, etc.)* • *One group of persons whose main livelihood activity is not natural resource based* • *One group of persons who come from households that are considered most vulnerable in the local context (identified by wealth ranking exercise)* • *One group of women with mixed livelihood activities.* *0.3&0.4 PRA: One group (8-10 persons) of male and female elders and middle-aged*

Research domain	Core questions (objectives I and II)	Method	Sampling: Who do we need to talk with?
Independent variable: Rainfall variability (Exposure)	*1.1 (Observed & measured) How is rainfall variability changing against long-term historical patterns in the sites of interest?* • *1.1.a Too much or too little rainfall in the past 10-20 years, measured against longer-term historical averages* *– What different words do you have in your language for "rain"? What is the meaning of these different kinds of rain?* • *1.1.b Less predictable seasons (such as loss of transitional seasons) in the past 10-20 years, measured against longer-term historical averages* *– What are the names of the seasons in this area, and when do they start now (and historically)?* • *1.1.c More erratic rainfall (such as cloudbursts) in the past 10-20 years, measured against longer-term historical averages* *– What factors are important to you (such as when seasons begin and end – when to plant seeds; what quality of rain comes – flash floods or gentle rains)?* *– What, exactly, is happening with rainfall patterns? How typical is this of the area (to what extent might it reflect microclimates)?* *1.2 Are rainfall variability patterns expected to change in coming decades, against long-term historical patterns in the countries or sites of interest?* • *Too much or too little rainfall in the coming 10-20 years, measured against longer-term historical averages* • *Less predictable seasons (such as loss of transitional seasons) in the coming 10-20 years, measured against longer-term historical averages* • *More erratic rainfall (such as cloudbursts) in the coming 10-20 years, measured against longer-term historical averages. What do experts think rainfall patterns will be like in 10–30 years from now? Why?*	*1.1 HH survey* *1.1 Center for International Earth Science Information Network (CIESIN) input (before field visits)* *1.1 UNU-EHS literature review (before field visits)* • *1.1.a PRA: Timeline on important Events and Rainfall & Trend Analysis* • *1.1.b PRA: Seasonal Calendar on Livelihood, Food Security and Migration in the context of Agro-Ecological Changes & Venn Diagram on Food Security* • *1.1.b Expert interviews* • *1.1.c Data from daily weather station readings (ideally synoptic weather stations)* • *1.1.c PRA: Impact Diagram & Focus Group Discussion on Coping and Adaptation with rainfall variability and food security* • *1.1.c Expert interviews* *1.2 CIESIN input (before field visits)* *1.2 Expert interviews*	*1.1.a PRA: One group (8-10 persons) of male and female elders and middle-aged persons* *1.1.b PRA: (both for base camp and satellite villages):* • *One mixed group of men (7-10 persons) including elders and other age groups that are farmers and non-farmers* • *One mixed group of women (7-10 persons) including elders and other age groups that are farmers and non-farmers* *1.1.c PRA: Two groups:* • *One mixed male group of farmers, pastoralists, etc.* • *One mixed group of women* *1.1.c Expert interviews: Officers with access to quantitative local weather observations, etc.*

Research domain	Core questions (objectives I and II)	Method	Sampling: Who do we need to talk with?
Dependent variable (endogenous variable): Livelihood and food security (Sensitivity to rainfall variability)	*2.0 What are the most important actors and institutions in the community with regards to food security?* *2.1 Does rainfall variability affect livelihood security today?* • *Economic situation* • *Food security* *– Does rainfall variability affect food production?* *– Does rainfall variability affect the stability of food supplies?* • *Drinking water availability* *2.2 How do people cope with rainfall variability today?* *2.3 Would rainfall variability affect livelihood security in the coming decades, under given future scenarios?* • *Economic situation* • *Food security* • *Would rainfall variability affect food production?* • *Would rainfall variability affect the stability of food supplies?* • *Drinking water availability*	*2.0 PRA: Seasonal Calendar on Livelihood, Food Security and Migration in the context of Agro-Ecological Changes & Venn Diagram on Food Security* *2.1 PRA1: Impact Diagram & Focus Group Discussion on Coping and Adaptation with rainfall variability and food security* *2.1 HH survey* *2.1 PRA2: Seasonal Calendar on Livelihood, Food Security and Migration in the context of Agro-Ecological Changes & Venn Diagram on Food Security* *2.2 HH survey* *2.2 PRA: Ranking of coping strategies with regard to rainfall variability* *2.3 PRA: Focus Group Discussion on future strategies* *2.3 Expert interviews* *2.3 Agent-based modelling (after field visits)*	*2.0 PRA: Two groups:* •*One mixed group of men (farmers/non-farmers)* •*One mixed group of women (farmers/non-farmers)* *2.1 PRA1: Two groups:* •*One mixed male group of farmers, pastoralists etc.* •*One mixed group of women* *2.1 PRA2: Different groups:* •*One mixed group of men (farmers/non-farmers)* •*One mixed group of women (farmers/non-farmers)* *2.2 PRA: Three groups:* •*One mixed group (women and men) of farmers, pastoralists/people whose economic activities depend much on rainfall (6-8 persons)* •*One mixed group (women and men) of non-farmers/people whose economic activities do not depend much on rainfall (6-8 persons)* •*One mixed group (women and men) of the most vulnerable (6-8 persons)* *2.3 PRA: One mixed group (women and men) of young people (need to be working already, ages at least 15 years old to ca. 30 years old; jobs should be related to rainfall such as farmers, pastoralists, fishers, marketers of agricultural products*

Research domain	Core questions (objectives I and II)	Method	Sampling: Who do we need to talk with?
Dependent variable: Mobility patterns	*3.0 What are the local migration dynamics?* • *What is the spatial pattern of migration in your area today?* • *What is the temporal pattern of migration in your area today?* *3.1 What are the variables that affect migration today?* • *How important is each of these variables (in managing risk)?* • *How important is rainfall variability relative to other reasons for migration?* *3.2 If rainfall is one of those variables, does rainfall variability cause HHs to send one or more persons to a different place (i.e. to migrate) today?* *3.3 Would rainfall variability cause HHs to send one or more persons to a different place (i.e. to migrate) in the coming decades, under given future scenarios?*	*3.0 PRA: Mobility map on migration plus Focus Group Discussion* *3.0 HH survey* *3.1 PRA: Venn Diagram on migration "support systems"* *3.1 HH survey* *3.2 HH survey* *3.2 Expert interviews* *3.2 PRA: Mobility map on migration plus Focus Group Discussion* *3.3 PRA: Focus Group Discussion on future strategies* *3.3 Expert interviews* *3.3 Agent-based modelling (after field visits)*	*3.0 PRA: Two separate groups (6-7 persons):* • *One group of male persons with migration experience* • *One group of female persons with migration experience* *3.1 PRA: Two separate groups (7-10 persons):* • *One group of male persons with migration experience* • *One group of female persons with migration experience* *3.2 Expert interviews in capital cities and local villages (ministries, environment and migration experts, NGOs and church groups, agricultural extension officers, village mayors, etc.)* *3.2 PRA: Two separate groups (6 – 7 persons):* • *One group of male persons with migration experience* • *One group of female persons with migration experience* *3.3 PRA: One mixed group (women and men) of young people (need to be working already, ages at least 15 years old to ca. 30 years old; job should be related to rainfall such as farmers, pastoralists, fishers, marketers of agricultural products)* *3.3 Experts in capital cities and local villages (ministries, environment and migration experts, NGOs and church groups, agricultural extension officers, village mayors, etc.)*

Annex 2

9. Ethical issues to be considered when conducting research

From the outset of the research, the professionals involved strive to conduct themselves and their work in an ethical manner with respect for the people and communities they work with in the case study countries. These standards similarly apply to working with all partners. The generation and utilization of knowledge should be achieved in an ethical manner. Researchers have primary ethical obligations to the people they study and to the people with whom they work.

These ethical obligations include (based on the Ethics Code of the American Anthropological Association 1988):

- avoiding harm or wrongdoing, understanding that the development of knowledge can lead to change which may be positive or negative for the people studied;
- respecting the well-being of humans;
- consulting actively with the affected individuals or group(s), with the goal of establishing a working relationship that can be beneficial for all parties involved;
- giving participants all the necessary and adequate information about the study so that they can make an informed decision about whether or not to participate. This includes information about why, how, when, with who, and where the study is taking place;
- ensuring confidentiality and protection of participants by not revealing information they have provided that could expose them to risks. A way to do this is to assure the participants that their names will be treated with complete confidentially, but also give them the choice not to disclose their names, if for any reason they would feel threatened. In general, before asking the participants/interviewees for their names, the researchers should assure the confidentiality of the research and that their names will not be given to third parties. It is important to note that in some cultures it is respectful to ask the people for their names in order to avoid treating them as "objects";
- use voice recorders and take pictures or film only after the permission of the participants/interviewees has been granted.

The researchers filling out the HH surveys have to check a box that confirms agreements of ethical conduct with participants and having considered all the ethical guidelines required for the study.

Annex 3

10. Guidelines for pre-testing corresponding to each research method

In the following, the pre-testing corresponding to each research method as well as the evaluation of the pre-testing results is shown.

10.1 Participatory Research Approach

To pre-test the PRA tools, ideally all methods are tested in advance, but at least six different methods should fall under pre-testing. At a minimum, 1-2 of the PRA pre-testings should include focus group discussions. If for any reason not all PRA tools can be tested, priority should be given to the following:

1. Transect walk on first day including resource mapping and wealth ranking
2. Livelihood risk ranking
3. Seasonal calendar on Livelihood, Food Security and Migration in the context of Agro-Ecological Changes
4. Mobility map on migration plus focus group discussion
5. Impact diagram & focus group discussion on Coping and adaptation with rainfall variability and food security
6. Ranking of coping strategies on rainfall

10.2 Household survey

To pre-test the HH survey, at least 10 surveys should be carefully conducted by the Senior and Junior National Researchers, making sure to include women who live in male-headed HHs or female HH heads in the pre-testing exercise.

10.3 Expert interviews

To pre-test the expert interviews, at least five interviews should be conducted. Before pre-testing with experts, it could be useful to test the expert interviews on other people that have enough knowledge to answer the questions, for example NGO office staff. The feedback of such people helps reveal areas where expert interview questions require further refinement.

10.4 Evaluating pre-test results with CARE country offices

Following the pre-testing phase in all eight case study countries, UNU-EHS evaluates the pre-test results together with CARE's COs.

UNU-EHS discusses the following points in a debriefing with the CARE CO staff and the National Researchers that conducted the pre-testing:

- Is the wording of questions understandable?
- Are there questions that are hard to understand? If yes, which ones?
- What are the reasons why the questions are difficult to understand?

- What would be a better way to formulate the questions?
- There are different thematic topics in the survey. Are the shifts from one to the other topic clear and logical? If not, do you think that transition paragraphs are needed?
- Does the respondent see a clear purpose for every question?
- Did respondents refuse to answer specific questions?
- Are some of the questions so sensitive to the extent that people feel uncomfortable answering them, especially in the case of questions about income, decision-making, particularly when questions are addressed to women?

Following this evaluation of pre-test results, UNU-EHS revises/adjusts the PRA methods, HH survey and expert interview questions. The Rainfalls Scientific Director discusses this revision with CARE, followed by translation of the methods into Lingua Franca for implementation.

11. Fieldwork: Sampling methods

11.1 Sample selection methods

The selection of sampling methods depends on the available background information about the communities provided by the CARE COs.

Site selection is done by UNU-EHS, based on recommendations given by the CARE COs (site-specific background information) and CIESIN (maps reflecting poverty, migration and rainfall indicators).

Before going to the community to conduct fieldwork, background information has to be acquired and disseminated to the research team. This information should include the following:

- UNU-EHS requests the CARE CO to provide (if possible) census data of the villages, including number of HHs per village; number of male and female headed HHs; number of inhabitants per village, if possible for each sex; information on age groups; information on economic activities of the population (what are the main sources of livelihood?); information on resource ownerships (land, livestock, fishery); information on local wealth categories (is there information on poverty classes?);
- General information about the communities (e.g., number of HHs and inhabitants, infrastructure available, social services available such as schools, health centres, water points, associations, environmental issues, political structure);
- Community or group history information, past or present conflicts and power dynamics which may be important in selecting focus groups or in facilitating dialogue;
- Information about local leaders, social aggregators, decision makers and contact persons.

11.1.1 Household survey sampling

Studying the whole population of one research site is not possible for various reasons. UNU-EHS recommends two possible sampling methods depending on the quality of information provided. The aim is to ensure that a representative sample is chosen from which more robust conclusions can be drawn for the Rainfalls project. The two sampling options are: *simple random sampling* and *stratified random sampling*.

Simple random sampling requires less information (such as demographic information in specific locations). This method is best applied to homogeneous populations where a random selection is likely to come up with representative HHs participating in the research. For example, to get a simple random sampling of 200 out of 640 people in a village, every HH is numbered from 1-640 and then a random selection of 200 HHs is made. Computerized selection is easily done (Bernard, 2006, p. 149), as the example shows:

Computerized selection can be done through the "RAND" function in Excel. If the number of HHs is 150, "=RAND()*150" will give the random number to be used as a basis.

For example, suppose the computerized random number is 43 and 15 interviews are to be made from a total number of 150 HHs. Since 150/15=10, 10 will be used as the interval for finding the number. Starting from the computerized random number (43 in this case), the easiest way to find the numbers is to begin subtracting by intervals of 10 (43, 33, 23, 13, 3). After that, repeat the exercise starting from 43 but this time adding 10 (53, 63, 73, 83, 93, 103, 113, 123, 133, 143).

If houses are numbered, the team will interview HHs 3, 13, 23, 33, etc. until 143; otherwise, the team can go to the third house and then go to every tenth house. The same exercise should be repeated in every village.

However, UNU-EHS expects to find heterogeneous and not homogenous populations in the different research field sites and countries. Therefore, UNU-EHS favours stratified sampling. Another disadvantage of simple sampling could be that research results may contain biases due to sampling error if simple random sampling pulls HHs which have non-representative profiles.

Stratified random sampling ensures that key subpopulations are included in the sample (Bernard, 2006, p. 153). The Rainfalls research approach is designed to be gender-sensitive, considering social inequalities and different occupation groups. Such an approach requires that researchers distinguish between men and women, livelihood groups (farmers, pastoralists and fisherman, etc.) as well as between different income/wealth groups. Based on the availability of information, the population is accordingly divided into subpopulations. They form the sampling frame (a list of units for analysis) from which UNU-EHS researchers can take a sample and to which researchers will generalize their findings (Bernard, 2006, p. 149). For each subpopulation a simple random sampling is done.

The required data to set up the sampling frame may come from national census data and cover the district or ideally the village level. They might also come from CARE COs that have worked in the research villages previously. To sum up, data about sex, age groups, and different occupational as well as income/wealth groups, is needed. If such data is not available, there is no possibility of using the stratified random sampling method.

While conducting the HH survey, researchers should not "simply" interview the neighbour of a desired HH head selected by the sample list, if the desired person is not available. The researchers may ask another HH representative, if he/she has a broad knowledge of the HH affairs, or make a second appointment with the desired HH head. Out of time constraints, it is also possible to choose a different HH from an alternative 10 per cent sample list, which should substitute for the option of asking a neighbouring HH head.

11.1.2 Selection of target groups for PRA sessions

The participants for the different PRA sessions are identified based on the knowledge of CARE CO staff and on the results of the transect walk and wealth ranking exercise which is conducted with different local experts and CARE staff on the first day of fieldwork. A snowball sampling pre-selection is added if necessary. Local CARE staff expertise is of importance to ensure that aspects of gender and vulnerability are sufficiently incorporated in research and especially in the selection of participants.

11.2 Desired number of observations and corresponding time estimates

The research team consists of three sub-teams working on PRA methods and the HH survey in parallel.Research will take place in a base camp village and 2 – 4 satellite villages (see Annex 4). The HH survey takes place in each village, the PRA is mainly conducted in the base camp and some PRA methods take place in satellite villages as well.

11.2.1 Household survey

In each case study, the researchers who are administering the HH survey should complete a minimum of 4-5 HH surveys per day per researcher. Each survey lasts 1.5 to 2 hours. The HH survey teams consist of 1 National Researcher (Senior or Junior) or 2 Junior National Researchers. If each researcher completes 5 or more HH surveys every day, then each field day should yield a minimum of 15 HH surveys per day. Each team member conducts interviews, so that at least 150 surveys can be collected per case study.

11.2.2 PRA sessions

Some PRA sessions are held with women only, others with men only and a third type with mixed groups.

In each case study, a minimum of two PRA sessions is planned per day (see Table 1), taking into consideration that each session should last between 2-3 hours. The two PRA teams consist of the following:

- Team 1: Senior National Researcher paired with 2 Junior Researchers;
- Team 2: 2 Junior Researchers.

The Senior National Researcher switches between teams regularly and the International Researcher similarly supports both the PRA sessions and HH surveys as needed and in coordination with the Senior National Researcher.

In total, there are 18 PRA sessions conducted in the base camp village with different target groups (see Table 1) and 15 additional PRA sessions conducted in the satellite villages (in some cases, PRA tools are combined).

11.2.3 Expert interviews

The Senior National Researcher conducts expert interviews (where appropriate with the support of the International Researcher). The expert interviews are conducted with individuals who possess particular information and expertise in specific topic areas (migration, rainfall variability, livelihoods, food insecurity, national and local development plans, climate change, vulnerability, etc.). The interviews may take place in the capital city or in the community, as appropriate. NGOs, government officers, agricultural extension officers, local leaders, schoolteachers and employees in international organizations may all be good sources for expert interviews. The Senior National Researcher ensures that the responses of experts are recorded (in notes form).

Expert interviews are conducted by the Senior National Researcher ideally before the main research phase, or after.

As to the expert interviews, the target is to conduct a minimum of 15 expert interviews, ideally 5 at the local, 5 at the regional and 5 at the national level. Each interview should last no longer than 1 hour. The length also depends on the availability and time the experts would be willing to give to the research team and the study.

Table 1: Overview of PRA methods for the base camp and satellite villages

No.	PRA Method	Target Groups	No. of sessions in base camp village	No. of sessions in satellite village
1.	Transect walk on first day including resource mapping and wealth ranking	Group of local experts, the village head, responsible from CARE	1	1
2.	Livelihood risk ranking	1 group of farmers 1 group of non-farmers 1 group of women 1 group of most vulnerable persons	4	1
3.	Timeline on important events and rainfall & trend analysis	Elders (men and women mixed)	1	
4.	Seasonal calendar on livelihood, food security and migration in the context of agro-ecological changes & Venn Diagram on food security	1 mixed group of men (farmers/non-farmers); 1 mixed group of women (farmers/non-farmers)	2	4
5.	Mobility map on migration & Focus Group Discussion	Participants with migration experience (e.g., returned migrants); 1 group of men; 1 group of women	2	2
6.	Venn Diagram on Migration "Support Systems" or Networks	Participants with migration experience (e.g., returned migrants); 1 group of men; 1 group of women	2	2
7.	Impact Diagram & Focus Group Discussion on Coping and Adaptation with rainfall variability and food security	1 mixed male group of farmers, pastoralists, etc. 1 mixed group of women	2	2
8.	Ranking of Coping Strategies on Rainfall	1 farmers (men and women) 1 non-farmers (men and women) 1 most vulnerable (men and women)	3	3
9.	Focus Group Discussion on Future Strategies	Mixed group of young people	1	1
TOTAL			18	15

11.3 General overview of field days

Table 2 shows an example of how fieldwork could be organized by the three research teams. It is a suggestion, as the teams need to be flexible so as to react to local conditions and the availability of participants/interviewees. Especially with PRA, flexibility is needed. A decision has to be made each morning by the International and Senior National Researchers which methods are going to be used, depending on appointments made by the facilitators. During the day, the teams should be flexible to react to the conditions and decide if they can conduct two PRA sessions with the same target group.

Table 2: Schedule of field teams (example)

Day	Team 1	Team 2	Team 3
1	Training workshop	Training workshop	Training workshop
2	Training workshop	Training workshop	Training workshop
3	Morning: Briefing Day: Transect walk; Interviews with local experts Evening: Debriefing & data entry	Morning: Briefing Day: Transect walk; Interviews with local experts Evening: Debriefing & data entry	Morning: Briefing Day: HH Survey Evening: Debriefing & data entry
4	Morning: Briefing Day: Livelihood Risk Ranking; Timeline and Trend Analysis Evening: Debriefing & data entry	Morning: Briefing Day: Livelihood Risk Ranking; Timeline and Trend Analysis Evening: Debriefing & data entry	Morning: Briefing Day: HH Survey Evening: Debriefing & data entry
5	Morning: Briefing Day: Livelihood Risk Ranking; Timeline and Trend Analysis Evening: Debriefing & data entry	Morning: Briefing Day: Livelihood Risk Ranking; Timeline and Trend Analysis Evening: Debriefing & data entry	Morning: Briefing Day: HH Survey Evening: Debriefing & data entry
6	Morning: Briefing Day: Ranking of Coping Strategies on Rainfall Evening: Debriefing & data entry	Morning: Briefing Day: Ranking of Coping Strategies on Rainfall Evening: Debriefing & data entry	Morning: Briefing Day: HH Survey Evening: Debriefing & data entry
7	Morning: Briefing Day: Ranking of Coping Strategies on Rainfall Evening: Debriefing & data entry	Morning: Briefing Day: Ranking of Coping Strategies on Rainfall Evening: Debriefing & data entry	Morning: Briefing Day: HH Survey Evening: Debriefing & data entry
8	Morning: Briefing Day: Seasonal Calendar & Venn Diagram on Food Security Evening: Debriefing & data entry	Morning: Briefing Day: Seasonal Calendar & Venn Diagram on Food Security Evening: Debriefing & data entry	Morning: Briefing Day: HH Survey Evening: Debriefing & data entry

Day	Team 1	Team 2	Team 3
9	Morning: Briefing Day: Seasonal Calendar & Venn Diagram on Food Security Evening: Debriefing & data entry	Morning: Briefing Day: Seasonal Calendar & Venn Diagram on Food Security Evening: Debriefing & data entry	Morning: Briefing Day: HH Survey Evening: Debriefing & data entry
10	Morning: Briefing Day: Mobility Map on Migration & Focus Group Discussion Evening: Debriefing & data entry	Morning: Briefing Day: Mobility Map on Migration & Focus Group Discussion Evening: Debriefing & data entry	Morning: Briefing Day: HH Survey Evening: Debriefing & data entry
11	Morning: Briefing Day: Mobility Map on Migration & Focus Group Discussion Evening: Debriefing & data entry	Morning: Briefing Day: Mobility Map on Migration & Focus Group Discussion Evening: Debriefing & data entry	Morning: Briefing Day: HH Survey Evening: Debriefing & data entry
12	Morning: Briefing Day: Venn Diagram on Migration "Support Systems" or Networks Evening: Debriefing & data entry	Morning: Briefing Day: Venn Diagram on Migration "Support Systems" or Networks Evening: Debriefing & data entry	Morning: Briefing Day: HH Survey Evening: Debriefing & data entry
13	Morning: Briefing Day: Venn Diagram on Migration "Support Systems" or Networks Evening: Debriefing & data entry	Morning: Briefing Day: Venn Diagram on Migration "Support Systems" or Networks Evening: Debriefing & data entry	Morning: Briefing Day: HH Survey Evening: Debriefing & data entry
14	Morning: Briefing Day: Impact Diagram & Focus Group Discussion on Coping and Adaptation with rainfall variability and food security Evening: Debriefing & data entry	Morning: Briefing Day: Impact Diagram & Focus Group Discussion on Coping and Adaptation with rainfall variability and food security Evening: Debriefing & data entry	Morning: Briefing Day: HH Survey Evening: Debriefing & data entry
15	Morning: Briefing Day: Focus Group Discussion on Future Strategies Evening: Debriefing & data entry	Morning: Briefing Day: Focus Group Discussion on Future Strategies Evening: Debriefing & data entry	Morning: Briefing Day: HH Survey Evening: Debriefing & data entry
16	Morning: Briefing Day: Data entry Evening: Debriefing	Morning: Briefing Day: Data entry Evening: Debriefing	Morning: Briefing Day: HH Survey Evening: Debriefing & data entry
17	Morning: Briefing Day: Data entry Evening: Debriefing	Morning: Briefing Day: Data entry Evening: Debriefing	Morning: Briefing Day: Data entry Evening: Debriefing
18	Morning: Briefing Day: Data entry Evening: Final debriefing	Morning: Briefing Day: Data entry Evening: Final debriefing	Morning: Briefing Day: Data entry Evening: Final debriefing

Annex 4
12. Guidelines for the field

The research team will work in one community, undertaking fieldwork in one base camp village and at least two satellite villages. Ideally, the satellite villages should be located in different agro-ecological zones with different livelihood activities than the base camp village, in order to ensure a wider variety of rainfall related coping strategies.

The training workshop will help Junior Researchers fill knowledge gaps and familiarize themselves with the Rainfalls approach, the overall objectives and the methods used in field research. The training includes role-play to ensure that the national research team effectively learns how to use those research methods that are still not known to them.

12.1 General guidelines

The following are the general guidelines for the research team that are included in more detail in the training workshop in preparation for the fieldwork.

12.1.1 Preparing for research

Preparation ahead of fieldwork:

- Find out about literacy levels in advance if possible to ensure that PRA exercises are planned accordingly;
- Inform local authorities and get their permission to work in the community prior to beginning research.

Preparations just before fieldwork starts/during the training workshop:

- Agree who will introduce the facilitators/the team to the communities;
- Agree on how concepts, such as rainfall variability, food security, livelihood security, migration, vulnerability, environmental problems, etc. will be described in local languages. Note that the concept of climate change is abstract and may be difficult to explain. Community members may be more comfortable talking about seasons, weather, the environment, etc. This is given special focus in the training workshop. Researchers should speak in concrete terms (e.g., changes in weather, changes in the timing of rainfall, quality and quantity of rainfall, quality of soil, etc.);
- Prepare the schedule of work for community visits. The schedule of work should ensure that participants are able to move at their own pace, but that the required ground will be covered in the available time;
- Keep in mind that community members are busy, so visits should be kept as short as possible to cover the research and within a culturally appropriate frame. If possible, work within the same groups should be widely spaced so as not to take too much time away from peoples' regular activities. The CARE COs shall guide the researchers on the most appropriate timing and ensuring the inclusion of potential livelihood groups that might be the most exposed to rainfall variability, food insecurity and migration.

12.1.2 Undertaking the research

In the field research process, the following should be considered:

- Be friendly, open-minded and willing to learn from local people. Keep in mind that participants are the experts of their lives and environment;

- Explain purpose of fieldwork to PRA participants and interviewees and ask for their permission to work with them;
- Ask permission before recording interviews or taking pictures;
- Agree on focus groups. If enough facilitators are available, it may be helpful to have concurrent sessions in the same community to allow participants in different groups to speak freely without being concerned about being heard by other groups;
- Decide how information on focus group discussions will be communicated to participants;
- When working in a team with facilitators, decide who will actively facilitate which parts of the agenda and who will take notes. Change roles frequently (adapted from CARE CVCA Handbook, 2009, p. 30).

12.2 Specific guidelines for implementing the household survey, expert interviews and Participatory Research Approach

12.2.1 Guidance for implementing the household survey

One main advantage of face-to-face interviews is that if the respondent does not understand a question, the interviewer can provide explanations and fill in any knowledge gaps. If the respondent is not answering fully, the researcher can probe for more complete data.

Use exact wording in the questionnaire

What is important for the whole research phase is that the different interviewers form and act as a team. While performing the HH survey, each team member should use the same probes (see below) to the various questions on the interview schedule. Especially for the open-ended questions, all important information needs to be recorded in key words (bullet points) and written down in plain text in the evening.

It is necessary that the interviewers read every question clearly and loudly enough and repeat it, if the respondent did not understand, without changing the wording of the question. The interviewers should also stick to the order of questions, as each question has a clear purpose. Once the interviewer has started asking about a topic, it is important to finish all questions before moving to the next section. Respondents could get frustrated or confused if topics are switched.

Clarify and answer respondent questions where needed

Normally, it is a requirement in survey research for each respondent to hear exactly the same question. In practice, this means not engaging in conversation with respondents who ask for more information about a particular topic or item of the survey. If one does not respond to questions, this may prevent the researcher and respondent from understanding each other, and could reduce the reliability/validity of responses (Bernard, 2011, p. 190). There is evidence that more conversational styles of interviews produce more accurate data, especially when participants need clarification on unclear concepts or questions (Bernard, 2011). Please make sure to answer questions clearly, but briefly (so that the survey does not exceed a maximum of two hours.

Key concepts and glossary

It is important that researchers familiarize themselves with all the research documents and especially with the key terms and concepts before the fieldwork starts. The training workshop will review the key concepts and terms of the Rainfalls project. If researchers have any questions, they should talk with the International and Senior National Researchers for support. It is important for researchers to be prepared to answer questions during the household interviews about specific terms.

Please look at the Glossary of this document with scientific terms that are relevant to the project and corresponding explanations in everyday language.

Recording answers during the household survey

In the HH survey, there are fixed-choice and some open-ended questions. While asking fixed-choice questions, it is necessary to make clear to the respondents that there is always an option for alternatives ("other"), if the aforementioned categories do not fit. Respondents should not be fixated on the given options but make their personal choice.

The open-ended questions break the monotony for the interviewee. All the important information should be covered in key words during the interview and written down as plain text in the evening.

In the questionnaire, there is the option "don't know" which makes the questionnaire items exhaustive. The respondent might not know the information the researchers ask for, and this is why this option is included. It does not mean, however, that one has to read this option in all questions. It should only be indicated in the beginning that this option exists (Bernard, 2011, p. 205).

If necessary, the interviewers should read all the different options of a question more than once, in order to make sure that the variety of categories is well understood. Only if the respondent has all options in mind, can they decide which answer fits best. The interviewer should not rush through the questions with different options and should be patient with participants who need time for reflection. Interviewees should not be interrupted or rushed. At the same time, the interviewer should be aware of time – one survey should not take more than two hours at maximum (ideally it should take between 60 and 90 minutes).

Moving from one section of the survey to the next

As the researcher moves from one topic to another, introduce the next paragraph to make sure that it makes sense to the respondent. One might say, for example: "Now that we have learned something about the crops you are planting, we would like to know about changes in rainfall". The exact wording of these transition paragraphs should vary throughout the questionnaire (Bernard, 2011, p. 203).

12.2.2 Guidance for implementing the expert interviews

According to Diekmann (adapted from Diekmann, 1996, p. 382), there are three categories of error sources in interviews: respondent's characteristics, interviewer characteristics and interview situation:

1. Respondent's characteristics

- *Social desirability effect*. This means the tendency of respondents to reply in a manner that will be favourably viewed by others. It generally takes the form of overreporting good behaviour and underreporting bad behaviour. The social desirability effect cannot be eliminated totally in research, especially in sensitive areas like personal income and earnings, sexual behaviour or religion. The researcher should be aware of it. One countermeasure to reduce this effect is putting questions as neutral as possible (without any terms that imply specific common values). Beyond that, researchers have developed specific tests that measure socially desirable responding.

- *Response-set.* This means the systematic response patterns of respondents, independent of the content of the question. Some persons are partial to the medium range answer category of questions, for example choosing in a 7-point scale option 3 or 4. We decided not to use 5- or 7-point scales for answer options in order to avoid this problem.

  Another typical case is the *yes-person*, which means the tendency to reply positively to questions. In some cultures, acquiescence is normal, as one tries to avoid saying no which implies being impolite. A tentative yes might mean no.

  In the survey, the battery of items should include negative as well as positive formulations.

- *Non-attitude problem.* This means that respondents express views or judgements even if the con-

text is not known to them or is non-existent. It is a question of spontaneous answers or by pure chance. To counteract in interviews, one should use filter questions such as: "Do you have an opinion concerning topic x?" "Have you ever thought about this topic?" An answer category "don't know" helps here, too, as it is included in our HH survey.

2. Interviewer characteristics and interview situation

- *Interviewer characteristics.* This means the appearance and behaviour as well as sex, age and clothing of the interviewer. A general rule states that the smaller the social distance between interviewer and interviewee, the better and less biased the results.

  To reduce distance, one should pay attention to issues like choice of dress or ornaments (i.e. consider not wearing a suit or flashy jewelry while working with very vulnerable people) and treat everybody with respect and "at eye level".

- *Interview effects.* A special kind of interview effect is intentional falsification of responses by interviewers. An interview might last long, so the timespan might be shortened by filling in responses while interviewing or in the evening. As the researchers are in close contact during the research phase, teams should be switched, and have intensive briefings and debriefings. Upon returning to the main base camp, the questionnaire is handed over to the Senior or International Researcher.

- *Interview situation.* A special case of the interview situation is the presence of third persons as this might affect the answer reaction of the interviewee. Especially questions concerning family and partnership should not be asked in the presence of the marriage partner.

  A key element of successful interviewing is effective probing. This means stimulating the interviewee to give more information without pushing too much into a desired direction (Bernard, 2011, p. 161). From different probing techniques, four will be presented here:

- The *silent probe* is the most difficult technique because the interviewer must remain quiet while waiting for the informant to continue talking. The silence can be accompanied by nodding or a mumbled "uh-huh" while one focuses on one's note pad. Sometimes this technique produces more information than asking direct questions. One should not use it in the beginning of interviews when interviewees seek more guidance. Interview-beginners often avoid it because it can be risky. If the respondent does not have any further information to share, the silence may become awkward.

- The *echo probe* means simply repeating the last thing someone said and asking the respondent to continue. It is particularly useful if the interviewee describes an event or process. One says "I see [then the repetition of the sentence]. Then what happened next?" Do not use the echo probe too often!

- The *"Uh-huh" probe* encourages the interviewee to continue by just affirmative comments, for example "yes, I see" or "uh-huh" or "right" etc. If one uses this technique make sure to look directly at the interviewee and stay engaged.

- The *tell-me-more* probe is the most commonly used form of probing. One probes by saying: "Could you tell me more about that?" or "Why exactly do you say that?" Do not use it too often, for it might annoy the interviewee.

Probing can also be used in PRA sessions to stimulate discussion.

Annex 5
13. Participatory research methods

13.1 Participatory Research Approach

13.1.1 Introduction: What is PRA?

Chambers (1996) defines PRA as "a family of approaches, methods and behaviours that enable people to express and analyse the realities of their lives and conditions, to plan themselves what action to take, and to monitor and evaluate the results".

PRA helps local participants evaluate the challenges and issues they face in their local setting. It can bring together different actors who do or do not usually interact, such as local people, development practitioners and government officials (World Bank, 2011a). It provides people, who are often deprived of a say on programmes implemented in their area, an opportunity to be heard and to then develop appropriate initiatives. It can help develop solutions or actions to respond to local challenges, empowering local people. Finally, it can help generate reliable qualitative data in the framework of research (Chambers, 2008).

The aim throughout this project is to understand the relationship between changing weather patterns (specifically rainfall and shifting seasons), food security, social inequalities and different forms of human mobility, as well as assess the potential for changing weather patterns to become a major driver of human migration and displacement in coming decades. PRA methods will be essential tools for doing so. PRA methods create knowledge, contribute to understanding and facilitate discussion. They are useful and innovative tools which facilitate gathering data in the field.

PRA is used in each case study and every site location to contribute to data gathering as well as preparing the ground for community-based adaptation (CBA) which will further on be implemented by CARE.

13.1.2 Organization of the PRA exercises

The PRA team is composed of 7 national researchers: 1 Senior and 6 Junior National Researchers. The International Researcher supports the team as often as possible. The national researchers are split up into 2 teams of 2 Junior Researchers. Each team reports to the Senior National Researcher on a daily basis. The Social Mapping exercise will involve all PRA team members since it is important for everyone to get a global understanding of the local setting.

For each PRA exercise, there should be:

- 1 facilitator;
- 1 note taker (who alternates throughout the different discussion groups).

Ideally, for PRA groups with women, the facilitator (and translator, if there is one) should be female. The team holds meetings every day during the fieldwork. A typical day will consist of:

MORNING

A morning briefing in the base camp/central village moderated by the Senior National Researcher and supported by the International Researcher to discuss practical matters and make sure everything is ready for the day. One or several PRA sessions depending on the case and the arrangements of the CO

AFTERNOON

One or several PRA sessions depending on the case and the arrangements of the CO

EVENING

An evening debriefing moderated by the International Researcher to discuss the preliminary findings and the sequence of events for each method and assign roles for each team member for the following day.

The UNU researcher plays a key role in reviewing how daily notes of PRAs are entered and will support the daily analysis process

13.1.3 The role of the facilitator in PRA

One of the Junior Researchers, or the Senior National Researcher, if present at the PRA session, takes up the role of the facilitator for the PRA method. As the PRA facilitator, the researcher has an essential and crucial role in the progression of each PRA method.

The researcher needs to create a relaxed environment where each participant can freely discuss the issues brought up. The researcher is the person who acts as the "main thread" of each exercise, providing guidelines on the nature of the issues discussed as well as ensuring coherence of the whole process and at the same time stepping back to allow participants to be the main actors. Leading a PRA session can be a challenging but also very enriching experience.

The researcher´s *behaviour and attitude* are crucial to ensure the smooth progress of each session. The following points should be kept in mind while facilitating the discussion:

- Acting as a convenor and catalyst;
- Not dominating the process;
- Showing full appreciation and respect to the participants;
- Generally, not interrupting and lecturing the participants but listening attentively (in case one finds an interruption inevitable, e.g., a participant dominating the discussion or taking the discussion out of track/context, do it very carefully without hurting the feelings of any of the participants);
- Being open and flexible;
- Showing the participants the willingness to listen to them and give them time;
- Having confidence in the knowledge of local people;
- Not blaming the participants but rather taking the criticism on the side of oneself as a researcher, in case anything goes wrong during the discussion;
- Encouraging participation of all;
- Passing on initiatives to others

(Chambers, 1996; Kumar, 2002).

13.1.4 The role of the note taker

The note taker's role is essential to the research project. The note taker is responsible for recording the whole session with the recorder provided (if culturally appropriate) as well as taking notes of what was said during the session. The note taker should also act as a process observer and take notes on the atmosphere of the gathering, problems encountered during the PRA session and any other observation of the behaviour of the participants which may be relevant for the analysis.

The following should be considered during the session:

- Filling in the worksheets with the essential information about the session (date, time, number and sex of participants, etc.);
- Taking notes directly on the worksheet according to the format specified;
- Writing notes in the language that one feels most comfortable with (the local Lingua Franca or English) or another local language; it is recommended to take notes in the language spoken by participants;
- Trying to capture as much as possible – remember the notes will be essential to the outcome of the research;
- Not editing notes during the process;
- Trying to distinguish between general arguments and individual opinions in notes;
- Trying to write the notes in a clear way so that the researcher or another team member is able to go over them if needed;
- Typing the notes at the end of each day.

13.1.5 Typical challenges encountered in PRA

Below is a list of difficult situations which can happen during a PRA session and suggestions about how to deal with them.

How to ensure that the voices of the most vulnerable are present throughout the research

The voices of the most vulnerable layers of the population, such as the poor, have often been excluded from participation in processes and decisions which affect them. This research seeks to be as inclusive as possible and therefore emphasizes the importance of adapting the research in the field in such ways that makes it possible for all layers of the population to be able to participate in an open and free discussion. Researchers should be sensitive and non-judgemental about the local context of the research. In ensuring that the most vulnerable are being included, the research methods have been devised accordingly. Prior consultations with the CARE COs and national researchers should help ensure that sample groups are representative and inclusive of all structures of society. The most sensitive PRA sessions are designed to be conducted in separate groups once with women only and once more with men only.

What if a participant monopolizes the conversation, preventing others from speaking?

The facilitator should observe and identify the different dynamics of the session. If someone is preventing others by continuously speaking, the facilitator must step in politely, thank the participant for their contribution and start by pausing the session and asking if anyone would like to add anything to what has been said. Moreover, the facilitator should remind everyone that the objective of the exercise is an open conversation involving all participants. It is also essential to emphasize that everyone's contribution is crucial to the outcome. Then the floor should be given to someone who would like to speak and has not been given the opportunity to do so. However, this does not mean that the participant who has been singled out for speaking too much should be prevented from speaking during the rest of the session.

What if a participant is silent during the session?

The facilitator should observe and identify the different dynamics of the session. S/he might notice that one or more participants are not speaking. This process might be very new to people who are not accustomed to be given the opportunity to talk. For some people, it takes a lot of courage to speak up and share their opinion with others. Therefore, the facilitator should identify the "silent" participants and ask them a question related to the topic of discussion. The question must be an easy one which should not overwhelm or intimidate the participant. For instance, researchers could ask the silent participant whether he/she agrees or not with what has been said. If the participant does not want to speak, no pressure should be put on them. The facilitator is always free to use appropriate body language to give such participants confidence (e.g., smiling, nodding, etc).

13.1.6 Interpretation of statements

The goal of the project is to enhance the understanding of the local situation in relation to the research objectives. However, it is also important for each team member to distinguish between the following terms:

Facts are commonly agreed time and place-specific truths.

Opinions are a person's or a group's view on a topic.

Rumours are unsubstantial information from an unknown source. Work to convert "rumours" to "facts" for all important issues.

A *statement* is something someone said.

In contrast, an *interpretation* is what you thought about what they had to say. "CLEARLY label which is which in your notes with 'S' or 'I'. This is VERY IMPORTANT" (Ehrhart, 2002).

Triangulation

When the researcher is unsure about gathered information, they can try checking it through triangulation to ensure the nature and quality of the information. Trian-

gulation involves cross-checking information through different methods (different PRA methods, asking different sources) at least three times.

13.1.7 Materials needed for the PRA exercises

The materials required include:

- The biggest sheets of paper available;
- Paper for note taking;
- Many marker pens (in a wide variety of colours);
- Various sizes, shapes and colours of paper;
- Chalk (in case there is nowhere available to write);
- Be imaginative and use local "natural resources" such as: stones, twigs, leaves, etc.;
- Camera with batteries;
- Voice recorder (i.e. mini disc player) with batteries;
- Refreshments for participants (depending on the local context).

13.1.8 How long does a PRA session last?

Conducting PRA is a long process and there is no precise length of time each session should last. However, for researchers, it is important to keep in mind that it can last roughly between 2 and 3 hours. It is expected that a minimum of two PRA sessions will be conducted a day.

13.1.9 Short description of the different PRA methods

13.1.9.1 Transect walk

Transect is used to explore the spatial dimensions of people's realities. It provides a cross-sectional representation of the different agro-ecological zones and their comparison against certain parameters including topography, land type, land usage, ownership, access, soil type, soil fertility, vegetation, crops, problems, opportunities and solutions (Kumar, 2002, p. 100).

13.1.9.2 Resource mapping

Resource mapping is one of the most commonly used methods in PRA next to social mapping. While the social map focuses on habitation, community facilities, roads, temples, etc., the resource map focuses on the natural resources of the locality and depicts land, hills, rivers, fields, vegetation, etc. A resource map may cover habitation as well (Kumar, 2002, p. 71).

The primary concern is not to develop an accurate map but to get useful information about local perceptions of resources. The participants should develop the content of the map according to what is important to them.

13.1.9.3 Wealth ranking

Wealth ranking is used to investigate the perceptions of wealth differences and inequalities present within a community. It serves to identify and understand local indicators and criteria of wealth and well-being. In addition, it maps the relative position of HHs in a community (Kumar, 2002, p. 218).

13.1.9.4 Problem or livelihood risk ranking

Problem ranking can be used to elicit local people's perceptions of the problems they face and how they rank the magnitude of each problem. The method can be used to focus on a particular problem area, such as problems related to livelihood issues (livelihood risk ranking).

13.1.9.5 Timeline

Timeline is a method used to explore the temporal dimension from a historical perspective. Timeline captures the chronology of events as recalled by local people. The important point here is that it is not so much the history of the community, but instead, of the events of the past as perceived and recalled by the people themselves (Kumar, 2002, p. 118).

13.1.9.6 Trend analysis: historical transect

Historical transect is used for depicting changes in different aspects of natural resources. It can be described as trend analysis focused on changes in natural resources (Kumar, 2002, p. 129).

13.1.9.7 Seasonal calendar

Seasonal diagrams are used for temporal analysis across annual cycles, with months and seasons as the basic

units of analysis. They reflect the perceptions of the local people regarding seasonal variations on a wide range of items (Kumar, 2002, p. 148).

13.1.9.8 Venn diagram

A Venn diagram is a visual depiction of key institutions, organizations and individuals and their relationship with the local community or other groups. The key players in decision-making are shown. Places of important social significance and interchange can also be included (Narayanasamy, 2009, p. 110).

13.1.9.9 Mobility map

A mobility map explores the movement pattern of an individual, a group or the community. The focus is where people go to and for what. Other aspects of movement, for example the frequency of visits, distances and the importance of places visited, may also be studied and depicted. It reflects the people's perception of movement patterns and the reasons thereof (Kumar, 2002, p. 87).

13.1.9.10 Focus group discussion

"The hallmark of focus groups is their explicit use of group interaction to produce information and insights. (...) Focus group discussions generally generate a lot of qualitative data. Focus groups are significant where qualitative insights are essential to understand reality, especially from the experiences of people undergoing a problem/experiencing a phenomenon" (Narayanasamy, 2009, p. 296).

13.1.9.11 Impact diagram

The impact diagram is a flow diagram, commonly used to identify and depict the impact of an activity, intervention or event. The impact diagram not only captures the planned changes, but also takes into account other types of changes as perceived by the local people. It helps in identifying direct impact as well as indirect impact at different levels (Kumar, 2002, p. 201).

13.1.9.12 Ranking of coping strategies

Ranking of coping strategies can be used to get an overview and insight into the ways people cope with certain risks. Furthermore, it provides an understanding of how coping and adaptation strategies are evaluated by the people themselves.

13.1.10 Guidelines for applying the PRA methods

Below are all the PRA methods organized into relevant research themes. For each relevant research theme there are corresponding objectives for the research as well as each PRA method that should be used.

Each PRA method listed contains:

- a step-by-step overview and suggestions on how to organize the PRA session;
- questions to initiate discussion (when applicable);
- an illustration of what a PRA session *could* look like.

However, there is no "perfect" way to conduct a session and each one is unique in its own way. This is why guidelines instead of instructions are provided. It is up to the facilitator of the PRA session and to the participants to shape the session. The following guidelines are based on work by Kumar (2002) and Narayanasamy (2009).

Every PRA session should be conducted through the following steps:

1. Word of welcome (local facilitator)
2. Introduction of all participants
3. Presentation of the project (International/Senior National Researcher)
4. Presentation of the PRA exercise (PRA facilitators)
5. Group work
6. Outcomes discussion
7. Asking participants whether they feel the result holds true to their vision of the issue (verification)
8. Taking pictures (if possible)
9. Concluding remarks (International/Senior National Researcher)

13.1.10.1 Transect walk with resource mapping and wealth ranking

Topic: Transect walk with experts

Objective: Understand the spatial dimensions of people's realities by visiting the community. Understand local perceptions of resources and a local ranking of the relative position of households in the community.

Number of exercises, group size and selection of participants

Base camp village

- Group of local experts, the village head and a responsible person from CARE

Satellite village

- Group of local experts, the village head and a responsible person from CARE

Materials required: DIN A3 (or bigger) satellite image map of the village, markers

Facilitation and questions to initiate discussion

Step 1: Introduce yourselves, the research project and thank the participants for their attendance.

Step 2: Explain the aim of the exercise: to understand the village's special dimensions including all important natural resources, habitation, important buildings and a local classification of wealth groups.

Step 3: Walk round the village and the agricultural and livestock-breeding areas and ask the experts to explain the surroundings. Mark all important spatial dimensions on the map.

Step 4: Ask the experts to explain local indicators and criteria of wealth and well-being. Ask them to register the relative position of the HHs in the community on the map in different colours according to their own classification.

Step 5: Thank everyone for their time, participation and congratulate them on the outcome of the session.

13.1.10.2 Livelihood risk ranking

Topic: Livelihood risks and threat map

Objective: The objective of the exercise is to get an overview of issues that are considered to be a threat/risk/problem to the way people make a living and to understand the severity, frequency and preventability of the risks.

Number of exercises, group size and selection of participants

Base camp and satellite villages

4 groups (in the main village) of 5-6 persons each:

- 1 mixed group of persons whose main livelihood activity is natural resource based (agriculture, fishing, cattle herding, etc.);
- 1 mixed group of persons whose main livelihood activity is not natural resource-based;
- 1 mixed group of persons who came from HHs that are considered most vulnerable in the local context (identified by wealth ranking exercise);
- 1 group of women with mixed livelihood activities.

Materials required: Pen and markers, big sheet of paper, record cards

Facilitation and questions to initiate discussion

Step 1: Introduce yourselves, the research project and thank the participants for their participation.

Step 2: Explain the aim of the exercise: to understand what livelihood risks local people identify as being of relevance to the research area.

Step 3: Show participants the resource map that was drawn during the transect walk (if available) and ask them if they want to add anything relevant to the map. If not, ask participants to draw a map of their village which includes everything that is important for their livelihood.

Step 4: Ask participants what events, factors, processes, etc. they consider a problem for the way they make their living. Ask them to locate them on the map (if

applicable) with a red marker and ask them why these factors are problems. Note down every problem on a sheet of paper, one sheet of paper per threat.

Questions to initiate discussion: Which events or situations do you consider as problematic for your livelihood? Why do consider them a problem? How do they affect you?

Step 5: Repeat to the participants the noted points and probe if any other risks/threats/ problems are missing.

Step 6: Ask participants to write on cards the points that have been mentioned. They should note down one issue per card; if illiterate participants are present, symbols should be drawn to illustrate the issues. Either the facilitator or another participant can write the issue down next to the drawing by the illiterate participants. Explain the symbols and ensure that they are understood by all participants.

Step 7: Rank by severity → Ask participants to classify/ rank the risks/threats/problems according to severity. Start with the issue that they consider most severe. Arrange the cards accordingly. Ask for the reason why they consider one issue as more severe than the other. Give room for participants to discuss among themselves. Make sure that a consensus is reached.

Questions to initiate discussion: Among the mentioned issues, which issue do you consider as the most severe? Which issue do you consider as the second most severe? Why do you consider the issue (most severe) more severe than the issue (second most severe)? And so forth …

Step 8: Ask the participants how they cope which each risk/threat/problem.

Questions to initiate discussion: When you are affected by these risks/threats/problems, how do you cope with or adapt to them?

Step 9: Reshuffle the cards and explain that now you would like to ask them to order the issues by the frequency of occurrence.

Step 10: Rank by frequency → Ask participants to rank the risks/threats/problems according to frequency.

Figure 1: Example of resource mapping

Source: Kumar (2002).

Start with the issue that is most frequent. Arrange the cards accordingly. Give room for participants to discuss among themselves. Make sure that a consensus is reached.

Questions to initiate discussion: What issue/event is the most frequent? What is the second most frequent? … Why is issue 1 more frequent than issue 2? …

Step 11: Preventability → Ask, for each risk/threat/problem, if they are preventable or not? Ask for the reason.

Step 12: Thank everyone for their time, participation and congratulate them on the outcome of the session.

13.1.10.3 Timeline on important events and rainfall and trend analysis

1. topic: Temporal dimension of important events and rainfall pattern

Objective: The objective of the exercise is to get a general overview of events that the people consider to be important in the history and development of the village. The second objective is to get an insight into rainfall-related events.

Number of exercises, group size and selection of participants

Base camp village

- 1 group (8-10 persons) of male and female elders and middle aged persons

Materials required: Cards, chalks, chart paper, bold markers

Facilitation and questions to initiate discussion

Step 1: Introduce yourselves, the research project and thank the participants for their participation.

Step 2: Explain the aim of the exercise: a) to get a temporal overview of events that the participants consider being important for the history and development of the village; b) to get an overview of rainfall related events.

Step 3: Facilitate the beginning of the exercise by asking key questions about the history of the locality such as:

Questions to initiate discussion: When was the village established? What are the major events in the history of the village? When was the village affected by natural hazards? What major changes took place and what are the reasons for these?

Step 4: Ask participants to write on cards the major events brought up during the discussion, in bold.

Step 5: Ask participants if there are additional major events they wish to add.

Step 6: Draw a line (on the ground or paper) and ask participants to order the cards chronologically. Check whether they agree with the order.

Step 7: Launch a discussion on the mentioned events.

Questions to initiate discussion: Why do you consider this an important event? What was the impact of the event on the village?

Step 8: Ask the participants about rainfall-related events. Start with the really bad years and the really good years. Ask them if other years were similar. Try to get a nuanced assessment of as many years as possible with reference to the really bad and really good years.

Participants should then write them down (good year, bad year) on cards and arrange them next to the established timeline.

Questions to initiate discussion: When you think back about rainfall in the village, which year would you consider as the worst year? When were bad years? When were really good years? When were normal years? Was the village affected by droughts? Floods?

Step 9: Ask the participants to explain why they consider certain years as good or bad. Try to find out what rainfall related events happened (drought, dry spell, less rain, floods, etc.). Note them down with one card per event.

Questions to initiate discussion: Why do you consider that year as good/bad? What happened?

Step 10: Ask the participants to explain what impact the rainfall-related event had for the people in the village?

Questions to initiate discussion: What was the impact of the event on people in the village? What impact did it have on agriculture and food security? Was everybody equally affected?

Step 11: Ask the participants how they coped with the rainfall-related event.

Guiding question: How did you cope with the rainfall-related event?

Step 12: Thank everyone for their time, participation and congratulate them on the outcome of the session. After a break, continue with the Trend Analysis!

Note: Steps 8-12 may be conducted simultaneously for each event.

2. Topic: Temporal analysis of livelihood related trends

Objective: Understand trends and developments with regard to issues related to livelihood, particularly resource-based livelihoods.

Facilitation and questions to initiate discussion

Step 1: Introduce yourselves, the research project and thank the participants for their participation.

Step 2: Initiate the discussion on the present situation of the village and then move on to aspects of interest: vegetation cover, land availability, water, livestock, farming, yields, population growth and migration. Give room for the participants to add issues that they consider to be important.

Step 3: Write down the different points of interest on cards. Put the cards on the ground in one line. Note down the year intervals (present, 10 years back, 20 years back, 30 years back) in a column on the ground. Draw a grit.

Step 4: Pick one aspect of interest (e.g., land availability). Ask the participants to depict the situation today

Figure 2: Example of a timeline

Village: 49 Banner April 1999

1905	• Construction of irrigation tank • main crops were jowar, horse gram and a coarse cereal locally known as Korra
1931	• Drought – 20 families migrated
1940	• Private school building constructed
1945	• 10 irrigation wells excavated. Led to chances in crops cultivated later
1950	• Church built
1954	• First 'sarpanch' (chief of the local self government at the village level was elected
1960	• Drought
1969	• Gravel road laid
1977	• Electricity connection to the village
1983	• Government school buildings – one Telugu and one Urdu medium constructed
1985	• Two drinking water tanks built
1991	• Bus service started to the village
1992	• Savings and credit programme started
1995	• First woman elected as 'sarpanch'
1996	• Sanction of government housing colony for the weaker section
1997	• Intervention of BIRDS – a voluntary organization in the village • First television set in the village

Participants: Fakruddin (male, 70 years), Sorjamma (female, 50 years), Subbamma (female, about 90 years), (male, 55 years) and others.

Facilitator: Anil Kumar

Source: Kumar (2002).

Figure 3: Example of a timeline

Source: UNU-EHS (2011).

in the relevant cell using symbols, visuals, seeds, sticks, etc. Ask the participants how the situation was 10 years back, 20 years back and so on. Ask them to depict the situations accordingly in the relevant cells. Continue this process until you have covered all time periods for one aspect and then move to the next aspect following the same process.

Questions to initiate discussion: How is the situation with regard to [aspect of interest] today? Please depict it. How was the situation 10 years back? Has it changed? If so, how? Please depict the change symbolically. And so on.

Questions to initiate discussion: What are the major trends and findings? What are the causes of changes that have been established? How do they evaluate the changes?

Step 5: Facilitate discussion and analysis on the result of the trend analysis.

Step 6: Thank everyone for their time, participation and congratulate them on the outcome of the session.

13.1.10.4 Seasonal calendar and Venn diagram on food security

1. topic: Seasonal calendar regarding livelihood, rainfall and food security

Objective: Understand the different seasonal patterns with regard to livelihood activities (planting, harvesting) and related issues (rainfall, hazards, etc.) as well as food security.

Number of exercises, group size and selection of participants

Figure 4: Example of a trend analysis

Village: Aukpa-Adoka, Nigeria — June 1999

Natural resources / Period	Water	Tree	Farmland
1960 (Independence)	• Rains daily during June • No wells • Water always in the river	○○○○○ ○○○○○	○○○○○ ○○○○○
1970 (End of civil war)	• Rains at least once in 2-3 days in June	○○○○ ○○○○	○○○○○ ○○○○
1979-80 (Shagari)	• Rains at least once in 4 days in June	○○○○○	○○○○○ ○
1999 (Today)	• Rains sometimes once in 8-10 days in June • River and well dry in dry season	○○○	○○○

Participants: Adama, Elizabeth Sule, Omoja Peter, Ochesija Nichlas and Oglinulu Okpachu
Facilitators: Paul C

Source: Kumar (2002).

Base camp village and satellite villages

- 1 mixed group of men (7-10 persons) including elders and other age groups that are farmers and non-farmers
- 1 mixed group of women (7-10 persons) including elders and other age groups that are farmers and non-farmers

Materials required: Cards, chalks, chart paper, bold markers

Facilitation and questions to initiate discussion

Step 1: Introduce yourselves, the research project and thank the participants for their participation.

Step 2: Explain the aim of the exercise: to understand the different seasonal food security patterns and understand how these relate to the general activities of the research area.

Step 3: Draw a table with 12 columns and explain that these correspond to the months of the year.

Step 4: Ask participants to list the planting and harvesting seasons, times of hazards such as droughts, floods, periods of food scarcity, times of migration as well as holidays and festivals. Subsequently, ask them to mark or draw these accordingly on the table.

Questions to initiate discussion: What are the busiest months of the year? When is most agricultural work carried out by women and men? When is most non-agricultural work carried out by women and men? Which could be the most appropriate season for additional activities for men and women? What time constraints exist and why? At what times of the year is food scarce?

Step 5: When the calendar is completed, ask the group members the following questions and discuss the results with participants.

Questions to initiate discussion: What are the most important livelihood strategies employed at different points of the year? What are current strategies for coping during difficult times? Do they work? Are there any differences in the timing of seasons and events as compared to 10 or 20 or 30 years ago? Have livelihoods/coping strategies changed based on the changing seasons or events? How are decisions made on the timing of livelihood strategies?

Step 6: Discuss the possible seasonal nature of labour migration from the community.

Questions to initiate discussion: During which months of the year do people migrate mainly seasonally? What are their destinations and what work do they do there? Do the preferred periods for migration correspond with a certain phase in the plant cycle, or do the preferred labour migration times depend mainly on the income opportunities at the destination? Do people go to the same place every year or do they change destination and type of work? What are the impacts of seasonal labour migration in the village? Are food availability and income improved through seasonal migration? Who is taking care of the plants/fields while you are away? Do other villagers follow the same "calendar"? Do they travel and return during the same months?

Step 7: Thank everyone for their time, participation and congratulate them on the outcome of the session. After a break, continue with the Venn diagram!

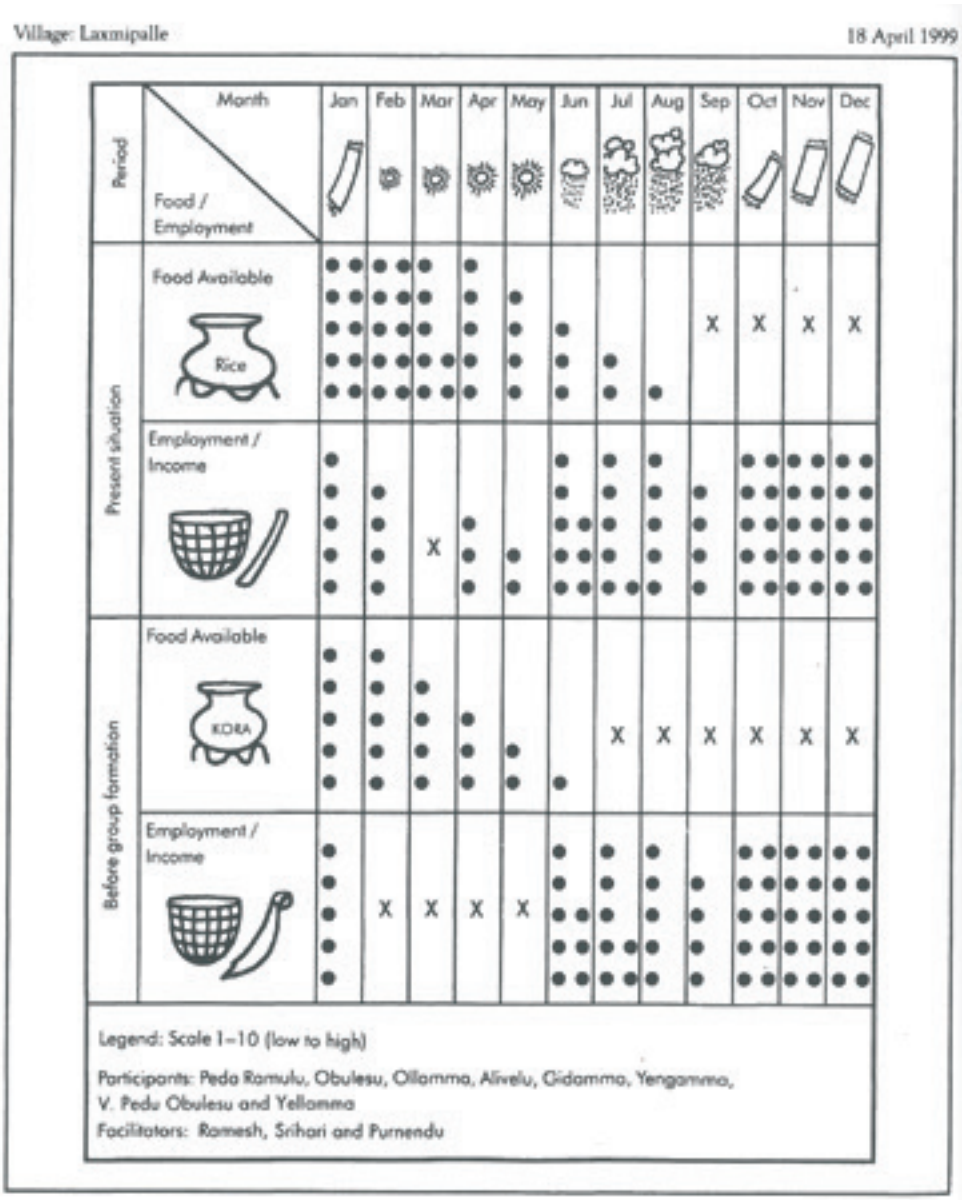
2. topic: Venn diagram – Access to food and local institutional context

Objectives:

1. To understand which actors, groups of persons, organizations and institutions (this could be formal and informal organizations, rules and laws, social norms) are most important in the community with regard to food security issues.
2. To analyse the local power structures in the communities: who has something to say, who can take decisions, who is involved in local planning processes, who is excluded, etc.
3. To evaluate different groups (i.e. women and farmers), local access to food and the differential availability of social safety nets (through a gender lens).

Materials required: Big sheet of paper, pencils and markers, glue (or if drawing on the ground: soft ground, sticks and local materials or symbols).

Figure 5: Example of a seasonal calendar



Source: Kumar (2002).

Facilitation and questions to initiate discussion

Step 1: Introduce yourselves, the research project and thank the participants for their participation.

Step 2: Explain the aim of the exercise: to understand the institutional context in relation to the food security situation of the area.

Step 3: Ask participants to identify major organizations, groups, firms or people, which they think have a strong influence in their locality, in particular with regard to the availability, access and consumption of food.

Step 4: Ask participants to represent each of these issues with different circles taking into account the importance/impact on local food security (i.e. the most important should be represented by a bigger circle and the less important in a smaller circle). For guiding questions and instructions, please refer to table 3.

Step 5: Draw the village (on paper or on the ground) in the centre and ask participants to arrange the circles taking into account distance as a representation of the access to these organizations and their services in the village (i.e. the closer, the easier to benefit from their services; the further away, the more difficult).

Step 6: Discuss the results with the participants. Why …?

Step 7: Thank everyone for their time, participation and congratulate them on the outcome of the session.

13.1.10.5 Mobility map on migration and focus group discussion

Topic: Destinations of migration and related issues

Objective: To get an overview of the migration flows from the study village.

Number of exercises, group size and selection of participants

Base camp village

- 2 separate groups (6 – 7 persons) of male and female persons with migration experience.

Satellite village

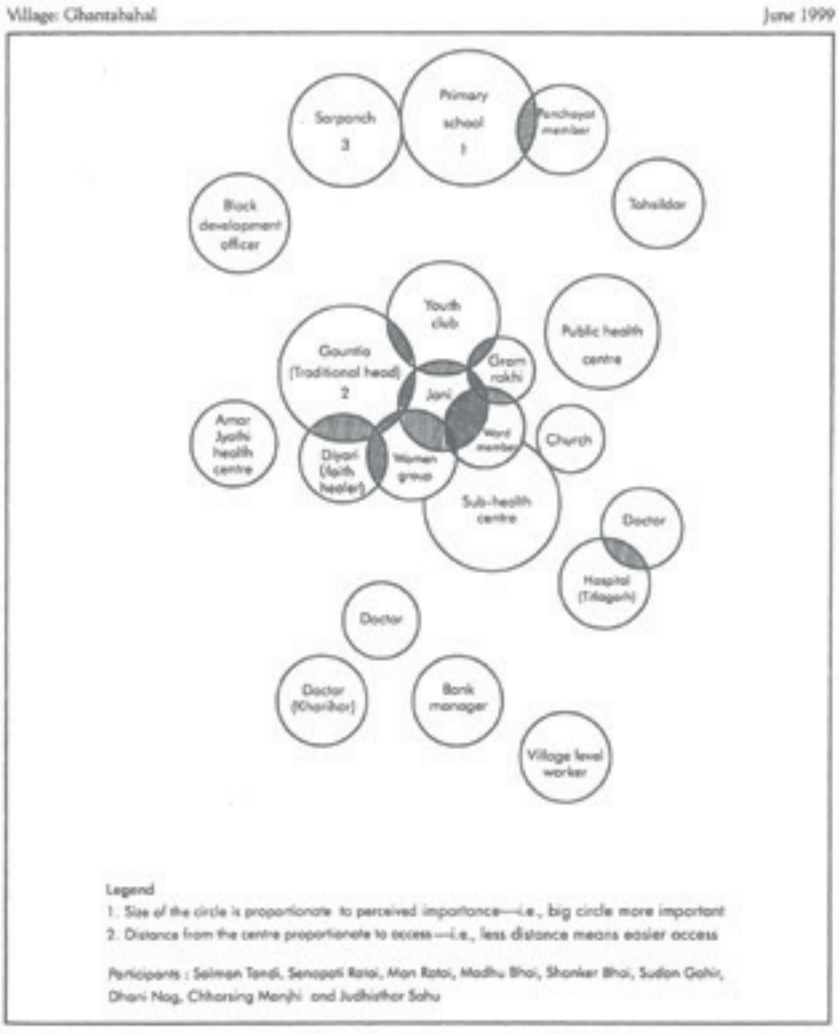
- 2 separate groups (6 – 7 persons) of male and female persons with migration experience.

Table 3: Discussion questions and instructions

Questions to initiate discussion	Instructions for PRA team
• Which organizations, groups, firms and actors are working in or with the community? (e.g., NGOs, government organizations, private companies, mosque, church, savings associations, etc.)	• Write the names of organizations, etc. on a piece of paper, in order to remember later on.
• Which organizations, firms and actors are regarded as the most important for the community, and why?	• Discuss freely.
• Which of the listed organizations, groups, firms and actors are important for the local availability of food, HHs' access to food and for consumption and nutrition issues? • Please rank their importance/influence/impact on local food security according to 5 different paper circles…	• Go with participants through the list of organizations, and ask them to rank each one of them regarding their influence on local food security.

Questions to initiate discussion	Instructions for PRA team
• Please specify what kind of services (that relate to food security) are provided by these organizations. • Why and in which regard are the respective organizations more or less important for HH food security (food availability, access, consumption)? • Is the influence rather positive or negative?	• You have paper circles in 5 different sizes. Write the name of an organization from the list in the circle with the size that the participants tell you. The bigger the circle, the greater the importance/relevance/ influence of that organization for the availability, the access and/or the consumption of food. • If possible draw a symbol on the paper circle (for illiterate people to understand). • Discuss.
• Please evaluate how easy or difficult it is to benefit from the services, information or products from these organizations, groups, firms, access. • Ask for each organization when placed on its "spot": Why is this organization easy or difficult to "access" (close/far/ for certain groups only)? • What kinds of interactions or exchanges exist between the organization and the community members? • Are the relations between these organizations and the "normal" community members rather positive or negative? • etc.	• Place the circles on the ground. • Draw the village (on paper/on ground). • Ask participants to arrange the circles with a "typical" village HH in the centre. • Closeness or distance represents the "ease of access" of a normal HH to these organizations and their services, i.e. the closer the organization is to the HH, the easier it is to benefit from its services. • Discuss.
• Which organizations work together? What kinds of interactions between them exist? • Who is involved in the organization? Are there people who influence/work in several organizations, and thereby have a great personal influence in the village? • etc.	• Discuss. • If close interactions exist, arrange the respective cards next to each other (they may also overlap)
• Who has access to these organizations' services? • Are there services which are meant for particular social groups only? • Are some particular groups or kinds of people (e.g., ethnic minorities, ultra-poor, women, youth) excluded from being members of or receiving services from certain organizations? • etc.	• Discuss these matters freely. • [If there is time – and you have taken 3-4 pictures of one completed Venn diagram – then you can also rearrange the circles according to the needs of a "particular" group, and not the "typical" HH].
• Are there specific laws, social norms, informal agreements on who can access and benefit from the services from these organizations, and who cannot? • More general, which local rules determine who is food (in) secure, who gets (no) help in times of crises?	• Write down the local "rules" that regulate people's access to the outlined services, and the general "rules of food security".

Figure 6: Example of a Venn diagram



Source: Kumar (2002).

Materials required: Cards, chalks, chart paper, bold marker, stones (or any other symbol).

Upon consent of the group, record the discussion and make handwritten notes; take pictures of the process and of the result (only if participants feel comfortable with photography).

Facilitation and questions to initiate discussion

Step 1: Introduce yourselves, the research project and thank the participants for their participation.

Step 2: Explain the aim of the exercise: to understand where and when migration is taking place and discuss migration-related issues.

Step 3: Destinations of migration → Ask participants where they as well as other village dwellers have migrated to. By seasonal migration it is meant that people leave their village of origin for less than six months per year, i.e. for employment; and by temporal migration it is meant that people leave their village of origin for more than six months per year.

Questions to initiate discussion: Where do people of your village migrate to? Does anybody also migrate internationally?

Write down the areas on cards – only one destination per card! Probe if there are any destinations not mentioned.

Step 4: Distance → Draw (on paper or on the ground) an area which represents the village and ask participants to place the cards in relation to the village. The further the destination is away from the village the further the cards should be placed from the village.

Guiding instruction: We would like to know how far the migration destinations are away from your village. Please place the cards in relation to the village, the nearer the destination, the nearer you should put the cards to the drawn village symbol.

Step 5: Number of migrants → Tell the participants that we would like to know how important (in terms of numbers of migrants) each destination is. Explain that the stones/number of people drawn displays the number of migrants. To the destination where more people are migrating to, they should place more stones/draw more people on the cards; to destinations where less people are migrating to, they should place fewer stones/draw fewer people.

Questions to initiate discussion: When you compare the different destinations mentioned, where do most people from the village migrate to, where are fewer people going? Put more stones on the places where more people are going to and fewer on the places where less people go to. Why are some destinations more popular? Less popular? [Enquire about concrete destinations].

Step 6: Activity in the destination area → Ask the participants what the migrants are doing in their migration destinations.

Questions to initiate discussion: What are the migrants doing in [name of the destination]? Why are they migrating there? How are the labour conditions and income opportunities at the different destinations? Is work on a contract basis or not? Who do you know at the destination? How do you find a job? Are you hired by employers for example? What problems do people face on the way to the areas of destination? What problems do migrants face in the destination areas?

Note the answers on the cards.

Step 7: Seasonality → Ask participants to which destinations people are migrating seasonally and temporarily. Note down on the cards.

Questions to initiate discussion: To which destinations do people migrate mainly seasonally? To which destinations do you migrate more long term? Are there mixed areas?

Step 8: Costs → Ask the participants about the costs of migrating to the different destinations. Ask them to put more stones on the destinations which have higher costs, and put less stones on the destinations which have lower costs. Ask them about what they have to pay for.

Questions to initiate discussion: We would like to know about the cost that is involved when migrating to the different areas. Put a greater number of stones on areas where the cost of migrating is higher and less stones

where the cost of migrating is low. What do you have to pay for when migrating to [destination]?

Step 9: Remittances → Ask them about the remittance flow from the different destination areas. Draw a thicker line between the village and the destination areas from areas where the amount of remittance per migrant is high, and a thinner line where the amount is lower.

Questions to initiate discussion: From which areas are migrants able to send the most money back to the village? [Draw the thickest line between this destination and the village.] From where do they send the least amount? [Draw the thinnest line between this destination and the village. Draw the other lines with reference to the thickness of these two lines.]

Step 10: Group discussion on migration-related issues → After finishing the above steps, open up the discussion on more general issues related to migration, such as: reasons for migration, impacts of migration on the areas of origin, problems related to the process of migration, problems in the areas of destination.

Questions to initiate discussion: What are the reasons people migrate from here? What impact does migration have on people who are left behind, on the social structure of the village, on agricultural production, etc.? What are the problems people are facing on the way to the areas of destination? What problems are migrants facing in the destination areas? Who performs the daily chores that were the responsibility of the migrant before leaving the HH? Do people from this village normally travel together and work in the same destination area? Please explain the reasons for travelling/not travelling together.

Step 11: Thank everyone for their time, participation and congratulate them on the outcome of the session.

13.1.10.6 Venn diagram on migration "support systems" or networks

Topic: Different kinds of migration "support systems" or networks and migration entrepreneurs

Objective: Understand the formal and informal "institutional" context of migration "support systems" or networks.

Number of exercises, group size and selection of participants

Base camp village

- 2 separate groups (7-10 persons) of male and female participants with migration experience (e.g., returned migrants)

Materials required: Large sheet of paper, pencils and markers

Facilitation and questions to initiate discussion

Step 1: Introduce yourselves, the research project and thank the participants for their participation.

Step 2: Explain the aim of the exercise: to understand the formal and informal "institutional" context in relation to the migration process.

Step 3: Ask participants to identify major institutions, organizations, people or groups of people they think have a strong influence in their locality with regards to migration (for guiding questions and instructions, please refer to table 4).

Step 4: Write on each circle each of these points taking into consideration the importance according to the size of the circle (i.e. the most important should be written in a bigger circle and the least important in a smaller circle).

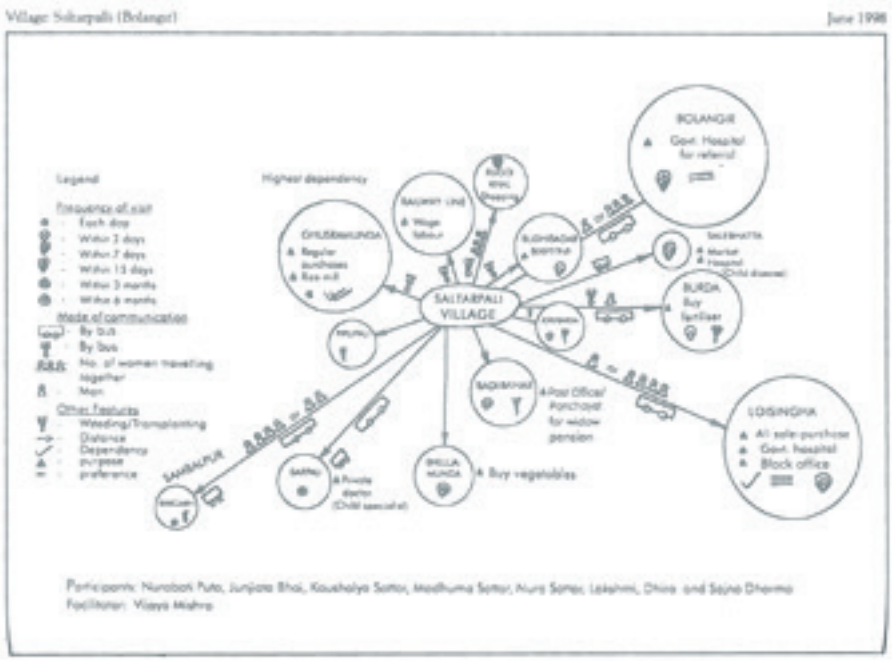
Step 5: Draw the village (on paper or on the ground) and ask participants to arrange the circles taking into account distance as a representation of the influence of each on the village (i.e. the closest to the village has the biggest influence on the village and the furthest away has the least influence on the village). Tell participants to also consider interaction between each institution by allowing for contact between each of these.

Step 6: Discuss the results with the participants.

Step 7: Thank everyone for their time, participation and congratulate them on the outcome of the session.

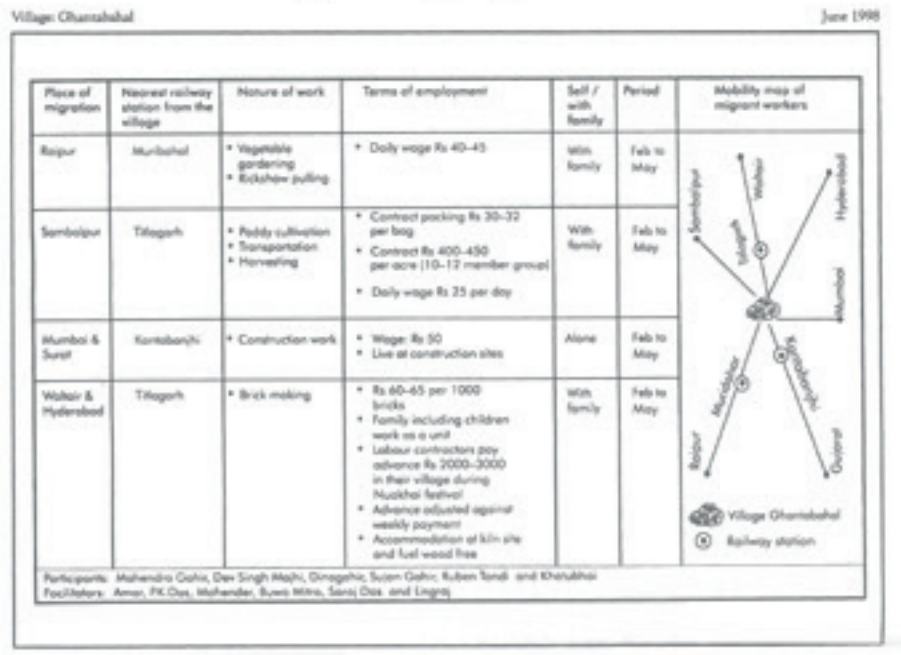
Step 8: Take pictures of the finished Venn diagram(s) and stick the circles to the paper with glue.

Figure 7: Example of a mobility map



Source: Kumar (2002).

Figure 8: Example of a mobility map of migrant workers and matrix



Source: Kumar (2002).

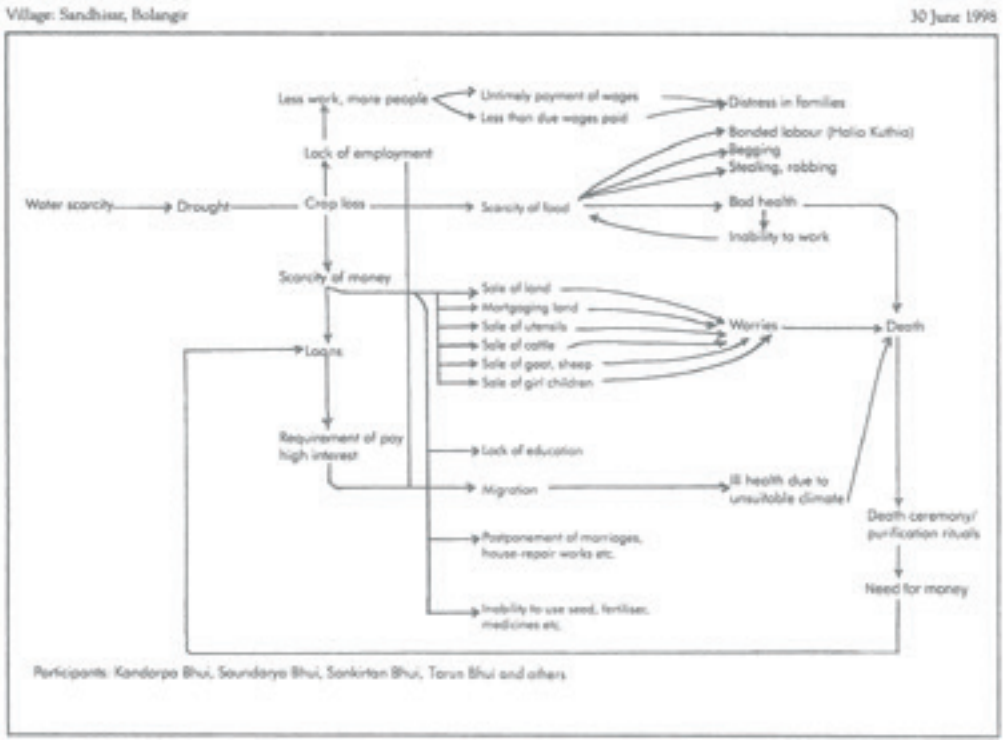
Table 4: Venn diagram – Discussion questions and instructions

Questions to initiate discussion	Instructions for PRA team
• With regards to internal migration, what actors or groups affect, trigger or are generally important for the internal migration of people from the community (these may include relatives living in the city, NGOs, religious groups, migration entrepreneurs, employees, etc)?	• Write the names of organizations on a piece of paper, for you to remember.
• Which actors or groups do you regard as the most important for migrating within your country, for instance to the capital city, and why? • Which actors or groups influence your decision to migrate within your country, for instance to the capital city, and how? • Why are these actors or groups important or relevant? • What kind of services (that relate to migration) are provided by these actors/organizations (e.g., information about migration opportunities, facilitation of transport, helping with finding accommodation and/or work at destination, financing the migration, etc.)?	• Go with the participants through the list of actors and organizations, and ask them to rank each one of them regarding their importance for internal migration. • You have paper circles in 5 different sizes. Write the name of an organization from the list in the circle with the size that the participants tell you. The bigger the circle, the greater the importance/relevance/influence of that actor/organization for the migration project. • If possible draw a symbol on the paper circle (for illiterate people to understand). • Discuss.
• Evaluate how easy or difficult it is to benefit from the assistance, services or information of these actors/groups? • Point to each organization when placed on its "spot": Why is this help/assistance of that actor/group easy or difficult to "access" (close/far)? • Why is there reliance on the services/assistance of these actors/groups in particular? • What are the economic and social costs of migration in general? • What kind of interactions/exchanges exist between these actors/groups and the community members? • Are these largely positive or negative relations?	• Place the circles on the ground. • Draw the village (on paper or on the ground) and ask participants to arrange the circles. In the centre is a "typical" HH in the village. • How close or distant a circle is to the HH represents the "ease of access" to these organizations and their services (i.e. the closer the organization is to the HH, the easier it is to benefit from its services). • Discuss.
• Which actors/organizations work together? What kind of interactions exist between them? • Who is involved in the respective groups/ organizations?	• Discuss. • If close interactions exist, arrange the respective cards next to each other (they may also overlap).

Questions to initiate discussion	Instructions for PRA team
• Who has access to assistance/help/the services of these actors/organizations? • Are there services which are meant for particular social groups only? • Are some particular groups or kinds of people (e.g., ethnic minorities, ultra-poor, women, youth) excluded from migrating within the country? If yes, for what reason? What hinders them from migrating? Do they get help/assistance from others to migrate? If yes, by whom? If no, why not? • Are there particular times when people rely solely on the help of these actors/groups to migrate (e.g., a particular season, in times of economic, political or ecological crises, etc.)?	• Discuss these matters freely. • If there is time – and you have taken 3-4 pictures of one completed Venn diagram – then you can also rearrange the circles according to the needs of a "particular" group, and not the "typical" HH.
• Are there specific laws, social norms, informal agreements on who can access and benefit from the help/services from these actors/groups? • More generally, which local rules and norms determine who can migrate (where to?), and who cannot?	• Write down the local "rules" that regulate people's access to the outlined migration services or networks, and the more general "rules of migrating" from the community.
• If not yet discussed, who can provide assistance/ help to facilitate migration? Ask explicitly: • When did the first people from this village migrate (internally)? • How is the relationship between community members and migrants from this community, at present? • What kinds of interactions exist between the migrants and the families in the community (i.e. remittances, information, cultural change, technology, etc.)? • How has their migration changed things in the community? How have the relations or interactions changed between them and the community?	• Discuss these matters freely. • If needed, add cards, arrows, boxes on the Venn diagram.
	• Take pictures of the finished Venn diagram and stick the circles to the paper with glue.

Important: After a break, repeat the whole Venn diagram exercise, but now explicitly talk about international labour migration.

Figure 9: Example of an impact diagram



Source: Kumar (2002).

13.1.10.7 Impact of rainfall variability diagram and focus group discussion on coping and adaptation

Topic: Impact of rainfall variability

Objective: To understand how different events of rainfall variability have an effect on the people in the village and how they cope with them, one must understand inter-linkages of different effects.

Number of exercises, group size and selection of participants

Base camp village

- 2 separate groups (6-7 persons) of men and women who are farmers, pastoralists, etc.

Satellite village

- 2 separate groups (6-7 persons) of men and women who are farmers, pastoralists, etc.

Materials required: Cards, chalks, chart paper, bold marker

Facilitation and questions to initiate discussion

Step 1: Introduce yourselves, the research project and thank the participants for their participation.

Step 2: Explain the aim of the exercise: to understand what impact the most severe rainfall-related event (such as drought or flood) has on the village.

Step 3: Discuss with participants what rainfall-related events have affected them in the past and which they consider the most severe. Use this event for further discussions. Ask participants to draw the event and to write it down in bold letters on a card. Put it in the centre. Ask the participants to concentrate on this event.

Step 4: Ask the participants the possible direct and indirect impact of the particular event. The impact could be positive and negative. Write down the answers.

Questions to initiate discussion: What direct impact did the event have? What indirect impact did it have?

Step 5: Read out the list of the identified events and ask them whether issues are missing, need to be added or deleted.

Step 6: Ask the participants to write down the points on cards. One point per card.

Step 7: Lay the impact cards on the ground around the topic card.

Step 8: Ask participants what linkages and relations the cards have. Ask the participants to rearrange the cards and link the cards with lines drawn with chalk, showing the linkages. Encourage participants to add new impacts at any time and to make modifications.

Questions to initiate discussion: How are different impacts related?

Step 9: Ask participants to explain the diagram. Ask questions if issues are unclear.

Repeat the exercise: One time for "normal events" and one time for "critical events" that are related to negative rainfall!

Step 10: Thank everyone for their time, participation and congratulate them on the outcome of the session.

13.1.10.8 Ranking of coping strategies with regard to rainfall variability

Topic: Coping with rainfall variability

Objective: To understand how people cope with rainfall variability and how the coping strategies are assessed.

Number of exercises, group size and selection of participants

Base camp village and satellite villages

- 1 mixed group (women and men) of farmers, pastoralists/people whose economic activities do depend much on rainfall (6-8 persons)
- 1 mixed group (women and men) of non farmers/ people whose economic activities do not depend much on rainfall (6-8 persons)
- 1 mixed group (women and men) of the most vulnerable (6-8 persons)

Materials required: Cards, bold markers

Facilitation and questions to initiate discussion

Step 1: Introduce yourselves, the research project and thank the participants for their participation.

Step 2: Explain the aim of the exercise: to understand how people cope with negative rainfall-related events (such as droughts) and rainfall variability.

Step 3: Ask participants how they cope with rain failure, shifting seasons, dry spells, etc. Note it down. Read the noted points and ask if participants want to add, modify or delete any points. Ask them to draw and write down the points on cards – one per card.

Questions to initiate discussion:

1st round: What do you do? Are there any subtle changes in rainfall patterns that affect your livelihood? How do you manage?

2nd round: What do you do when there are extreme rainfall-related events, such as drought, a dry spell, etc.? How do you manage?

Step 4: Severity → Draw on three cards facial expressions displaying a continuum from happiness (laughing) to sadness (crying) [needs to be prepared in advance]. Put the cards down and explain that the facial expressions are displaying levels of severity. Ask the people what coping strategy they consider very severe, severe, not as severe and not severe. Ask them to put the card next to the facial expressions. Ask them why they rate coping strategies in that order.

Questions to initiate discussion: How severe do you consider [coping strategy] to be? What is the reason?

Step 5: Frequency → Reshuffle the cards. Ask the participants which strategies are applied most often, second most often and so forth. Order the cards accordingly – please rank the most frequent strategy on top.

Questions to initiate discussion:

1st round: What is the strategy that you apply most often? Second most often? And so forth.

2nd round: Which strategy did you or would you choose first, in case there was a drought, a flood, etc.?

Step 6: Thank everyone for their time, participation and congratulate them on the outcome of the session.

Figure 10: Example of a coping ranking

Source: Sakdapolrak (2008).

13.1.10.9 Focus group discussion on future strategies

Topic: Future strategies of young people

Objective: Understand how younger people in the community see their own future; what options they see for themselves in their home community; what attitudes they have towards migration; whether they want to migrate (where to) or not; and, how they would act in times of further agro-ecological change or a severe livelihood crisis?

Number of exercises, group size and selection of participants

Base camp village: 1 mixed group (women and men) of young people

Material required: Ask for permission to record the discussion and note as much as possible.

Facilitation and questions to initiate discussion

- How do you see your future? What are your dreams, ambitions, goals?
- Do you think that you are going to live here in this village and do the same kind of work that your parents did, in 5 or 10 years? What else then do you intend to do either here in your home community or somewhere else?
- Do you want to finish school or start working early?
- Do you want to migrate to another place in the future?
- If yes, what do you think would be the main reasons for you to migrate?
- Do environmental or rainfall-related problems (e.g., droughts, erratic rainfall) play a role in your decision to migrate?
- If livelihood conditions worsened in the future, would you consider migration of the whole family an option? What would have to happen for you to leave the village temporarily or permanently?
- What characteristics make a person a good candidate for migration?

- When you think about migration destinations, does your neighbouring HH's behaviour affect you? If so, how?
- To whom do you talk to about migration decisions and strategies apart from your HH members?
- Talking about migration with others, what specific information is interesting for you?
- What destinations would you consider heading to?
- What kind of work would you like to do?
- How would you finance your migration?
- Which networks do you possess which could help you with your migration process? Are there people who could help you move to a new place? In what form would you receive such help (e.g., financial, networking…)?
- How much does migration to common destinations cost?
- If you do not intend to migrate, and stay in this area, how would you make sure that your family has enough food? Which strategies would you apply to improve the livelihood conditions of your family?

Figure 11: Interview situation (Mexico)

Source: UNU-EHS (2010).

13.1.11 Worksheet template for note taking

Title of PRA Session:	Place:	Date and Time:
Name of note taker:		Name of facilitator:
Number of participants:		Number of female and male participants:
NOTES:		

13.2 Household Survey

"Where the Rain Falls" household survey

Consent Seeking

Dear Participant,

You have been randomly selected to be part of this survey. The information you provide will only be used to learn about the relationship between changing rainfall patterns, food security and migration. We would like to understand better how people react when changing weather patterns affect their livelihood.

The survey is conducted by the United Nations University (UNU-EHS), Germany, and CARE International. This survey is currently taking place in eight different countries.

This household survey will take approximately 60-90 minutes and will be carried out today, if you agree to participate. We will ask questions about you, your household and your household members.

The information you provide is totally confidential and will not be disclosed to anyone. It will only be used for research purposes. Your name and other personal information will be replaced with a code that will be used to identify your answers without using your name. Your participation is voluntary and you can withdraw from the survey if you want to do so. You can choose not to answer particular questions in the survey. If you have any questions about this survey you may ask me or contact (UNU-EHS and CARE International + contact addresses) or (Principal Investigator at site).

Dear interviewer:

Treat the interviewee with respect and keep in mind that you will learn from him or her, because s/he is an expert in her/his specific living conditions. Please listen carefully to the participant's answers and encourage her/him to tell you her/his point of view. Please withhold your own opinion, even if you know the living conditions of the area very well.

Please read the question clearly and loudly enough. Please read the exact words written for each question. Do not change the wording you use for each question. In case the question is not clear to the respondent, please read the question a second time; if the question is still not clear, please explain it again, without influencing the answer of the respondent.

When asking open questions, wait for the participant's answer and fill in. In case they do not reply, explain and present the different options. Please note the answer as detailed as possible. When asking closed questions, please read the different options and let the participant reply, in case they do not reply, explain and present the diffrent options.

Please sign the following statement before you fill out the questionnaire.

I hereby confirm that while filling out this questionnaire I follow and apply the ethical guidelines described in the research protocol attached to this questionnaire.

Date Signature

1. Interview information

Household ID:

Date of interview: _ _ _ / _ _ _ / _ _ _ (DD/MM/YY)

Name of community:

Questionnaire number[2]: _ _ _ _ _

Data entry person:

Data entry date:

Comments/Notes by the interviewer:

Name of interviewer:

Name of location (GPS-waypoint, if possible):

Time of interview: _ _: _ _ to _ _: _ _ (HH:MM)

Interviewee name (optional), sex and age:

Household ethnicity (s):

Religion:

Household mother tongue(s):

If the interview did not take place, please note in your field pocketbook all necessary information, such as date, name and reasons. If you rescheduled the interview, please note this too.

[2]**NOTE FOR INTERVIEWERS:** The questionnaire number has 7 digits: the first one for the country, the second one for the village and the last three for the household number. For example, if Thailand is country no.3 (03) and the interview is taking place in village no.2 (02), the questionnaire answered by household no. 15 will be questionnaire number 03.02.015.

Table 1 – Household[3] member information[4] (all present and absent members that contribute to the resources of the household plus their children)

1.01	1.02	1.03	1.04	1.05	1.06	1.07	1.08	1.09	1.10	1.11	1.12
ID[5]	**First name or full name**	**Relationship to household head**	**Sex and age**	**Year of birth[6]**	**Place of birth**	**Marital Status**	**Years of education**	**Migration type[7]**	**Migration Status**	**Present/ absent in household currently**	**Employment category[8]**
	(OPTIONAL)	1= head 2= husband/wife 3= son/daughter 4= father/mother 5= brother/sister 6= uncle/aunt 7= cousin 8= niece/nephew 9= children in law 10= parent in law 11= other (specify)	1= M Age 0 – 2 3 – 14 15 – 64 >65 2= F Age 0 – 2 3 – 14 15 – 64 >65		1= this village 2= elsewhere in the region 3= elsewhere in the country – please specify region 4= abroad, please specify country	1= single 2= married 3=consensual union 4= widowed 5= divorced 6= separated 7= other (specify)		1= seasonal 2= temporal	1= never migrated 2= current internal 3= current international 4= returned internal 5=returned international	1= present 2= absent (for more than a month)	1= farmer, independent 2= fisherman 3= cattle raiser 4= farm worker 5= road construction worker 6= construction worker 7= trade/retail 8= transport 9= household services 10= community services 11= student 12= unemployed 13= daily labourer 14= textile worker 15= other

[3]**Household definition:** A household can be defined as "a group of people who are generally but not necessarily relatives, who live under the same roof and normally eat together, including individuals who live for part of the year or the entire year elsewhere, without having established their own family (with spouse and/or children) in that other place" (De Haas, 2003, p. 415).

[4]**NOTE FOR INTERVIEWERS:** Please record in this order: household head first, then the spouse; then, all the children (from oldest to youngest); lastly, all other persons who live in the household.

[5]Use the questionnaire number and add 01, 02, 03 etc. for each person.

[6]Remark: If the exact year of birth is unknown, ask if a well-recollected event took place at that time to help memory and time framing.

[7]**Definitions: Seasonal migration** can be defined as yearly recurring migration over periods of less than six months per year. Temporal migration can be defined as a move from the household of origin during at least six months per year to a place within the country or abroad with the purpose of working, studying or family reunification, over a distance that forces the concerned person to settle at the destination to spend the nights. Return migration is defined as the return of a once migrated household member over a sustained period of more than a year. Current internal migration means that a person is actually migrating within the country as a seasonal or temporal migrant. Current international migration means that a person is actually migrating internationally.

[8]**NOTE:** People can fall under more than one employment category. Note all categories that are mentioned.

2. Economic activities									
201 Do you own land?	1. Yes	2. No. If no, continue with question 207.							
202 If yes, please specify how much land per type you own. If not known, please tell us the number of small/medium/large fields. (multiple options possible) Note: Please write down the number of acres they own.									99. DK[9]
203 If yes, how do you use your own land? (multiple options possible)	1. Crops. Please specify	2. Pasture. Please specify	3. Forest	4. Not planted	5. Other (specify)				99. DK
204 If yes, what type of land do you own? (multiple options possible)	1. Irrigated	2. Wetland	3. Dry land	4. Grazing/ pasture	5. Orchard	6. Other (specify)			99. DK
205 If owned, how did you acquire it? (multiple options possible)	1. Savings	2. Inheritance	3. Loan from bank	4. Loan from family	5. Loan from friends	6. Other (specify)			99. DK
206 Do you employ people to work on your land?	1. Yes. If yes, please estimate the total number of man days per year.								2. No.
207 Do you work on somebody else's land? Please specify									
208 Do you work on shared land?	1. Yes.								2. No.
209 If you do not own the land that you use, what is the legal status of it? (multiple options possible)	1. Communal		2. Rented		3. Other (specify)				99. DK
210 In the last 5-10 years, did your crop yields decline or increase?	1. Declined a lot	2. Declined	3. Remained the same	4. Increased	5. Increased a lot				99. DK
211 If 1 or 2 (210), what were the reasons for the declining yields? Please specify. (multiple options)	1. Droughts	2. Floods	3. Seasonal shifts in rainfall	4. Insect invasion (e.g., locusts, grass hopper)	5. Diseases	6. Lack of capital for investments	7. Lack of labour power	8. Other. Please specify	99. DK
211a What is the main purpose of your crop production? (choose one option)	1. Household consumption		2. Sale of products		3. Feed for animals		4. Other		
212 Do you own livestock?	1. Yes		2. No → Please go to 216				99. DK		
213 If yes, what type? (please specify how many per type)	1. Cows	2. Pigs	3. Horses	4. Donkeys	5. Oxen	6. Chicken	7. Goats/ Sheep	8. Other (specify)	99. DK

[9]DK means „don't know"

2. Economic activities								
214 How dependent are you and your household on consumption from your animal production?	1. Completely dependent	2. Somehow dependent	3. They are only an asset we own (e.g., for future emergencies….etc.)	4. Not dependent	99. DK			
214a What is the main purpose of your livestock raising? (Choose one option)	1. Household consumption	2. Sale of products	3. Other					
215 How financially dependent are you and your household on your animals?	1. Completely dependent	2. Somehow dependent	3. They are only an asset we own (e.g., for future emergencies….etc.)	4. Not dependent	99. DK			
216 If you owned livestock in the last 5-10 years, did the number of animals/livestock decline or increase?	1. Declined a lot	2. Declined	3. Remained the same	4. Increased	5. Increased a lot	99. DK		
217 What were the reasons for the declining animals/livestock? Please explain.	1. Droughts	2. Animal diseases	3. Seasonal shifts in rainfall	4. Lack of capital for investment	5. Lack of labour power	6. Floods	7. Other. Please specify	99. DK
218 Do you engage in fishing?	1. If yes, as a labourer or do you own a fishery?							2. No
219 If no, do you work in someone else's fishery? Please specify for whom and where	1. Yes. Please specify							2. No
220 Where do you go fishing?	1. In public ponds	2. In rivers	3. In lakes	4. In the ocean	98. NA[10]			
220a What is the main purpose of your fish production? (Choose one option)	1. Household consumption	2. Sale of products	3. Other					
221 How dependent are you and your household on your fish production for your food consumption?	1. Completely dependent	2. Somehow dependent	3. Not dependent at all					
222 How financially dependent are you and your household on your fish production?	1. Completely dependent	2. Somehow dependent	3. They are only an asset we own (e.g., for future emergencies….etc.)	4. Not dependent at all	99. DK			
222a Do you own fruit trees? If yes, please specify which ones and how many	1. Yes							2. No

[10]NA means "not applicable" (if the option NA is missing, please add it).

2. Economic activities			
222b How much income do you derive from fruit tree products each year?	1. (local currency)	2. No income	98. NA
222c Do you own an agricultural garden next to your house? If yes, what do you plant?	1. Yes		2. No
222d Do you derive any income from your homestead gardening? If yes, how much?	1. (local currency)	2. No income	98. NA

2. Livelihood-related issues								
223 Which of the following situations did your household face in the last year? (multiple option possible)	1. Lower income	2. Inadequate food intake/ hunger	3. Ill-health of household members	4. Family problems	5. Conflicts within the community	6. Natural disasters	7. Animal diseases (specify)	8. Other. Please specify
224 Which of the following situations did your household face in the last 5 years? (multiple options possible)	1. Lower income	2. Inadequate food intake/ hunger	3. Ill-health of household members	4. Family problems	5. Conflicts within the community	6. Natural disasters	7. Animal diseases (specify)	8. Other. Please specify
225 Has your household ever been adversely affected by one or more of these natural events? (multiple options possible)	1. Drought	2. Flood	3. Heavy storms	4. Landslide	5. Mudflow	6. Other. Please specify	7. Never been affected by any natural event	
226 If yes, how was your household affected by natural events? (multiple options)	1. House or other property damaged	2. Crops affected/ destroyed	3. Death of livestock	4. Loss of livelihood	5. Other	99. DK		

Instruction for interviewer: Before talking about changes in rain and weather, please ask for important "landmark events" that happened during the last 10-30 years to increase the reliability of answers to the next questions on changes over time.

It should be events that are well known to the interviewee, such as important personal events like marriage, birth of a child, death of a relative, a significant new job. They might also be connected to natural disasters, election, war or any other historical event that is relevant for the interviewee.

Please note personal "landmark events" here as detailed as possible with time-frame:

3. Rainfall variability						
300 In the last 30 years, how many years did you live in this district? If you were not living here, skip the following questions (Nos. 301-305)						
301 Did you observe changes in rainfall over the last 10-20 years, compared to the situation today (case by case)? Please explain.	1. Yes. Please explain			2. No		
302 In this place, have you experienced more droughts or dry spells over the last 10-20 years than before?	1. Yes, a lot more	2. Yes, more	3. About the same as before	4. No, less than before	5. Did not existed at all	
303 In this place, have you experienced more floods over the last 10-20 years than before?	1. Yes, a lot more	2. Yes, more	3. About the same as before	4. No, less than before	5. Did not existed at all	
304 Have you experienced more heavier rain falls over the last 10-20 years than before?	1. Yes, a lot more	2. Yes, more	3. About the same as before	4. No, less than before	5. Did not existed at all	
305 In this place, have you experienced an increase in other extreme weather events over the last 10-20 years than before?	1. Yes, a lot more	2. Yes, more	3. About the same as before	4. No, less than before	5. Did not existed at all	
306 How many seasons do you have in a "regular year" now?					99. DK	
307 How many seasons did you have 10-20 years ago?					99. DK	
308 In this place, have you experienced changing rainfall patterns in the seasons over the last 10-20 years?	1. Yes			2. No	99. DK	
309 If yes, what kind of changes? (multiple options possible)	1. Longer dry spells	2. Shorter dry spells	3. More dry spells at unexpected times	4. Longer rainy season	5. Shorter rainy season	6. More rain at unexpected times	7. Other. Please specify

3. Effect of changing rainfall on livelihood and food security

310 Does changing rainfall affect your food production?	1. Yes, a lot	2. Yes, but only a little	3. No, it does not affect us	98. NA	99. DK	
311 If yes, in what form?	1a. Decline of crop production 1b. Increase in crop production	2a. Decline of fodder production 2b. Increase in fodder production	3a. Decline of pasture plants (e.g., grass) 3b. Increase in pasture plants	4a. Water shortage for animals 4b. More water availability for animals	5a. Less fish production due to shallow rivers/ canals 5b. More fish production	6. Other. Please specify
312 Does changing rainfall negatively affect the economic situation of your household?	1. Yes, a lot	2. Yes, but only a little	3. No, it does not affect us	98. NA	99. DK	
313 If 1 or 2, in what form?	1. Decreasing income due to declining yields	2. Decreasing income due to declining animal production	3. Increasing food prices in the market	4. Substituting market products for subsistence production	5. Less sales of fish due to shallow rivers/canals	6. Other. Please specify 99. DK
314 Does changing rainfall affect the drinking water availability in your household?	1. Yes, a lot	2. Yes, but only a little	3. No, it does not affect us	98. NA	99. DK	
315 If 1 or 2, in what form?	1a. Complete drying out of water wells 1b. More water wells	2a. Less availability of canal/river water 2b. More water availability in canals/ rivers	3a. Only water of lower quality available 3b. Better quality water	4. Other. Please specify	99. DK	

4. Food security, consumption and livelihood (Note: Please ask questions 408 and 409 before 405)							
401 What is the major food crop that you grow on your own?	→ List of crops(suggested by CARE COs)				98. NA	99. DK	
402 Do you produce food for your household consumption only?	1. Yes		2. No			98. NA	
403 Do you sell parts of your food production?	1. Yes Please specify which products		2. No			98. NA	
404 How much of your food production did you sell last year?	1. Everything (100%)	2. Most (75%)	3. Half of it (50%)	4. Only a small amount (25%)	5. Hardly anything	98. NA	99. DK
405 Which food products do you largely buy from the market?							
407 How much money do you spend in a "regular" week on food? (amount = local currency)						98. NA	99. DK
408 How much money do you spend in a "regular" week on buying major food/meals from the market? (amount = local currency)						98. NA	99. DK
409 Throughout the year, how much of the total food that your household consumes is purchased on the market? Please estimate:	1. Everything (100%)	2. Most (75%)	3. Half of it (50%)	4. Only a small amount (25%)	5. Hardly anything	98. NA	99. DK
410 How many meals do adults of your household eat on a "regular" day?						98. NA	99. DK
411 How many meals do children of your family eat on a "regular" day?						98. NA	99. DK

4. Food security, consumption and livelihood (Note: Please ask questions 408 and 409 before 405)												
412 Are there any months of the year where you regularly do not have enough food: a) from your own production and/or	Jan.	Feb.	March	April	May	June	July	August	Sept.	Oct.	Nov.	Dec.
b) not enough money to buy food? If yes, please explain circumstances (multiple options possible)	Jan.	Feb.	March	April	May	June	July	August	Sept.	Oct.	Nov.	Dec.
413 Within the past year, were there specific months in which you did NOT have enough food to meet the household's food needs?	1. If yes, which months? What did you do?										2. No	

5. Food consumption						
Relative frequency						
501 In the past, if there were times where you have not had enough food or enough money to buy food for 7 successive days, how often did your household:	All the time/ every day 7	Pretty often 4-6 days 5	Once in a while 2-3 days 2.5	Hardly at all 1 day 1	Never 0 days 0	98. NA
a. Rely on less preferred and cheaper foods?						
b. Borrow food, or rely on help from a friend or relative?						
c. Limit portion size at mealtimes?						
d. Restrict consumption by adults in order for small children to eat?						
e. Reduce number of meals eaten in a day?						
f. Reduce number of people eating at home (e.g., by sending a child to eat with relatives or friends)						
502 Has your household experienced food shortages in the last 5-10 years? If yes, please explain the cause, the frequency and how you dealt with the situation.	1. Yes	2. No	98. NA			

6. Coping and adaptation strategies (production, finance, etc.)

601 In the last 5-10 years, if there have been times when you did not have enough food or money to buy food, did you… (multiple options possible)	1. Modify food production to increase output (if yes, go to 602)	2. Reduce household food consumption (if yes, go to 603)	3. Diversify activities in order to increase alternative income (if yes, go to 604)	4. Sell household assets (if yes, go to 605)	5. Migration of household members (if yes, go to 606)	6. Reduce expenditure (if yes, go to 607)	7. Rely on external help (if yes, go to 608)	8. Other options. Please specify.
602 If you ever had to change your food production to manage a difficult situation, did you… (multiple options possible)	1. Plant other crops or varieties of same crops. Please specify	2. Use more fertilizer	3. Introduce another mode of irrigation. Please specify	4. Use more labour power, machines, etc.	5. Implement another strategy, please specify			
603 If you ever had to reduce food consumption did you… (multiple options possible)	1. Change your diet (e.g., buy cheaper food items, collect wild food)	2. Reduce food consumption (e.g., number and/or size of meals)	3. Send a household member somewhere else[11]	4. Other strategy, please specify				
604 If you ever had to increase alternative income sources in the village did you… (multiple options possible)	1. Switch to alternative sources of income (e.g., produce handicraft)	2. Increase number of family members contributing to household income	3. Expand existing livelihood activities (e.g., do more livestock breeding, trading, fishing)	4. Other strategy, please specify				
605 If you ever had to sell household assets what did you sell… (multiple options possible)	1. Land. Please specify	2. Agricultural products	3. Livestock and/or livestock products	4. Car/motorbike/tractor/bicycle. Please specify	5. Jewelry	6. Other. Please specify		
606 If one or more household members (including yourself) had to move to another place did you/they… (multiple options possible)	1. Move seasonally	2. Move temporarily	3. Move to rural areas	4. Move to urban areas	5. Migrate to a different country (internationally)	6. Other. Please specify		
607 If you ever had to reduce household expenditure did you … (multiple options possible)	1. Take children from school	2. Do not go to doctor, or reduce other health expenditures	3. Reduce purchase of goods that are considered non-essential (e.g., drinks, cigarettes)	4. Other strategy, please specify				
608 If you ever had to rely on external help did you… (multiple options possible)	1. Borrow money or food from other family members in the village	2. Borrow money or food from neighbours/ friends in the village	3.Get government support. If yes, please specify what kind.	4. Get NGO Support. If yes, please specify what kind.	99. DK 98. NA			

[11]Remark: For example send a child to relatives or friends

6. Natural disasters and coping							
609 What types of disasters affected your household in the last 12 months? (Check all that apply, if not affected skip 610)	1. Flood	2. Drought	3. Storm/wind/ excessive rain	4. River erosion	5. Cold wave	6. Landslides	7. None
610 What did you do to cope with this disaster?	1. Sold productive assets	2. Sold land	3. Formal loan (bank, NGO)	4. Adjusted food purchases/ meals	5. Took a child out of school	6. Migrated temporarily	7. Other

Table 2 – Migration patterns of all household members (male and female). Have you or any other household members moved to a different place before, but still belonged and contributed to the household? Please note: Once a member of the household established his/her own household and does not contribute to the household income any more, he/she does not count any more as a member of the household we are talking about.

1.01 **ID**[12]	1.02 **First or full name of migrant** (optional)	1.10 **Migration Status**[13] 1= current internal 2= current international 3= returned internal 4= returned international	7.01 **Main destination(s)**[14] **including location** (as detailed as possible; what is the distance from the household of origin?) 1= if internal, which region 2= if internation-al, which country	7.02 **Trips**	7.03 **Year/month of departure**		7.04 **How long did he/ she stay? (Please specify in months)**	7.05 **Main reason for moving** 1= work 2= education 3= marriage 4= other. Please specify on the reason	7.06 **Main economic activity during first and last trip (please specify)**	7.07 **Main economic activity before moving**
					Year	Month	Specify in months			
				First trip						
				Last trip						
				First trip						
				Last trip						

[12]Remark: The ID is the same as in Table 1, as well as Name and Migration Status (used for cross-check!). Please cross-check at the time of 'collection' and 'data entry'.

[13]Definitions: Seasonal migration can be defined as yearly recurring migration over periods less than six months a year. Temporal migration can be defined as a move from the household of origin during at least six months per year to a place within the country or abroad with the purpose of working, studying or family reunification, over a distance that forces the concerned person to settle at the desti nation to spend the nights. Return migration is defined as the return of a once migrated household member over a sustained period of more than a year. Current internal migration means that a person is actually migrating within the country as a seasonal or temporal migrant. Current international migration means that a person is actually migrating internationally.

[14]Remark: If international migration, please specify which country.

OPEN SPACE for NOTES, COMMENTS, CALCULATIONS, a TIMELINE or OPEN QUESTIONS (Please always refer to the question number)

7. Migration perceptions on household and village level					
701 Who was the first person to have moved in your household? What time? Please specify the relationship, status and time of migration					99. DK
702 When did the first internal migration occur from your village? When did the first international migration occur?	a. Internal		b. International		99. DK
703 Do members of all ethnic groups from your village migrate?	1. Yes		2. No		99. DK
704 Do some ethnic groups rely more on migration than others? Please specify and tell us the reasons	1. Yes		2. No		99. DK
705 To what extent does migration contribute to the welfare of the households of the village?	1. Very important	2. Important	3. Moderately important	4. Of little importance	
706 To what extent did moving to a different place contribute to the welfare of the households of your village 10-20 years ago? Why do you think so?	1. Very important	2. Important	3. Moderately important	4. Of little importance	
707 Can you explain how significant changes in population movement (migration) have been for your village?					99. DK
708 What is your personal opinion, do people move to a different place … (multiple options possible)	1. Only in times of crisis	2. As a normal income strategy	3. As a tradition. Please explain	4. Other. Please specify	99. DK

7. Migration decision, destination and networks					
709 In your household, do you have migrants?	1. Yes	2. No → go to 733			
709a In your household, who is involved in making migration decisions?	1. Males	2. Females	3. Both	Please specify names or positions in household	
710 Who in general takes the final decision about movements?	1. Household head (male/female)	2. Migrant himself/ herself	3. Consent from household members	99. DK	
711 If you migrated before, did you consult with other household members?	1. Yes	2. No	98. NA		
712 If somebody in your household migrated before, did they consult with other household members?	1. Yes	2. No	3. If yes, please specify names or position in household		
713 If somebody in the household has to migrate, who is the most likely migrant from the household (among persons of working age)? Please explain.				99. DK	
714 Who is the least likely person to migrate from your household? Please explain.				99. DK	
715 What characteristics make a person more likely to move away? Please explain.				99. DK	
716 Who in your household decides on where a person will move to (migration destination)?				99. DK	
717 What is important for deciding on where a person moves to? Based on what does your household decide for a specific migration destination?				99. DK	
718 When you think about destinations people could move to, do the decisions of your neighbours, relatives and friends about destinations affect the decision? If so, how?				99. DK	
719 To whom do you talk about migration decisions and strategies apart from your household members? (multiple options possible)	1. Friends	2. Neighbours	3. Village elders	4. Extended family members	5. Others. Please specify
720 If you talk to others, how important is their advice for you?	1. Of no importance	2. Of little importance	3. Very important	99. DK	

7. Migration decision, destination and networks							
721 Talking about migration with others, what specific information is interesting for you? Please explain.							99. DK
722 How often did you decide to move in groups ?	1. Never		2. Often		3. Always		99. DK
723 If yes (see 722), why do you migrate together? Please explain the reasons.							99. DK
724 If your household does have migration experience, would you say that you influenced other households in their migration strategies?	1. Yes. Please specify				2. No		99. DK
725 If you personally had the choice, would you leave your village? If yes, where to and for what reasons?							99. DK
722 How many household members migrated from the household this year?	0 persons	1 person		2 persons		3 persons	More. Please specify
727 Can you tell us how important certain things are/ were in the original decision to migrate in your household?	**Please fill in Table 3 below. Then turn to question no. 728**						99. DK
728 When household members move, who helps them at the destination? (multiple options possible)	1. Family members/ relatives	2. Friends from home	3. Neighbours from home	4. Nobody	5. Others. Please specify		99. DK
730 Does availability of money (e.g., loans, microcredit) affect whether household members migrate or not? a) Would it provide them with means to migrate? OR b) Would it give them incentive to stay in the village?	1. Yes.			2. No			99. DK
731 How much money do you think a potential migrant should have to move successfully to the following destination types?	1. Short distance migration (< 20 km)		2. Medium distance migration (20 to 50 km)		3. Long distance migration (> 50 km)		4. International migration
732 How does your household meet the costs of migration? Please specify	1. Savings	2. Loans	3. Selling livestock	4. Selling other property	5. Non-farm income	6. Remittances from migrant's relatives	7. Other. Please specify

Table 3 – Reasons/factors that affect migration decisions/moving to another place temporarily or permanently				
No	**Do you consider the following factors as very important/important/not important for the migration decision in your household?**	**Very important**	**Important**	**Not important**
	Social			
1	No school for my children available in the village			
2	Insufficient health care services in the village			
3	No relatives and friends in the village			
4	Family reasons (e.g., death of parent)			
5	Other (please describe)			
	Personal			
6	"Bright lights" of the city/ attraction of the city			
7	Better job opportunities in the city			
8	Friends already living in the city			
9	Better living quality in the city			
10	Willingness to build up own life in the city			
11	Willingness to become independent from the family			
	Conflicts			
12	Conflict over natural resources (please specify)			
13	Other (please describe)			
	Economics (in the region/village)			
14	Not enough income			
15	Unemployment			
16	No land available for farming			
17	No land available for grazing			
18	Overfishing			
19	No permission available for fishing?			
20	Dissatisfaction with livelihood			

Table 3 – Reasons/factors that affect migration decisions/moving to another place temporarily or permanently				
No	**Do you consider the following factors as very important/important/not important for the migration decision in your household?**	**Very important**	**Important**	**Not important**
	Economics (in the region/village)			
22	Less crop production for sale			
23	Less animal production for sale			
24	Decline in fish production (due to shallow rivers/canals) for sale			
25	Other (please describe)			
	Natural surroundings			
26	Poor water quality			
27	Poor soil quality → soil degradation			
28	Water shortage			
29	Increase in drought frequency			
30	Longer drought periods			
31	Unreliable harvest			
32	Shifted seasonal rainfalls			
33	Heavy rainfall events			
34	Insect plagues			
35	Floods			
36	Storms			
37	Earthquake			
38	Mudflow			
39	Other (please describe)			
	Food security			
40	Decline in crop production for household consumption			
41	Decline in animal production for household consumption			
42	Increasing food prices in the market			
43	Less financial resources to buy food/staples			
44	Decline in fish production (due to shallow rivers/canals) for household consumption			
45	Other (please describe)			

7. Migration and weather conditions (see also Table)			
733 We talked about observed changes in the weather and natural surroundings. Did these changes affect your household's economic activities?	1. Yes. Please specify	2. No	99. DK
734 Did these changes affect decisions to move to other places within your household?	1. Yes. Please specify.	2. No.	99. DK
735 At present, what are the main reasons why people move away from your village? Please specify			99. DK
736 10 years ago, what were the main reasons why people moved away from your village?			99. DK

7. Migration and return					
737 Do the migrated members of your household intend to return to the village? (multiple options possible)	1. Yes	2. No			99. DK
738 If yes, is this return intended to be permanent or temporary?	a. Permanent	b. Temporary			99. DK
739 If yes, please explain the reasons why household members intend to return.					
740 If no, please explain the reasons why household members do not intend to return.					
741 Do household members intend to join people who have already moved away? If yes, please specify.					
742 How many migrants returned to your household this year?	0 persons	1 person	2 persons	3 persons	More. Please specify
743 If yes (1 or more persons), please explain why they returned.					99. DK

7. Institutional affiliation and support						
744 Are you or another household member part of any of the following organizations? (multiple options possible)	1. Village or regional council	2. Local organization (e.g., business council, church group, sports team)	3. Farmer organization/ cooperative	4. Microcredit group	5. Other organization. Please specify	6.None of these
745 Which of these organizations helped you before?	1. Village or regional council	2. Local organization (e.g., business council, church group, sports team)	3. Farmers organization/ cooperative	4. Microcredit group	5. Other organization. Please specify	6.None of these
746 Would you trust them to help you, if you had a problem in the future? Please explain.	1. Yes			2. No		
747 If yes, in what way would one or more of the organizations help you if needed?						99. DK
748 If not, why would you not rely on these organizations for help?						99. DK

7. Migration and remittances								
749 Does your household currently (in the last 12 months) receive money from migrants (remittances)?	1. Yes		2. No				98. NA 99. DK	
750 Has your household ever received money from household members who migrated ("remittances")?	1. Yes		2. No				98. NA 99. DK	
751 If yes, what type of remittances? (multiple options possible) a. current situation b. past situation	1. Internal remittances a. b.		1. International remittances a. b.		3. Both a. b.		98. NA 99. DK	
752 If yes, how many migrants contributed/are contributing to your household income? a. current situation b. past situation	a. b.						98. NA 99. DK	
753 If yes, in which way do migrants help your household? Please specify	1. Send money regularly	2. Send money occasionally	3. Material support (e.g. tools, food, gifts) (please specify)	4. Other kind of help (please specify)	98. NA 99. DK			
754 If yes, compared to your local monthly household income, what is the size of remittances? If possible ask for amount of money	1. Substantial	2. Intermediate	3. Small	99. DK				
755 If yes, have remittances changed over the last 5-10 years, compared to the current situation?	1. Substantial increase/ decrease	2. Slight increase/decrease	3. No increase/ decrease					
756 If remittances have changed in the last 5-10 years, did this have an impact on your household's food consumption? Please specify why or why not.	1. Substantial impact	2. Little impact	3. No impact	99. DK				
757 If yes, how do household members use most of the remittances? Please rank according to 1./2./3. Priority	1. Food consumption	2. Purchase of consumer goods	3. Health care	4. Repayment of debts	5. Investment in a) livestock/ agriculture b) improved housing	6. Financing temporarily	7. Other	99. DK

7. Reasons for staying at home							
758 Which are the reasons why you did not move away and stayed at home?	1. No "kick-off" capital	2. No network connec-tions to the city/ other places	3. I did not want to be separated from my household	4. I was happy and wanted to stay at home	5. I had to take care of my children/ parents/ parents-in-law	6. My household wanted me to stay	7. Other. Please specify

8. Household "assets"/resources[15]							
801 What are the income sources or economic activities of your household? Please specify (multiple options possible)	1. Income/ profit from agriculture	2. Income from business	3. Local salary	4. Profit from renting out	5. Remittances (internal or international)	6. Income from livestock	7. Other. Please specify
801a How many household members brought cash income into the household in the last year?	____ people						
802 What is the (first) most important economic activity of your household today? What about the second and third most important ones?	1.		2.		3.		
803 What were the first, second and third important income sources 10 years ago? If it was different from the present situation, please explain.	1.		2.		3.		
805 How much is the total amount of money that your household has to its disposal every month?	(In local currency)			Did not want to answer		99. DK	
806 Do you have savings?	1. Yes			2. No		99. DK	
806a Do you have loans?	1. Yes			2. No		99. DK	
807 How many months could you sustain your household without cash-inflow by drawing on your savings?						99. DK	

[15] By household "assets" we mean income generated by your economic activities, your property, the different financial means you have, and your housing conditions.

8. Household "assets"/resources								
808 Do you receive (have access to……) If yes, please specify	1. Loans	2. Insurance	3. Remittances	4. Governmental support (specify)	5. Other (specify)	99. DK		
809 If you receive loans, please tell from whom do you get them: (multiple options possible)	1. Friends	2. Family	3. Neighbours	4. Other people in the village	5. Formal loans from bank	6. Micro-credit	7. Other (specify)	99. DK
810 What are the reasons for borrowing money?								99. DK 98. NA

8. House (housing conditions, property, water and electricity) and wealth						
811 What type of house does your family live in? Please specify on the type of floor, walls and roof	1. Is the house built from permanent materials (cement, etc.?) a. yes/b. no c. What type of floor? _____ d. What type of walls? _____ e. What type of roof? _____			2. Is the house built from temporary materials (mud, thatch, etc.?) a. yes/b. no c. What type of floor? _____ d. What type of walls? _____ e. What type of roof? _____		
812 How many rooms do you live in?						
813 Compared to the other houses in your village, would you say that your house is in a better condition/same as average or worse condition than the others?	1. Better condition		2. Same as average		3. Worse condition	
814 Do you own real estate property?	1. House of residence	2. Insurance	3. Landed property owned (e.g., agricultural plot, land for house construction)	4. None	5. Other (specify)	99. DK
815 Do you have access to electricity?	1. Yes		2. No			99. DK

8. House (housing conditions, property, water and electricity) and wealth							
816 How do you get your drinking water? (multiple answers possible)	1. Piped	2. From a nearby-water source (e.g., river)	3. From a communal pond	4. Other (specify)	99. DK		
817 How do you get water for other purposes than drinking in your household)? (multiple answers possible)	1. Piped	2. From a nearby-water source (e.g., river)	3. From a communal pond	4. Other (specify)	99. DK		
818 How do you get your irrigation water? (multiple answers possible)	1. Piped	2. From a nearby-water source (e.g., river)	3. From a communal pond	4. Other (specify)	99. DK		
819 If you compare your households living conditions with other households in the village, would you say your family is doing better, worse or about the same as the average? Why would you say so?	1. Better than average	2. Same as average	3. Worse than average	99. DK			
820 Do you own the following items? (If yes, please specify how many)	1. Car/ Pickup y/n number	2. Motorcycle y/n number	3. Bicycle y/n number	4. Tractor y/n number	5. Donkey	6. Other (specify)	99. DK
821 Do you own the following domestic assets? (if yes, please specify how many you currently own)	1. Stove Pickup y/n number	2. Radio y/n number	3. TV y/n number	4. Tractor y/n number	4. Plastic water basin for water storage y/n number	6. Other (specify)	99. DK

13.3 Expert interviews

In the following, some questions for semi-structured expert interviews are given. The HH survey and the PRA tools could also serve as a guide for further questions.

Depending on the expertise of the interviewee, the questions could vary and deviate and be added to. For example, experts from the national meteorological office may be given the set of questions related to rainfall variability, while during an interview with an officer from the Ministry of Agriculture or an organization such as the World Food Programme questions about food security may have been posed.

Questions related to climate change, rainfall variability:

- Have you observed changes in rainfall over the last 10-20-30 years in the research region?
- Have you experienced more droughts or dry spells during the last 10-20-30 years in the research region?
- Have you experienced more floods during the last 10-20-30 years in the research region?
- Have you experienced more heavy rainfall during the last 10-20-30 years in the research region?
- Have you experienced an increase in other weather events during the last 10-20-30 years in the research region?
- Did you observe a change in the number of seasons during the last 10-20-30 years? Please explain.
- Could you share any reports or other documentation of the trends you have told me about?

Questions related to livelihood and food security:

- What are the main income activities of people in the area?
- Can you estimate how many people live on subsistence production in the area?
- Which products do people need to buy from local markets? What about the price development of these products?
- To what extent does rain variability influence livelihoods and food security?
- Does changing rainfall affect the food production of HH in the area? If yes, in what way?
- Do people plant different crops in times of declining rainfall? If yes, which kinds?
- Does changing rainfall affect the economic situation of HHs in the area? If yes, how do people cope? What kinds of strategies do they use?
- Does changing rainfall affect the drinking water availability in the area?
- Were there times of food shortages during the last 10-20-30 years in the area?
- Please give us a detailed idea about the coping strategies people of the region used in times of food shortages.
- Is there support from the government, NGOs or any other institutions during times of crisis? If yes, how do they help?
- Could you share any reports or other documentation of the trends you have told me about?

Questions related to migration:

- Could you characterize migration flows in your country? In the research area?
- What are the main areas of origin and destination for migrants in your country? In the research area?
- Why do people out-migrate?
- Please tell us about social, personal, economical, environmental/rainfall-related or political factors that affect the migration decisions of people in this area.

- Which type of migration is dominant? What about international migration?
- In your opinion, is there any relationship between rainfall variability and migration? Between food security and migration?
- Who has been migrating away?
- How do people migrate? What are their means? How do they receive support?
- Would you say that there are intensive social networks that facilitate migration? What kind of networks are these?
- How common is return migration to the area?
- Can you tell us about remittances from migration?
- Who are the people who do not migrate? What might prevent people from migrating in case they would be willing to do so? What are the reasons for staying?
- How do people who do not migrate cope with the situation? What kinds of coping mechanisms are stressors (e.g., changes in rainfall patterns or food insecurity)?
- Do they get any help? If yes, from whom?
- Could you share any reports or other documentation of the trends you have told me about?

Questions related to the interplay of rainfall variability, food security and migration and consequences:

- Would you say that rainfall variability, food security/livelihood and migration affect each other? If yes, could you elaborate on this topic?
- Do you have suggestions/solutions how to improve the livelihood situation of people in the area?
- Which institutions should work together in order to improve the livelihood situation of people in the area?
- From your point of view, what are the main challenges for the coming years?
- Could you share any reports or other documentation of the trends you have told me about?

Annex 6

14. Data management

14.1 Quality control procedures

HH survey items should be evaluated by pre-testing and by the debriefing of the interviewers regarding any problems that may arise in the survey (Saris and Gallhofer, 2007, p. 173). Quality criteria for survey measures are as follows: The first criterion is to have as little of a "no-response" component as possible. The second criterion is not to have bias in the response. Bias is defined as a systematic difference between real values of variables of interest and the observed scores corrected for random measurement errors (Saris and Gallhofer, 2007, p. 194).

14.2 Data recording and processing

During all *PRA* sessions, the note taker should make sure to write down the main information in bullet points. Where culturally appropriate, PRA sessions may be recorded, especially the focus group discussions. In addition, photos from different stages of the PRA process should be taken if appropriate. In some cases, video recording might be done.

In the evening, the Junior Researchers should submit a "brief" with their bullet points and discuss them with the Senior National Researcher in the local language. The Senior National Researcher should collect the information in a report in English or in the local language to be translated later into English. However, this should be combined with discussions among the team members to ensure the quality of outcomes. The notes will be transcribed and expanded as an input to the preliminary analysis.

Then a detailed record in written format should combine the pictures and the notes taken during the sessions, in order to support subsequent analysis.

Concerning the *HH survey*, the researcher needs to fill in the questionnaire and carefully note all important information given in open-ended questions. In the evening, a researcher should enter questionnaire data into the EpiData entry mask.

All *expert interviews* should be recorded, if agreed upon, and notes should be taken. Notes taken during the expert interviews should be transcribed and expanded as an input to the preliminary analysis.

Later the transcripts from PRA and expert interviews should help conceptualize the data gathered from the household survey, so that all the information is integrated in an overall report.

14.3 Validation of data and preliminary analysis

At the end of each working day, the team gets together in the base camp and debriefs with/reports to the Senior National and International Researchers with the support of the translator. The completed survey sheets are then checked for consistency and completeness after they are submitted to the Senior National and International Researchers.

Following this, a discussion is held to evaluate the strengths and weaknesses of the workflow in order to be improved in the coming days. After completing the fieldwork, the teams should review the information gathered to identify any gaps in the information collected. Follow-up interviews or further research may be required.

Moreover, a brief preliminary analysis of the field research of each day is done by the national researchers based on the information gathered from the field. This analysis is supported by the International Researcher.

14.4 Data entry and final analysis

14.4.1 Household survey

HH survey data is entered into a computer using a data entry mask (EpiData software) at the end of every day by the Junior National Researchers under the supervision of the Senior National Researcher. The data entry mask is prepared by UNU-EHS and made available to all the research teams for daily data entry. During the training workshop, the team will familiarize with using EpiData.

EpiData Entry is used for simple or programmed data entry and documentation. The program includes a simple data entry mask, double entry verification, a list of ID numbers in several files, a codebook overview of data and dates added to backup.

EpiData Analysis performs basic statistical analysis, graphs, and comprehensive data management, for example descriptive statistics, SPC charts, recoding data, label values and variables and defining missing values.

To ensure data quality control, double-checking of the data entry will be done by the Junior National Researchers and spot-checking by the International Researcher.

The in-depth analysis of quantitative data entered in EpiData is done with SPSS, a computer program for statistical analysis in social science.

In addition to statistical analysis, data management and documentation are features of the base software.

For objective I of the study, the data is analysed by the Senior National Researcher using SPSS software. The analysis is supported by the International Researcher.

For objective II of the study following the fieldwork phase, the data is analysed by the Agent Based Modeler at UNU-EHS.

14.4.2 PRA and expert interviews

Qualitative data derived from expert interviews and PRA sessions are cleaned in written (Word software) format for a preliminary analysis run by the research team during fieldwork. Later on, more in-depth descriptive analysis is done by the Senior National Researcher and supported by the International Researcher.

Annex 7
15. Report writing

15.1 Roles of the institutions/researchers in drafting the reports

15.1.1 Role of UNU-EHS and International Researcher

The following points summarize the role of UNU-EHS and the International Researcher in the reports:

- Leading the research component;
- Supporting the CARE COs in preparing for and undertaking field tests of the methods prior to the fieldwork in each country;
- Ensuring that an International Researcher representing UNU-EHS is physically present for the fieldwork, including during the training workshop prior to the full roll-out of the research, unless agreed differently with a specific country office and CARE;
- Supporting the national research teams and helping ensure the quality of the eight final CSRs by reviewing, commenting, and otherwise supporting analysis of findings;
- Co-authoring the CSR (UNU International Researcher) for seven case studies together with the respective Senior National Researcher. Co-authorship depends on the amount of work done by the International Researcher and the Senior National Researcher in the report;
- Taking the lead on drafting a final global report/policy brief based on the research findings of the eight CSRs in collaboration with CIESIN (mapping component) and CARE International. This also includes UNU-EHS providing quality control to the report.

15.1.2 Role of CARE International and CARE country offices

As the overall role of the CARE COs is to ensure the implementation of the project, the role of CARE International is important in the following tasks:

- Providing feedback to the three methods used in the research prior to the fieldwork;
- Following up on the CSR drafting and review;
- Commenting on CSR;
- Organizing the experts' workshop following the field research where the national stakeholders will be informed about the outcomes of the research and invited to provide their feedback to the CSRs;
- In one of the eight case studies, ensuring a staff member representing CARE is physically present for the fieldwork, including during the training prior to the full roll-out of the research.

15.2 Development of reports: Outlines for case study reports and synthesis for policymakers

The two main scientific outcomes of the research project are:

1. One *CSR* for each country (a total of eight CSRs), outlined below
2. One *Synthesis for Policymakers* that:
   a. includes the objectives, research questions and methodologies used in the eight case studies
   b. summarizes the findings of all the case studies
   c. includes hotspot maps by CIESIN
   d. provides reflections on research and policy implications of findings.

15.2.1 Case study report outline

The *CSR* will be drafted by the Senior National Researcher in the language most convenient to her/him. It is foreseen that the Senior National Researcher and the International Researcher (UNU) will co-author the CSR. Once the report has been drafted, it will be reviewed by the CARE CO and UNU International Researcher. Following this, if relevant, it will be translated into English by a professional translator who will have to communicate with the Senior National Researcher for quality control and clarification on the content of the report. After translation, the report will be reviewed and validated once more by the International Researcher and the UNU-EHS team. Up to 10 external reviewers are asked to give their feedback to ensure high quality of the final version of the CSR.

Each CSR must follow the outline below, to ensure comparability of findings across the eight Rainfalls country case studies.

Section 1: Introduction

General introduction about the country (location, population, demographic data, history, political situation, environmental issues, migration patterns…etc.). The introduction should also include a brief summary of the rest of the report and its various sections.

Section 2: Literature review (incl. some theoretical background and a review of empirical studies)

This section narrows down to the region/district/villages where the research was done. Here, the CARE CO and the Senior National Researcher should be able to provide the necessary information and relevant literature.

Section 3: Methodology (incl. limitations of study)

- Brief description of the research objectives, questions and methodology used in the site, including the pre-testing (more detailed sections on the three components will be part of the global report, but this brief description should make the reader familiar with the general methodology used). If there are any changes or deviations from the original methods, for example the number of PRAs, the arrangements of the groups, the way the sampling was done, etc., please also include that in this section.
- Site selection.

» Practical challenges/drawbacks that the researchers faced in the site selection and how they have faced/overcome these challenges. For example, some sites are theoretically very appropriate for the research but have limitations regarding logistics and other practical issues.

- Research limitations that could include but are not necessarily limited to the following (depending on each case study):

» Limited time allocated for the field visit;

» Limited geographical scope which might lead to research results that do not necessarily cover a considerable size of a geographical region;

» Translation issues related to the various local languages in some case studies;

» Sampling issues that depend on the availability of demographic and other data.

Section 4: Introduction to the case study area (socio-economic background)

» general information about the selected field site, such as demographic, economic, environmental and other factors that are used for sampling purposes

» rationale/criteria of site selection (base camp and satellite villages). Here, you should also refer to the CARE CO and the Senior National Researcher and get back to the official statistics/tables that they could provide you with regarding the demographics, economics, etc. of the very villages you did the research in. Also, the site selection matrix should be referred to.

Section 5: Rainfall patterns/variability (biophysical background)

Research outcomes (expert interviews, PRA, HH survey) regarding rainfall patterns/variability, particular events related to rainfall in the past 30 years (floods, droughts, seasonal shifts etc.).

Section 6: Livelihood/food security

Research outcomes (expert interviews, PRA, HH survey) regarding livelihood/food security patterns in the base camp and satellite villages.

Section 7: Migration and human mobility patterns

Research outcomes (expert interviews, PRA, HH survey) regarding migration patterns in the base camp and satellite villages.

Note: In sections 5, 6 and 7, a clear distinction should be made between the results of each research method.

Section 8: Under what circumstances do HHs use migration as a risk management strategy?

This section analyses in depth the research outcomes by focusing on the current and past relationships between changing weather patterns (specifically rainfall and shifting seasons), food security, social inequalities (also regarding gender) and different forms of human mobility. In general, this key section should fulfill the first research objective and answer the corresponding research questions.

Section 9: Summary and conclusions

Overall outcomes of the fieldwork and a summary of the previous sections.

Section 10: Reflections for policymakers

This section deals with policy reflections relevant to the corresponding country/sites based on the conclusions of the CSR.

15.2.2 Final global report for policymakers/policy brief and other academic papers

The synthesis for policymakers will be drafted by the UNU Scientific Director and UNU Research Director in English, and in collaboration with CARE and CIESIN, which will take into account the CSRs and hotspots/mapping analysis. UNU-EHS provides the lead authors for the synthesis for policymakers and subsequent peer review journal articles, and the co-authors will include a selection of CARE and CIESIN staff participating in the project.

General outline of the final global report:

Section 1: Executive summary with key findings and messages

Section 2: Introduction of the report that includes:

- the background and history of the project;
- the research and funding partners;
- research objectives;
- relevance to policy dialogue (e.g., COP, IPCC, etc.).

Section 3: Methods

- Research questions;
- Research methodology.

Section 4: Research limitations

- General challenges/drawbacks that the research teams faced in the field.

Section 5: Research findings

- Summary of the eight CSRs analysis and understanding of potential future interactions of rainfall variability, food and livelihood security, and migration;
- Regional hotspot maps indicating where weather patterns in combination with other variables have the potential to drive migration, including a region and country specific assessment of impacts of rainfall variability on livelihoods and respective scenarios for environmentally induced migration within the next 2-3 decades (in cooperation with CIESIN).

Section 6: Policy reflections

Policy reflections based on the research findings.

15.3 Possible additional publications (authorship by mutual agreement)

- Two methods papers on PRA and the HH survey;
- Publishing refined versions of eight CSRs in peer-reviewed journals (co-authoring the article will depend on the amount of work done by the International Researcher and the Senior National Researcher in the article);
- Paper on gender and livelihoods (with CARE leadership);
- One or two papers on adaptation and human mobility (with UNU leadership).

Annex 8

16. The research team

16.1 Skills and experience of the fieldwork research team

The general skills and experience of the research team should include:

Multidisciplinary scientific expertise

- Scientific knowledge and expertise in human mobility, agriculture, water, climate change, food security and other relevant issues;
- Expertise in qualitative and quantitative social science research and in facilitation of participatory processes – to animate and balance the participation of everyone in the group, keep the group on track and to construct an environment of trust and openness;
- Knowledge in policy and institutional analysis.

Research skills

- Context;
- Knowledge in data management;
- Qualitative interviewing – to listen actively and push for deeper reflection/additional information;

- Experience with quantitative HH surveys;
- Writing skills – to write down field notes, write a comprehensive report and present the results to various audiences.

Leadership

- Ability to foster understanding and commitment among team members in a complex international research project;
- Conflict management – to help the group understand diverse perspectives and opinions, and to come to conclusions and/or consensus;
- Gender and diversity – to ensure gender and diversity-sensitive facilitation and to analyse differential vulnerability (adapted from CARE CVCA Handbook 2009, p. 12).

16.2 Team composition

The Rainfalls research team has a local, national and international component in each case study country. The following positions make up each case study country team:

Local: Local facilitators in the base camp and satellite villages who will assist with the HH survey, UNU-EHS will hire one field translator who will translate communication for the International Researcher, and one additional professional translator to facilitate transcribing research findings as they are recorded back into English for further analysis, etc. The CARE CO will facilitate the arrangement of these local team members.

National: Senior National Researcher, six Junior National Researchers and CARE country office members. The national research team members will be hired by CARE.

International: International Researcher (UNU-EHS organized).

16.2.1 Senior National Researcher

The Senior National Researcher has the following primary responsibilities:

- Where possible, supporting CARE CO to pre-test the research methods (HH survey questionnaire and PRA tools) and to suggest refinements of the research methods to UNU-EHS;
- Conducting expert interviews shortly prior to and/or after fieldwork;
- Prior to fieldwork, collaborating with UNU International Researcher and CARE staff to ensure all logistics are ready for successful implementation of the research;
- Collaborating with a CARE/UNU-EHS International Researcher to lead a 2-3-day training workshop and one day of online communication with UNU concerning the preparatory workshop (prior to fieldwork);
- Managing a team of six Junior National Researchers and village facilitators during fieldwork;
- Ensuring the timely and quality implementation of the research methods (both qualitative PRA tools as well as the HH survey questionnaire) jointly with the International Researcher;
- Advising UNU and CARE on cost-effective ways to ensure the research will include the participation of women and the poorest and most vulnerable people within the selected sites;
- Ensuring quality of translation (even if verbal) in local dialect if relevant;
- Responsible for data management during the fieldwork according to the protocol that UNU will provide; data sets must be available for UNU to copy at the end of their stay in the country;
- Assembling field reports/surveys from the research team and submitting them to the Research Director;
- Ensuring the accuracy of data entry, and quality of reports prepared by Junior Researchers;

- Leading a village-level "feedback" and data-validating (triangulation) workshop. This may occur on the last day of fieldwork or later, depending on the situation;
- At a later time, organizing the local experts workshop where the final report is presented, keeping the UNU team posted and facilitating UNU participation in the workshop via Skype;
- Preparing and writing the final country research report (approximately 30-40 pages for main report, annexes can contain further information as needed) in English, French, Spanish and Portuguese (or in the main Lingua Franca of the country);
- Presenting research results to senior stakeholders in a national-level workshop;
- Co-authoring the CSR together with the respective International Researcher. Co-authorship depends on the amount of work done by the International Researcher and the Senior National Researcher in the report.

Note: The Senior National Researcher/the CARE team are in charge of logistics and money/payment of the local research helpers (facilitators, driver, translators, etc.).

16.2.2 Junior National Researchers

The female and male Junior Researchers will be recruited locally in each case study country. The Junior Researchers are expected to read all research methods prior to undertaking the research.

The Junior Researchers will be conducting fieldwork under the supervision of the Senior National Researcher. At the end of each day, they are expected to write up their handwritten field notes and start data entry.

Responsibilities

Under the supervision of the Senior National Researcher, the Junior National Researchers will have the following primary responsibilities:

- Wherever possible, assisting the CARE CO and Senior National Researcher in conducting a pre-test of the research tools;
- Participating in a 2-3-day training and preparatory workshop (prior to fieldwork) for field research methods;
- Conducting participatory research (through PRA techniques such as focus group discussions, etc.) and HH surveys;
- Recording participatory research findings on the project worksheet for each method on a daily basis;
- Translating notes from participatory research methods into English or national language (if notes are taken in another language);
- Data entering for participatory research (Word) and HH survey (EpiData) on a daily basis;
- Helping the Senior National Researcher in a village-level "feedback" and data-validating (triangulation) workshop. This may occur on the last day of fieldwork or later, depending on the situation;
- Supporting the Senior National Researcher to prepare a final CSR shortly after the main fieldwork phase is completed;
- Helping the Senior National Researcher to present results to stakeholders in a national-level workshop.

16.2.3 Local facilitators in the base camp and satellite villages

One to three local facilitators (male and female facilitators) will be recruited in each case study country for work within the base camp and satellite villages. The exact number of the facilitators will depend on the availability of the Junior Researchers (e.g., if there would be six available from the latter, the research team will only need one local facilitator).

The role of the facilitators will be:

- Supporting the selection and identification of HHs and groups (according to the sampling criteria given by the research team);
- Arranging meetings with HH members/groups of people;
- Helping with logistics;

- Supporting the research team on a daily basis during the fieldwork;
- The ability to speak local language(s), preferably English language skills and the ability to translate from local language into English.

16.2.4 International Researcher

UNU will send one researcher for each of the seven case study countries, and CARE will send the Rainfalls Project Coordinator (PC) to the remaining case study country. The International Researcher/CARE Rainfalls PC will have the following tasks:

- Conducting a fieldwork training workshop in cooperation with the Senior National Researcher. A detailed PowerPoint presentation for the training workshop will be prepared by UNU-EHS;
- Preparing with the Senior National Researcher before the start of the fieldwork (through phone calls and emails) to ensure coherency and understanding about the research methods and their introduction to the Junior Researchers;
- Sharing and discussing the training workshop material with the Senior National Researcher and CARE COs;
- Communicating with the Senior National Researcher and CARE COs regarding pre-testing;
- Working on the feedback provided by the Senior National Researcher and CARE COs based on the pre-testing results;
- Ensuring the availability of and supporting the literature review done within the UNU-EHS work;
- Supporting the Senior National Researcher in the daily morning meetings with all team members;
- Moderating the debriefing in the evening to discuss the preliminary findings and the eventual problems or constraints arising;
- Supporting the Senior National Researcher in assembling a detailed protocol that combines the pictures and bullet points taken in each PRA session;
- Supporting the whole research team in the field and making sure that the workflow takes place according to schedule;
- Co-authoring the CSR together with the respective Senior National Researcher. Co-authorship depends on the amount of work done by the International Researcher and the Senior National Researcher in the report;
- If possible, distance participation in the community and stakeholder workshops led by the Senior National Researcher.

Glossary

Below, scientific definitions are provided followed by an explanation in "everyday language" which might be used during fieldwork.

Adaptation: "Adjustment in natural or human systems in response to actual or expected climatic stimuli or their effects, which moderates harm or exploits beneficial opportunities" (IPCC, 2007).

Adaptation means that people change the way they cultivate fields and/or their nourishment because the climate is changing (maybe more or less/more regular or heavy rain, higher temperatures, and so on).

Adaptive capacity: "The ability of a system to adjust to climate change (including climate variability and extremes) to moderate potential damages, to take advantage of opportunities, or to cope with the consequences" (IPCC, 2001).

One of the most important factors shaping the adaptive capacity of individuals, HHs and communities is their access to and control over natural, human, social, physical and financial resources.

Table 5: Factors shaping adaptive capacity

Human	Knowledge of climate risks, conservation agricultural skills, good health to enable labour
Social	Women's savings and loans groups, farmer-based organizations
Physical	Irrigation infrastructure, seed and grain storage facilities
Natural	Reliable water source, productive land
Financial	Micro-insurance, diversified income sources

Source: CARE USA (2002).

Imagine a group of people who realized that the rain falls at a different time each year, and who maybe faced an unexpected heavy rain provoking a flood that caused damage in their village – and which now comes once a year. Imagine those people managing to adapt to these new conditions and still having a good life. They are proving to have a good *adaptive capacity*.

Climate change: "refers to any change in climate over time, whether due to natural variability or as a result of human activity" (IPCC, 2007).

CARE uses this definition because it encompasses both natural variability and anthropogenic changes (CARE USA, 2002).

By climate we mean the weather as you have known it since you were a child. If the rainy season was in June and it is now in July/August it means that the climate changed. Also, if you say that "my parents used to only plant this vegetable in the plains, now it grows on hills" this may be a hint for a changing climate as well – just as a river that used to have water all year long and now lays dry in the hot season.

Climate (climatic) variability "1) In the most general sense, the term 'climate variability' denotes the inherent characteristic of climate which manifests itself in changes of climate with time. The degree of climate variability can be described by the differences between long-term statistics of meteorological elements calculated for different periods. (In this sense, the measure of climate variability is the same as the measure of climate change.)

2) The term 'climate variability' can be used to denote deviations of climate statistics over a given period of time (such as a specific month, season or year) from the long-term climate statistics relating to the corresponding calendar period. (In this sense, climate variability is measured by those deviations, which are usually termed anomalies)" (NSIDC, 2012).

Think about the weather of your hometown for the last, say, 30 years. You may say that usually in months x and y, rain falls exactly at that time. Only once in 10 years, you know by experience, there is no rain. Then, you are not worried, because you know that this might happen (this is because the climate is *variable*).

Environmental migration: "Environmental migrants are persons or groups of persons who, for compelling reasons of sudden or progressive changes in the environment that adversely affect their lives or living conditions, are obliged to leave their habitual homes, or choose to do so, either temporarily or permanently, and who move either within their country or abroad" (IOM, 2007, pp. 1-2).

For example: If a family who used to grow its own food stock cannot do so anymore because there was no rain for months (something with the *environment* is "wrong") and thus the family cannot feed itself anymore, they move away (*migration*).

Food security: "When all people at all times have both physical and economic access to sufficient food to meet their dietary needs for a productive and healthy life" (USAID, 1992).

"Food security takes into consideration the physiological needs of individuals, the complementaries and trade-offs among food and other basic necessities that households make, the dynamic nature of household food security over time and the levels of vulnerability and response to risk" (Barrett, 1999; from CARE USA HLSA, 2002).

Food security means that people have enough to eat, that food is affordable (not too expensive or even self-cultivated) and that they are satisfied with the choice of food stock they are used to eating.

Hazard (in the context of disaster risk reduction): "A dangerous phenomenon, substance, human activity or condition that may cause loss of life, injury or other health impacts, property damage, loss of livelihoods and services, social and economic disruption, or environmental damage.

When we discuss hazards in the context of the Climate Variability and Capacity Analysis (CVCA), we are referring both to shocks, such as droughts or floods (rapid onset), and to stresses, such as changing rainfall patterns (slow onset).

It is important to distinguish between the hazard – for example a flood, and the effects of the hazard – for example death of livestock. Some effects, such as food shortages, may be the result of a combination of hazards, including climate shocks and stresses, declining soil fertility, and insecure access to markets. To effectively analyse vulnerability, we must understand the dynamic nature and interactions of hazards" (UNISDR, 2009; from CARE USA HLSA, 2002).

Imagine something really dangerous is happening to your village. This may be a storm or cyclone, an avalanche, even a war that breaks out or a dry season provoking the loss of your harvest. In any case, you realize that you are (going to be) threatened by this event – it is a *hazard*.

Household: A household can be defined as "a group of people who are generally but not necessarily relatives, who live under the same roof and normally eat together, including individuals who live for part of the year or the entire year elsewhere, without having established their own family (with spouse and/or children) in that other place" (De Haas 2003, p. 415).

A HH comprises of the people you live with. You usually share a home, you share food and you care for each other. These are usually relatives, but might also be other people. HH members include present and absent people that contribute to the resources of the HH plus their children.

Livelihood: "A livelihood comprises the capabilities, assets (stores, resources, claims and access) and activities required for a means of living: a livelihood is sustainable which can cope with and recover from stress and shocks, maintain or enhance its capabilities and assets, and provide sustainable livelihood opportunities for the next generation: and which contributes net benefits to other livelihoods at the local and global levels in the long and short term" (Chambers and Conway, 1992).

Imagine your village and imagine the people living in the same village when a *hazard* occurs. You may then see that some people easily recover from the chaos, maybe because they have enough money to pay for a new home, maybe because they have many friends that help them build a new house or maybe because their field was not affected by the event and it is still possible to cultivate it, and for many other reasons. They are better off than others; they have a promising livelihood.

Livelihood security: "The adequate and sustainable access to income and other resources to enable households to meet basic needs (Frankenberger, 1996). This includes adequate access to food, potable water, health facilities, educational opportunities, housing, and time for community participation and social integration" (CARE USA, 2002).

Livelihood strategies: "A livelihood comprises the capabilities, assets (stores, resources, claims and access), and activities required for a means of living (Chambers and Conway, 1992). More specifically, livelihoods can be seen to consist of a range of on-farm and off-farm activities that together provide a variety of procurement strategies for food and cash" (CARE USA, 2002).

Migration: "*(Temporal)* migration can be defined as a move from the household of origin during at least six months per year to a place within the country or abroad with the purpose of working, studying or family reunification, over a distance that forces the concerned person to settle at the destination to spend the nights. Labour migration is migration primarily motivated by the aim to work and gain a living elsewhere. (...) *Seasonal* migration can be defined as yearly recurring migration over periods less than six months a year. *Return* migration is defined as the return of a once migrated household member over a sustained period of more than a year" (De Haas, 2003, p. 414).

If someone leaves their home and moves to another place and decides to live there, you call this: *migration.* In the case that he moved to that other place only because there was work for him, you call this: *labour migration*. In the case that he only moves once a year and for less than six months (maybe because his workforce is only needed during that time), you call this: *seasonal migration*. And in the case where a person comes home after years of absence – he returned – you call this: *return migration*.

Rainfall: The amount of precipitation of any type (including snow and ice), usually taken as the amount measured by means of a rain gauge (AMS, 2011). This means that it is the total atmospheric water that reaches the ground at a given location.

Rain, hail and snow are called rainfall when they fall down on the earth.

Rainfall variability refers to variations in the mean state and other statistics (such as rainfall intensities, the number of days with rainfall, seasonal patterns, the occurrence of extremes, standard deviations, etc.) of rainfall on all spatial and temporal scales beyond that of individual rainfall events (derived from "climate variability", IPCC, 2007).

Rain sometimes falls heavily, sometimes only slightly, sometimes it rains for days, sometimes only once a week. In fact, rain does what "it wants"; you call this rainfall variability.

Resilience: The ability of a community to resist, absorb, and recover from the effects of hazards in a timely and efficient manner, preserving or restoring its essential basic structures, functions and identity (adapted from UNISDR, 2009; from CARE USA HSLA, 2002).

Imagine a village/town that was recently affected by an earthquake; many houses were destroyed; an avalanche washed away the crops in the fields and people suffered. However, since they quickly rebuilt their homes and started to plant new crops, they managed to go back to living the life they had before. You may say that they have a high resilience.

Vulnerability: "Vulnerability is the degree to which a system is susceptible to, and unable to cope with, adverse effects of climate change, including climate variability and extremes. Vulnerability is a function of the character, magnitude, and rate of climate change and variation to which a system is exposed, its sensitivity, and its adaptive capacity" (IPCC, 2007).

Imagine a neighbouring village/town that was affected by a cyclone and heavily destroyed two months ago. You have observed over weeks that people did not manage to rebuild their village and that they suffered from food shortages and other losses. In fact, they were not very well off and thus it proved very difficult to get back to "good times". You may say that they were very *vulnerable*.

Vulnerability to climate change: "The degree to which a system is susceptible to, or unable to cope with, adverse effects of climate change, including climate variability and extremes. Vulnerability is a function of the character, magnitude, and rate of climate variation to which a system is exposed, its sensitivity, and its adaptive capacity (IPCC, 2007, p. 976; from CARE USA HLSA, 2002).

References

Afifi, T., and J. Jäger, eds. (2010). *Environment, Forced Migration and Social Vulnerability*. Dordrecht, London, New York: Springer, Heidelberg, pp. 197–209.

Afifi, T., and K. Warner (2008). The impact of environmental degradation on migration flows across countries. Working Paper, No. 5/2008. Bonn: UNU-EHS. Available from http://www.ehs.unu.edu/article:476?menu=94.

American Anthropological Association (AAA) (1998). Code of ethics of the American Anthropological Association. Available from http://www.aaanet.org/index.cfm.

American Meteorological Society (AMS) (2011). Glossary of Meteorology. Available from http://amsglossary.allenpress.com/glossary/search?id=rainfall1.

Barrett, C. (1999). Food security and food assistance programs. In *Handbook of Agricultural Economics*, Bruce L. Gardner and Gordon C. Rausser, eds. Amsterdam: Elsevier Science.

Barrios, S., L. Bertinelli, and E. Strobl (2006). Climatic change and rural–urban migration: The case of sub-Saharan Africa. *Journal of Urban Economics*, vol. 60, No. 3, pp. 357–371.

Bernard, H.R. (2006). *Research Methods in Anthropology: Qualitative and Quantitative Approaches*. 4th edn. Lanham, MD: Altamira Press (Rowman & Littlefield).

Bernard, H.R. (2011). *Research Methods in Anthropology: Qualitative and Quantitative Approaches*. 5th edn. Lanham, MD: Altamira Press (Rowman & Littlefield).

CARE (2009). *Climate Vulnerability and Capacity Analysis Handbook*. 1st edn. Available from http://www.careclimatechange.org/cvca/CARE_CVCAHandbook.pdf.

CARE (2010). Toolkit for integrating climate change adaptation into development projects. Available from http://www.careclimatechange.org.

CARE USA (2002). *Household Livelihood Security Assessments: A Toolkit for Practitioners*. Tucson, AZ: Tango International.

Chambers, R. (1996). The power of participation: PRA and policy. Policy Briefing, No. 7. Brighton, UK: Institute of Development Studies.

Chambers, R. (2008). Who counts? The quiet revolution of participation and numbers. Working Paper, No. 296. Brighton, UK: Institute of Development Studies.

Chambers, R., and G. Conway (1992). Sustainable rural livelihoods: Practical concepts for the 21st century. Discussion Paper, No. 296. Brighton, UK: Institute of Development Studies.

Collinson, S. (2010). Developing adequate humanitarian responses. Background Paper for the Transatlantic study team on climate change and migration, German Marshall Fund.

Dasgupta, S., and others (2007). The impact of sea level rise on developing countries: A comparative analysis. Policy Research Working Paper, No. 4136. Washington, DC: World Bank.

De Haas, H. (2003). Migration and development in Southern Morocco. The disparate socio-economic impacts of out-migration on the Todgha Oasis Valley. Amsterdam: Katholieke Universiteit Nijmegen.

Diekmann, A. (1996). *Empirische Sozialforschung: Grundlagen, Methoden, Anwendungen*. Hamburg: Rowohlt.

EACH-FOR. Available at www.each-for.eu.

Ehrhart, C. (2002). Reference Manual for 2002/3 PPA Fieldwork Procedures. Uganda: UPPAP Implementing Consortium.

El Hinnawi, E. (1985). *Environmental refugees.* Nairobi: United Nations Environment Programme.

Flick, U. (2009). *An Introduction to Qualitative Research.* 4th edn. London: Sage.

Foresight: *Migration and Global Environmental Change* (2011). Final Project Report. London: The Government Office for Science.

Frankenberger, T. (1996). *Measuring Household Livelihood Security: An Approach for Reducing Absolute Poverty.* Washington, DC: Food Aid Management, Agriculture and Consumer Protection.

Henry, S., B. Shoumaker, and C. Beauchemin (2004). The impact of rainfall on the first out-migration: A multi-level event-history analysis in Burika Faso. *Population and Environment*, vol. 25, pp. 423–460.

Homer-Dixon, T.F. (1999). *Environment, Scarcity and Violence.* Princeton, NJ: Princeton University Press.

Integrated Approaches to Participatory Development (IAPAD): Social mapping. Available from http://www.iapad.org/images/map_soc_tawangan.gif.

International Organization for Migration (IOM) (2007). Discussion note: Migration and the environment. Paper MC/INF/288, 1 November, 94th Session, International Organization for Migration, Geneva.

International Panel on Climate Change (IPCC) (1990). Climate Change: The IPCC Impacts Assessment. Australia: Australian Government Publishing Service. Available from http://www.ipcc.ch/ipccreports/far/wg_II/ipcc_far_wg_II_full_report.pdf.

_____ (2001). Box 1, Climate change: Sensitivity, adaptability and vulnerability. Working Group II: Impacts, adaptation and vulnerability. Contribution of Working Group II to the Third Assessment Report of the Intergovernmental Panel on Climate Change. Available from http://www.ipcc.ch/ipccreports/tar/wg2/index.php?idp=22.

_____ (2007). Climate change 2007: Impacts, adaptation and vulnerability. Contribution of Working Group II to the Fourth Assessment Report of the Intergovernmental Panel on Climate Change. M.L. Parry, O.F. Canziani, J.P. Palutikof, P.J. Van Der Linden, P.J., and C.E. Hanson, eds. Annex I. Cambridge, UK: Cambridge University Press.

Jäger, J., and others (2009). Environmental change and forced migration scenarios project synthesis report. Deliverable D.3.4 for the European Commission.

Kniveton, D., and others (2008). Predictive modeling. *Forced Migration Review, Special Issue: Climate Change & Displacement*, 31, Oxford.

Kniveton, D., and others (2009). Trends in start of the wet season over Africa. *International Journal of Climatology*, vol. 29, pp. 1216–1225.

Kumar, S. (2002). *Methods for Community Participation: A Complete Guide for Practitioners.* London: ITDG Publishing.

Laczko, F., and C. Aghazarm, eds. (2009). *Migration, Environment and Climate Change: Assessing the Evidence.* Geneva and New York: IOM, UNU-EHS, CCEMA, Rockefeller Foundation.

Leighton, M. (2010). Climate change and migration: Key issues for legal protection of migrants and displaced persons. Background Paper for the Transatlantic study team on climate change and migration, German Marshall Fund.

Lonergan, S. (1998). *The Role of Environmental Degradation in Population Displacement.* 2nd edn. Global environmental change and security project report. Research Report 1. Canada: University of Victoria.

Martin, P. (2010). Climate change, agricultural development, and migration. Background Paper for the Transatlantic study team on climate change and migration, German Marshall Fund.

Martin, S.F. (2010). Climate change and international migration. Background Paper for the Transatlantic study team on climate change and migration, German Marshall Fund.

Martin, S.F., and K. Warner (2010). Climate change, migration, and development. Paper for the Global Forum on Migration and Development, Civil Society Days. 8–9 November, Puero Viarte, Mexico.

Massey, D. (2007). *World City*. Cambridge, UK: Polity Press.

McLeman, R.A., and B. Smit (2006). Migration as an adaptation to climate change. *Climatic Change*, vol. 76, Nos. 1–2, pp. 31–53.

Myrada (2012). Trend analysis. Available from http://www.myrada.org/pra/images/image 004.jpg.

Narayanasamy, N. (2009). *Participatory Rural Appraisal: Principles, Methods and Application*. New Delhi, India: Sage.

National Snow and Ice Data Center (NSIDC). Arctic climatology and meteorology. Available from http://nsidc.org/arcticmet/glossary/climate_variability.html.

Neumayer, E. (2005). Bogus refugees? The determinants of asylum migration to Western Europe. *International Studies Quarterly*, vol. 49, pp. 389–410.

Perch-Nielsen, S.L., M.B. Battig, and D. Imboden (2008). Exploring the link between climate change and migration. *Climatic Change*, vol. 91, pp. 375–393.

Piguet, E. (2008). *Climate Change and Forced Migration: How Can International Policy Respond to Climate-Induced Displacement?* Geneva: UNHCR Evaluation and Policy Analysis Unit.

Piguet, E. (2010). Linking climate change, environmental degradation, and migration: A methodological overview. *WIREs Climate Change*, pp. 517–524.

Sakdapolrak, P. (2004). Internationale Arbeitsmigration als Lebensgestaltungsstrategie: Eine Fallstudie aus Nordost-Thailand. Unveröffentlichte Diplomarbeit. Geographisches Institut, Universität Heidelberg.

Saris, W., and I. Gallhofer (2007). D*esign, Evaluation, and Analysis of Household Surveys for Survey Design*. Hoboken, NJ: John Wiley & Sons.

Stal, M., and K. Warner (2009). The way forward: Researching the environment and migration nexus. Research Brief based on the outcomes of the 2nd Expert Workshop on Climate Change, Environment, and Migration, 23–24 July, Munich, Germany. Bonn: UNU-EHS.

Thow, A., and M. De Blois, M. (2008). Climate change and human vulnerability: Mapping emerging trends and risk hotspots for humanitarian actors. Report to the UN Office for Coordination of Humanitarian Affairs (OCHA), Geneva.

United Nations Framework Convention on Climate Change (UNFCCC) (2008a). Ad Hoc Working Group on Long-term Cooperative Action under the Convention (AWG-LCA), FCCC/AWGLCA/2008/3, paragraph 24. Available from http://maindb.unfccc.int/library/ view_pdf.pl?url=http://unfccc.int/resource/docs/2008/awglca1/eng/03.pdf.

_____(2008b). Ad Hoc Working Group on Long-term Cooperative Action under the Convention (AWG-LCA), FCCC/AWGLCA/2008/14, paragraph 19. Available from http:// unfccc.int/resource/docs/ 2008/awglca4/eng/14.pdf.

United Nations International Strategy for Disaster Reduction (UNISDR) (2009). Available at http://www.unisdr.org.

United Nations University (UNU) (2008). Climate change and migration: impacts, vulnerability, and adaptation options. 3rd session of the Ad Hoc

Working Group on Long-Term Cooperative Action under the Convention (AWG-LCA 3). Accra 21–27, 2008-08-14

United Nations University Institute for Environment and Human Security (UNU-EHS) (2007). EACH-FOR Research Guidelines. Available from www.ehs.unu.edu/article/read/each-for.

_____(2010). Photos taken during fieldwork by UNU-EHS team members.

United States Agency for International Development (USAID) (1992). Definition of food security. Policy Determination 19: 13 April 1992. Available from http://www.usaid.gov/policy/ads/200/pd19.pdf.

Warnecke, A., D. Tanzler, and R. Vollmer (2010). Climate change, migration, and conflict: Receiving communities under pressure. Background Paper for the Transatlantic study team on climate change and migration, German Marshall Fund.

Warner, K. (2010). Global environmental change and migration: Governance challenges. *Global Environmental Change*, Special issue focusing on resilience and governance, vol. 20, pp. 402–413.

_____(2011). Interdisciplinary approaches to researching environmental change and migration: Methodological considerations and field experiences from the EACH-FOR project. In *Handbook of Research Methods in Migration*, S. Castles, R. Cohen, R Delgado-Wise, and J. DeWind, J., eds. Oxford: Edward Elgar Publishing.

Warner, K., T. Afifi, M. Stal, and O. Dun (2009a). Researching environmental change and migration: Evaluation of EACH-FOR methodology and application in 23 case studies worldwide. *In Migration, Environment and Climate Change: Assessing the Evidence*, F. Laczko and C. Aghazarm, eds. Geneva: International Organization for Migration.

Warner, K., C. Ehrhart, A. de Sherbinin, S.B. Adamo, and T.C. Onn (2009b). In search of shelter: Mapping the effects of climate change on human migration and displacement. A policy paper prepared for the 2009 climate negotiations. Bonn, Germany: United Nations University, CARE, and CIESIN-Columbia University and in close collaboration with the European Commission's Environmental Change and Forced Migration Scenarios Project, the UNHCR, and the World Bank.

Warner, K., and F. Laczko (2008). *Migration, Environment and Development: New Directions for Research. International Migration and Development. Continuing the Dialogue: Legal and Policy Perspectives.* Joseph Chamie and Luca Dall´Oglio, eds. New York and Geneva: IOM and Center for Migration Studies.

Warner, K., A. Narusova, and D. Kniveton (2010). Climate change, environmental, and migration: Frequently asked questions. A summary for decision makers at the UNFCCC Climate Negotiations in Cancun (COP16). Climate Change, Environment and Migration Alliance (CCEMA).

World Bank (2011). Participatory rural appraisal (PRA). Available from http://web.world bank.org/WBSITE/EXTERNAL/TOPICS/EXTSOCIALDEVELOPMENT/EXTPCENG/0,,contentMDK:20507691~pagePK:148956~piPK:216618~theSitePK:410306,00.html.

Zetter, R. (2008). *Legal and normative frameworks. Forced Migration Review*, vol. 31, 62-63.

WHERE the RAIN FALLS

About the "Where the Rain falls" Project:

The Where the Rain Falls Project is an 8-country study that specifically explores the differential impacts of changing weather patterns on livelihoods, food security and human mobility.

The United Nations University Institute for Environment and Human Security (UNU-EHS), CARE International, with financial support from the AXA Group and the John D. and Catherine T. MacArthur Foundation, formed a strategic partnership in 2011 to undertake this initiative.

www.whereтherainfalls.org