Climate Change & Food Security Vulnerability Assessment

Toolkit for assessing community-level potential for adaptation to climate change

Working Paper No. 108

CGIAR Research Program on Climate Change, Agriculture and Food Security (CCAFS)

Bioversity International & Institute of Development Studies
Martina Ulrichs, Terry Cannon, Andrew Newsham, Lars Otto Naess and Mipsie Marshall

RESEARCH PROGRAM ON
Climate Change, Agriculture and Food Security

Working Paper

Climate Change and Food Security Vulnerability Assessment
Toolkit for assessing community-level potential for adaptation to climate change

Bioversity International and Institute of Development Studies

Martina Ulrichs, Terry Cannon, Andrew Newsham, Lars Otto Naess and Mipsie Marshall

Martina Ulrichs is a political scientist and holds a MA in Poverty and Development from the Institute of Development Studies. As an independent consultant she has worked for organisations such as GIZ, UNFPA, Irish Aid and DfID on multidisciplinary research projects on sustainable livelihoods, social protection and climate change adaptation in Latin America and East Africa. Martina recently joined the Social Protection Team at the Overseas Development Institute (ODI) as a Research Officer.

Terry Cannon is Senior Research Fellow at the Institute of Development Studies (UK), and specialises on rural livelihoods in the context of local adaptation to climate change, natural hazards and disasters. He recently co-authored and edited the IFRC World Disasters Report focus on Culture and Risk, and has worked in Vietnam for UNDP to provide training materials on community disaster risk reduction and adaptation to climate change. He is co-author of At Risk: natural hazards, people's vulnerability and disasters, published in 1994 and 2004.

Andrew Newsham is Lecturer in International Development and is Programme Convener for the dissertations programme at the Centre for Development, Environment and Policy of SOAS, University of London. He brings practical and theoretical insights from social anthropology and human geography to a research agenda which encompasses environment and development in Southern Africa and South America, with a particular focus on climate change adaptation and development.

Lars Otto Naess, research fellow at IDS, is a social scientist with more than 15 years' experience with climate change, development and agriculture. His current research interests include social and institutional dimensions of adaptation to climate change, policy processes on climate change and agriculture at national and sub-national levels, the role of local knowledge for adaptation to climate change, and adaptation planning in the context of international development. Much of his recent work has focused on Africa, in particular Tanzania, Kenya, Malawi and Ethiopia.

Mipsie Marshall is research assistant at IDS involved in climate research. Her interests include gender, social justice and innovation.

This study was commissioned by Bioversity International as part of its contribution to CCAFS. The study reflects previous experiences of IDS in vulnerability assessment, as well as insights derived from collaborative research with Bioversity International, as reflected in two other CCAFS Working Papers.

Abstract

This CCAFS Working Paper presents a participatory methodology that has been designed to provide organizations with the tools to understand the interrelations between climate impacts, food systems and livelihood strategies at the local level, while taking into consideration traditional /indigenous knowledge of the participating community. The toolkit developed applies a multidimensional view of the vulnerability of livelihood strategies to climate change, with a focus on differentiated access and entitlements to livelihood resources and food for different groups within a locality or community (often determined according to gender, ethnicity and socio-economic class). It includes step-by-step instructions on how to implement participatory tools that were adapted to answer the following questions: Why are people vulnerable? How are they vulnerable to climate change? What consequences does this have for their food security? Implementing this methodology will provide an initial understanding of the local context and vulnerability profiles, which, combined and triangulated with other sources of information (meteorological data, socio-economic indicators etc.), feeds into the process of identifying adaptation measures.

Contents

ABSTRACT 1

CONTENTS 2

INTRODUCTION 3

CONCEPTUAL FRAMEWORK 5

METHODOLOGY 10

FACILITATING PARTICIPATION 10
GENERAL TIPS FOR PARTICIPATORY FIELDWORK 14
STEP 1 - CHOOSE IMPLEMENTATION TIME PERIOD 17
STEP 2 - IMPLEMENTING THE PARTICIPATORY VULNERABILITY ASSESSMENT 20
1. TRANSECT WALK 20
2. VILLAGE MAP 23
3. HISTORICAL TIMELINE AND CLIMATE TRENDS 25
4. WELL-BEING RANKING 28
5. LIVELIHOOD STRATEGIES AND SEASONAL CALENDAR 33
6. CHANGING FARMING PRACTICES AND CROP RANKING 36
7. CLIMATE RISK AND COPING MECHANISMS MATRIX 39
8. FOOD SYSTEMS ANALYSIS – CAUSAL FLOW DIAGRAM 42
9. INSTITUTIONAL MAPPING AND VENN DIAGRAM 44
STEP 3 - ANALYSIS OF FIELDWORK FINDINGS 47
STEP 4 - RECOMMENDATIONS FOR ADAPTATION MEASURES 52
STEP 5 - REPORTING BACK TO THE COMMUNITY 53

ANNEX 55

GLOSSARY 55
TEMPLATE SEMI-STRUCTURED INTERVIEWS 56

Introduction

Extreme climate events and climate variability already expose food systems to shocks and stresses. These affect production and access to food of different groups, often with negative consequences, and are projected to worsen in coming decades as climate change accelerates. It is becoming increasingly important to understand the complexity of factors and processes that constrain or enable people's ability to build resilient livelihoods. This includes their ability to access and control the resources needed to adapt to shocks and stresses and become food secure.

This Working Paper present a toolkit to be used to understand the interrelations between climate impacts, food systems and livelihood strategies at the local level. It applies a multidimensional view of vulnerability of livelihood strategies to climate change[i], with a focus on differentiated access and entitlements to livelihood resources and food for different groups within the community (often determined according to gender, ethnicity and socio-economic class). The methodology has developed an ad hoc toolkit to support participatory vulnerability analyses in rural communities, and includes participatory tools that were adapted to answer the following questions: Why are people vulnerable? How are they vulnerable to climate change? What consequences does this have for their food security?

Who is this for?

The toolkit forms part of a collaborative venture between Bioversity International and IDS (Institute of Development Studies, UK) and has been designed for organizations or local government actors that want to implement climate change adaptation and food security projects in rural localities. It provides an initial understanding of the local context and vulnerability profiles, which combined and triangulated with other sources of information (meteorological data, socio-economic indicators etc.) feeds into the process of identifying adaptation measures. Depending on the project context, relevant stakeholders' needs have to be identified in advance in order to include them into the process.

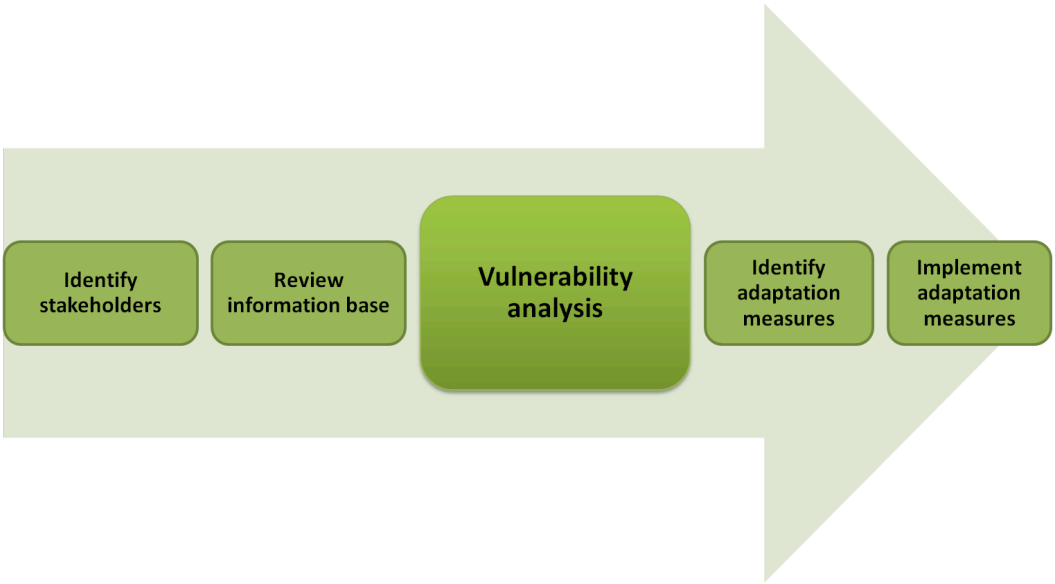


Figure Project planning process

The toolkit itself is a step-by-step manual to implement a participatory vulnerability analyses in rural communities. The different tools in the kit can be used to generate a range of information from the perspectives of the local people. This can bring out the underlying causes of vulnerability, as well as the potential direct and indirect effects of climate change on livelihood strategies and food security. Application of the tools will provide qualitative data that can inform planning processes for adaptation measures. When used in relevant implementation projects, the tools can form the basis for a participatory approach that engages with the people to become the agents of change.

The methodology should equip project implementers with the tools to assess the occurrence and consequences of climate impacts on local livelihood strategies and food systems with limited resources. It will assist them in understanding the perspective of local people on how climate change may affect them, what kind of coping strategies are already in place and how their adaptive capacity can be enhanced through measures that are tailored to the profile of different local groups. It is a social vulnerability analysis that identifies the root causes of vulnerability to different types of shocks and stresses. These root causes and drivers of vulnerability are socio-economic, environmental, political, ethnic or gendered, and the toolkit assesses the specific effects of climate impacts in relation to these.

How does it work?

Section 1 of the toolkit starts with an explanation of the methodology's conceptual framework, including a description of the five dimensions of vulnerability (see pages 5-8 of this paper). This is followed by a brief introduction on participatory methods and facilitation with some practical tips for the implementation of workshops at the local level. ***Section 2*** is a step-by-step guide to planning a participatory vulnerability assessment, implementing different tools, analysing the results, drawing some recommendations from the findings and presenting the results to the local participants.

The toolkit aims to aide facilitators of participatory workshop in the implementation of the assessment, by pointing out relevant questions that need to be asked and providing some tables on how the findings can be analysed. This is by no means exhaustive and project planners are invited to apply this manual in a flexible, critical and sensible way, always taking into account the specific context they are in and being respectful to the local participants.

Conceptual Framework

Vulnerability can be described as the degree to which a system, household or person is sensitive and unable to confront adverse impacts of climate change, including climat e variability and extreme events. Vulnerability is the function of the type, magnitude and rate of climate change and the variation to which the system is exposed to it, its sensitivity and its adaptive capacity[ii]. This section will briefly outline three components (sensitivity analysis, political ecology and food systems) of our approach to understanding vulnerability to climate change, and how these are captured in five dimensions of vulnerability.

Policymakers, local practitioners and researchers are challenged by having limited information and high levels of uncertainty regarding the future impacts of climate change. This makes it very difficult to plan adaptation measures aimed at reducing vulnerability to climate change. Projections at global and regional levels often provide average climate values, which do not reveal the implications of variables at a specific time and space[iii]. This uncertainty restricts the extent to which the projections can be used as the basis for adaptation measures in specific contexts, even if they can often give us an idea of the broad direction of change likely to be experienced.

To avoid the problems of limited information, the approach taken in this vulnerability assessment involves using a ***sensitivity analysis***. This reduces the reliance on projections of climate trends, because instead of asking "what are the possible climate scenarios at this location?" it asks "what would happen to this crop/ cropping system/ housing type/ storage method/ water source if the location experiences a change in temperature, rainfall or variability?". The entry point for analysis is the identification of the units within a system when they are exposed to certain impacts, and the level of their sensitivity to these impacts on the basis of current and past experience. In the context of local vulnerability to climate change and food security, the units of analysis are 1) livelihood strategies and 2) local food system.

The sensitivity analysis also allows us to identify the factors that determine why livelihood strategies and the local food system are sensitive and thus more vulnerable to climate impacts. Interventions that aim to build resilience can then focus on these factors in order to make livelihood strategies and food systems more resilient to different (uncertain) climate change scenarios. This helps to reduce the challenges of the uncertainty in global and regional climate change projections. By identifying thresholds to climate stresses and shocks on livelihoods and the food system, the level of adaptive capacity and overall resilience can be assessed, and the resources needed for adaptation defined and estimated.

Political ecology is another key component of our approach to vulnerability. A natural hazard, for example a hurricane, only becomes a disaster if the population affected is vulnerable to that hazard. Vulnerability to an extreme event is a combination of the lack of preparedness of the population, as well as the lack of sufficient levels of resilience: people's capacity is inadequate to deal with and recover from an extreme climate event. In many cases being more exposed to risks is not a result of choice, but of marginalisation and poverty. A political ecology approach includes an analysis of the system of power that structures society in terms of unequal exposure to risks and opportunities[iv]. These may create differences between rich and poor, men and women, different ethnic groups, and different ages. Climate change represents one example of this pattern of unequal distribution, since different levels of vulnerability to climate change exist, depending on social, cultural, political and economic. It is these diverse vulnerability patterns, in conjunction with the effects of a natural hazard, which need to be taken into account to create a useful analysis of vulnerability to climate (and other) impacts.

Local actors need to take into account the linkages between climate impacts, food systems and livelihood strategies in order to develop adaptation measures that contribute to building climate change resilience and food security. This includes adaptation for any increase in extreme weather, which often has drastic implications for food sources when the hazards destroy production assets, disrupt livelihoods and damage ecosystem services. Local food systems play a crucial role in providing (or not) food security, in particular in relation to three food security outcomes: ***availability*** (distribution and exchange networks, including the need for a stable supply of food), ***access*** (affordability, efficiency of markets) and ***utilization*** (social and nutritional values of food, food safety). Malfunctioning of the food system to provide these outcomes can be caused by a range of factors, such as social, political, economic and ecological factors which determine whether certain people have (or do not have) access to food within a system[v].

Taking these components into account, it becomes crucial to highlight through the vulnerability analysis the different risk profiles of different groups of people, depending on their level of exposure, as well as their social, economic and political determinants of vulnerability. The 'dimensions of vulnerability' (DoV) framework helps understand the underlying factors that affect the vulnerability of people and their livelihood strategies to climate change, and how these determine the patterns of availability, access and utilization stability of food supplies at the local level.

Dimensions of vulnerability (DoV)[vi]

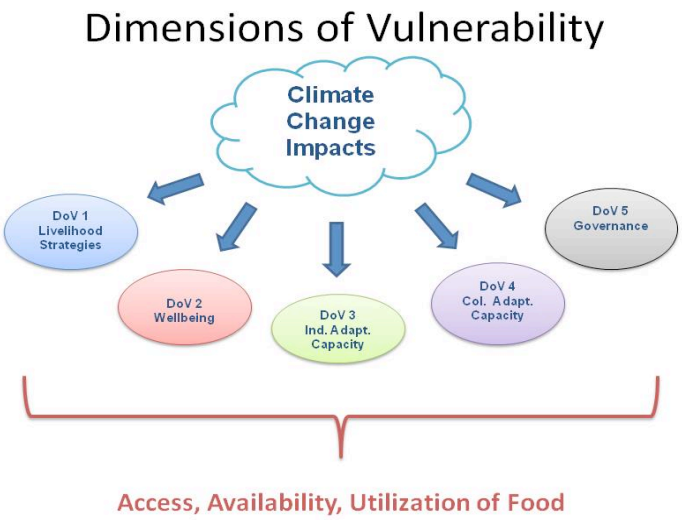


Figure Conceptual framework for Participatory vulnerability analysis

The participatory methodology aims at understanding social vulnerability to climate change at the individual, household and local level. Taken as a whole, the five dimensions of vulnerability (DoV) provide a holistic picture of the different factors that make people vulnerable to climate change at the local level, and highlight what the consequences are for the local food system and food security. These include the patterns of access to and control over resources that may be needed for adaptation.

DoV 1 – Livelihood strategies

This dimension comprises the various livelihood activities that the people undertake in the locality under investigation. It is particularly important to understand what the most significant activities are for food security at the household level. These can be directly related to the production of food for the household (e.g. farming), cash crops such as coffee or income-generating activities which are vital for purchasing food. This includes an analysis of the different assets (financial, human, natural) that are needed for different livelihoods and what the patterns of access and control over these assets are. For example, if a farmer cannot obtain the credit needed to buy new seeds, this lack of control over the financial assets is essential for the livelihood activity and can increase vulnerability.

Things to find out:

- What livelihood strategies exist at the local level?
- What is their importance for food security at household level?
- Which resources and assets are important for these livelihood strategies? Who can access these and who controls them?
- Which livelihood strategies are the most important ones for different groups of people within the community (including according to gender, ethnicity, age, socio-economic status)?
- How are the different livelihood strategies affected by climate impacts, extreme weather events and climatic tendencies?

DoV 2 – Well-being

This dimension looks at well-being indicators as defined by the community members themselves. They are context-specific and can range from socio-economic indicators (e.g. 'income'), to environmental (e.g. 'clean air') or emotional ones (e.g. 'family life'). well-beingwell-beingwell-beingBased on these local well-being indicators, groups with different levels of well-being are identified within the community, and the extent to which their livelihood strategies allow them to obtain a certain level of well-being and obtain sufficient food and meet other basic needs (e.g. health services, schooling, safety) are assessed. Whether or not their livelihood strategies manage to meet people's basic needs depends largely on the income and subsistence generated by the livelihoods (covered in DoV1). But in addition, climate-related factors may bring changes that affect their well-being and the sustainability of their livelihood strategies, such as health impacts from changes in disease vectors, water and sanitation and changes in temperature, which ultimately impact on their levels of food security and nutrition.

Things to find out:

- What are the local indicators and categories of well-being?
- What is the distribution of well-being across people within the locality?
- Within the locality, what is the proportion of households for each well-being category?
- Which households are considered to be more vulnerable and less able to adapt, and why?
- Which households are food secure, and why?
- Which households are not food secure, and why?

DoV 3 – Adaptive capacity of individuals and households

This dimension of vulnerability explores the (limits of the) current level of capacity at the individual and household level to deal with the climate impacts experienced in the area. This includes identifying current response and coping strategies that people in the location are already implementing. It requires understanding their effectiveness, analysing which resources are needed to implement these strategies, as well as identifying who has access to them.

Things to find out:

- What strategies do individuals and households use to respond to climate impacts?
- What are the limits of the capacity at the local level either to withstand or otherwise respond to climate impacts?
- What implications do these capacities and limits have for food security and nutrition?
- Which level of access do different groups within the locality have to the resources needed for adapting to the consequences of climate impacts?
- What levels of control over livelihood strategies and resources do different groups within the locality have in order to adapt and diversify in the face of climate change?

DoV 4 – Collective adaptive capacity

The idea of collective adaptive capacity is that through collaboration and co-operation between different institutions, people and groups, more can be achieved than through the actions of individual people and households. Part of this can be understood as "collective protection". Collective protection is used in relation to hazards (shocks) to support people – not only in emergency relief but also in preparedness. Examples of collective protection from hazards include warning systems for hurricanes and floods. Collective capacity to protect from shocks and adapt to change also involves the ability of the community and its members to influence the processes that directly affect them, such as the design and implementation of adaptation measures. This collective adaptive capacity cannot be achieved by individuals or households alone: the people are dependent on the good functioning of the institutions that can (or not) provide such protection and collective adaptation. Such institutions can include local citizen volunteer groups, Red Cross/ Crescent, NGOs, local and national government.

Things to find out:

- What collective activities do people engage in that can assist people in dealing with climate impacts (e.g. pooled labour, food loans/gifts, making land/other resources available in times of hardship etc.)?
- Through which institutions are these practices and strategies implemented?
- On what basis can people be involved in or access these institutions? How much access do groups within the location have relative to each other (e.g. according to gender, ethnicity, class, caste)?
- What are the limits of the collective capacity at the local level either to withstand or otherwise respond to climate impacts?
- What implications do these capacities and limits have for food security and nutrition?

DoV 5 – Governance and power relations

The final dimension of vulnerability relates to governance systems and the operation of formal and informal power. These are highly significant in deciding if people have good collective protection (e.g. flood protection measures, warning systems) and adaptation strategies (e.g. livelihood diversification). People are dependent on good governance to ensure that the ways they are affected by power is beneficial for hazard preparedness and post-disaster response. But it is also important in determining how resources and assets are allocated between different groups and places on the basis of who is in control of assets and how income and welfare is distributed. This also affects nutrition and food systems (and wellbeing generally as in DoV1) for instance in how land is allocated, or whether or not (and why) an area gets electricity or a road.

Things to find out:

- Who are the different actors, internal and external, that affect vulnerability in each location?
- How do power systems operate to make different groups of people more or less vulnerable, more or less able to adapt to climate change?
- Which actors and institutions are the most likely to be called upon to assist with climate change adaptation?
- Which actors and institutions are the most relevant to implement food security and nutrition interventions?
- How good (or bad) are the relations between the people in this location and these actors and institutions?
- How capable, responsible and sensible are the different actors and organizations within and outside of the location to reduce the vulnerability of different groups to climate impacts and increase the adaptive capacity at the community level?

Methodology

Facilitating participation

To undertake participatory work, the researcher facilitates a process in which the people themselves generate and begin to analyse information. The traditional top-down, outsider-insider power dichotomy is to some extent reversed and the researcher is the one learning from the local people in order to understand their reality and context. This implies that the facilitator needs to be self-reflective, able to question his/her own assumptions, 'unlearn' existing prejudices, embrace local knowledge and listen to local voices rather than trying to push a predetermined agenda[vii].

This is not always easy, since each research project has a particular objective and purpose. In genuinely participatory activities, the outside agency needs to be prepared to change what they were hoping to achieve, if it does not fit with what the local people identify as their own needs. The challenge is to facilitate participatory workshops in a way that does not impose a certain opinion on participants and that avoids influencing the process to reach predetermined results. This toolkit provides some ways to understand the local context and people's perception on the impacts of climate-related risks on their livelihood strategies and food security, but obtaining some useful results depends ultimately on people's participation. Hence, it is crucial that the facilitator establishes a relationship of trust and creates a space that is inclusive and where people feel at ease to express their opinions. This may be difficult given the power relations that exist at the local level, and which may be a factor in determining how assets are distributed and prospects for adaptation are influenced.

Participatory methods may be new for the local participants, and for those who are asked to implement them. The people may have had researchers or government officials come into their community and hold information session, where information flows one way, without necessarily being discussed or validated with the community. It is essential to explain the purpose of participatory activities with the people, and stress that the researcher is coming to learn from them. There is no "right" or "wrong" answer, and all views and experiences are welcome.

Box. Key principles of participatory approaches

Participation

There are different types of participatory interaction and some have limitations or may not be fully participatory. The goal of proper participation is to give all people a right to play an active and influential part in shaping decisions that affect them. Yet genuine participation is not easy to achieve, especially where power relations inhibit people from speaking. It means that views and opinions are not just listened to, but are acted upon (where the researchers have the ability to have relevant influence). Great care also needs to be taken not to raise people's expectations (e.g. that funding will be available for projects and other activities) as a result of the research and participatory action.

Seeking and valuing local knowledge

Local people have their own expert knowledge of their surrounding area, often called indigenous knowledge. This should be the starting point for organisations working with them. There will be differing perspectives and "realities" – every person has their own experiences and interpretations which add richness and value to a process. However there can be challenges: not all indigenous knowledge is "good" (e.g. where people do not accept that germs cause illness, and instead believe in curses or spirits). So the balance of respecting local culture while supporting local needs (e.g. for better health) has to be handled carefully.

Using a mixture of visual and verbal techniques

The participatory methods try to be as inclusive as possible by using a mix of activities that can be attractive to all. Through diagrams, drawings and sharing experiences, the aim is to involve as many people as possible. The process aims to be on an equal basis, regardless of age, race, gender, culture, literacy or socio-economic status. Methods should be used in ways that make people comfortable, and encourages them to voice their opinions and be heard.

Actively seeking unheard voices

Participatory approaches involve trying to ensure that people who are normally silent or silenced are granted safe spaces to be heard. It is often those that have least say in decisions affecting their lives that are most affected by them. This often includes those who are young, elderly, remote, poor, illiterate, migrants, or disabled. Facilitating participatory approaches means actively trying to find out who wants to participate but is currently excluded, and then trying to include them. The approach also respects that some people may not want to participate. Care needs to be taken about how power relations will affect those who are often suppressed or silent when the project and outsiders have left.

A reversal of learning

These approaches are about outsiders learning from the community, gaining their wisdom and letting go of preconceptions. It may also involve "unlearning" what the outsiders think they already know.

Handing over the stick (or pen, or chalk)

This phrase came from early participatory work and is essentially about letting others "do it". It involves those considered expert or powerful or of higher status sitting back, keeping quiet and letting the community get on with it. The terms "uppers" and "lowers" are often used in the context of participatory approaches: thinking about the relationships between them and their implications in terms of power, willingness to speak etc. is an important consideration.

References

Stevens, J. (2011) *A Brief Introduction to Participatory Approaches,* Participation Resource Centre, Institute of Development Studies: Brighton.

HIV/AIDS Alliance (2006) *Tools Together Now! 100 participatory tools to mobilise communities for HIV/AIDS*. International HIV/AIDS Alliance: Brighton

Precepts of PRA (Stevens, 2011)[viii]

Precept	Indicating
Introduce yourself…	Be honest, transparent, relate as a person
They can do it…	Have confidence in people's abilities
Unlearn…	Critically reflect on how you see things
Ask them…	Ask people for their realities, priorities, advice
Don't rush…	Be patient, take time
Sit down, listen and learn…	Don't dominate
Facilitate…	Don't lecture, criticize or teach
Embrace error…	Learn from what goes wrong or does not work
Hand over the stick…	Or pen, anything that empowers
Use your own best judgement at all times	Take responsibility for what you do
Shut up!	Keep quiet, welcome and tolerate silence

PLA Behaviours and Attitudes (HIV/AIDS Alliance, 2009, p.20)[ix]

DO	DON'T
Be humble	Be imposing
Listen to others	Talk all the time
Be creative	Be rigid
Work with people	Word for people
Give people time to come up with their own ideas	Always express your ideas first
Be patient	Rush
Respect people's viewpoints	Impose your ideas
Be tolerant	Be intolerant (except of intolerance!)
Be practical	Be arrogant
Trust people and build trust	Doubt people
Be supportive	Ignore people's ideas and priorities
Share (experiences, tools, ideas, time, food etc.)	Keep knowledge, skills and experience to yourself
Stand or sit at the same level as people	Physically dominate other people (by standing over them, wagging your finger, etc.)
Focus on the issue not the person	Focus on the person rather than the issue
Involve everybody	Exclude anyone
Let them do it (draw, map, count, score, prioritise, discuss, conclude etc.)	Take over
Empathise	Be distant
Use your own best judgement	Distrust yourself
Embrace errors	Feel bad about yourself when things don't quite go according to plan
Have fun!	Be too serious

General tips for participatory fieldwork

Before the fieldwork

- Announce workshop - Make sure the workshop has been promoted in advance and that all people in the locality and relevant authorities have been formally invited to attend the first group session (community map).
- Schedule activities - The times for the group sessions have to be sensitive to the daily work schedules of the people. This can mean having different times for men and women, depending on their availability.
- Arrange an appropriate venue – Make sure you have arranged an appropriate venue for the workshop, which is easily accessible for all community members and regarded as a neutral space (e.g. in gender, ethnic or religious terms)
- Translators – Investigate which languages are spoken and try to arrange having translators present (particularly to include ethnic minorities).

During the fieldwork

- Explain objective of the research - Ensure that the purpose of the project and/or research is explained, so that people understand what they are doing it for, and what the outcome will be. This is especially important to manage people's expectations. Where the activity is for research only, a clear indication will be needed of why it is worth the people taking the time and trouble to help. If the vulnerability analysis is linked to possible or actual project funding, there needs to be a clear explanation of what will be happening, when, and who is likely to be involved.
- Record the workshop - Using a recording machine (mobile phone, recorder etc.) can be useful for documenting the research. However, permission must be requested from the participants and be prepared to document the workshop without recording, in case people object to it. Recording a meeting may make some people reluctant to talk if they fear that their views will not be acceptable to some in the community, and may even cause danger.
- Take into account literacy levels - Some participants might not be able to read. Depending on the context use pictures instead of writing, and stones or beans instead of numbers, to illustrate the diagrams in a more inclusive way. Make sure you always explain everything that is being captured in the diagrams and always invite participants to capture what is being said in the diagrams, instead of writing/drawing it yourself.
- Entertainment for children – In order to help women to participate, you may need to have some kind of entertainment for children whilst the group discussions are taking place. This may also reduce disturbance during the discussions. One way of keeping the children entertained whilst also continuing with the research, is asking children to draw their houses and all the food produced in the garden or fields. Depending on their age and literacy this could be deepened by asking them to write the main problems they face in terms of producing and/or accessing food.

- Note-taking - The role of the note-taker is crucial during the activities, especially discussions. The note-taker should try to capture as much information as possible, including what is put in diagrams, to help put them in context. The note-taker should also observe who said what, who spoke the most, who did not speak at all and whether certain statements caused a certain reaction from the group or were contested. Ideally, the note-taker and the facilitator should take some time after the focus group to photograph diagrams and capture the main issues that arose from the methods and discussion.

Closing the workshops

- Closing the work with the people is an important gesture, since it is a formal 'good-bye' and opportunity to thank the community members for their time. This is also the opportunity to inform the people again of the objectives of the research and the next-steps that will come out of it.
- A clear explanation should be given of how the results will be shared with the people and when (see STEP 5).

A note about methods

Mixed methods approach

The methodology aims to analyse vulnerability in its social, cultural, economic and political context. In order to do so it includes a range of methods, including semi-structured interviews, analysis of primary and secondary sources, and participatory methods which use visual methods in group exercises. This mix supports the analysis of a complex set of relations and causal links related to vulnerability to climate impacts. Confidence in the validity of the analysis comes from comparing the information from the various methods. This helps when there are different sources of data and unit of analysis. This process, called triangulation, can improve the authenticity of the data and improve the analysis.

Participatory group exercises

The participatory exercises help to gather information on the local context quickly and with limited resources. The diagrams (maps, tables) are a way to capture information generated in group discussion and help to validate the information collectively with the participants. The composition of groups is important, particularly in cases where very specific information or opinions are required from a certain group of people (e.g. farmers, women) or where the facilitator wants to enable vulnerable groups to participate who would feel uncomfortable raising their voice in a bigger group due to local power dynamics. We suggest forming gender-specific groups to obtain different perspectives on issues, especially those of females. In culturally sensitive contexts it may be best to have a female and male facilitator for the different groups. The size of the group is also important, since big groups tend to develop a dynamic where the most confident (or powerful) speak and the most marginalized keep quiet. The facilitator must observe group dynamic and make sure that people get an opportunity to speak. Alternatively participants who are most marginalized could be identified and a semi-structured interview or separate focus group arranged with them.

Semi-structured interviews

Semi-structured interviews allow in-depth conversations with individuals, sometimes on specific topics. This can be connected with the information provided during the group exercises. Where there are high levels of inequality and social exclusion, semi-structured interviews can open a more confidential and private space for discussion. The annex includes templates for semi-structured interviews.

Box. Additional toolkits

Care (2009) Climate Vulnerability and Capacity Analysis Handbook [online]. CARE International: Geneva.

CCAFS and FAO (2012) Training Guide: Gender and Climate Change Research in Agriculture and Food Security for Rural Development [online]. Food and Agriculture Organization of the United Nations: Rome. Geilfus, F. (2008) 80 Tools for Participatory Development: Appraisal, Planning, Follow-up and Evaluation. Inter-American Institute for Cooperation on Agriculture (IICA): San Jose.

HIV/AIDS Alliance (2006) Tools Together Now! 100 participatory tools to mobilise communities for HIV/AIDS. International HIV/AIDS Alliance: Brighton.

IFRC (2008) Vulnerability Capacity Assessment Toolbox. International Federation of Red Cross and Red Crescent Societies (IFRC): Geneva.

IISD (International Institute for Sustainable Development) (2012) CRiSTAL User's Manual Version 5: Community-based Risk Screening Tool – Adaptation and Livelihoods [online]. IISD: Winnipeg.

IFAD (1999) Manual for Bottom-Up-Approach in Food Security Interventions [online]. IFAD: Rome.

STEP 1 - Choose Implementation time period

Depending on the amount of information you already have about the community, you can choose between the different tools to select the ones that will help gather the necessary information to analyse the different dimensions of vulnerability. However, the more time you invest with the people, the more you will be able to understand about the local context and the more you will be able to build relationships of trust and confidence. Investing time in making the process truly participatory (rather than 'extractive'), will be more likely to result in local ownership and acceptance of the interventions you may be planning. Below are two possible scenarios for implementing the participatory assessment. Users of the toolkit are invited to reflect on whether these scenarios work for them or should be adjusted.

The first option (comprehensive vulnerability analysis) is recommended in cases where no baseline data and little knowledge of the community are available. The second option is for cases where there is extensive baseline data and prior knowledge, and a relationship with the community already exists. In the case of a longer timeframe it is not necessary to implement the analysis in five consecutive days. The work can be divided into two or three field visits over a month. This makes the analysis more feasible for those with less flexible time, and also allows to analyse the results between the visits and adjust the research questions accordingly.

Option 1. Comprehensive vulnerability analysis

Time: 5 days

This needs 3 to 5 people (ideally two facilitators, two note-takers and one coordinator)

Option 2. Rapid vulnerability analysis

Time: 3 days

Requires a minimum of two people (one facilitator, one note-taker)

This option assumes that there is already baseline data on:

- Most relevant climate impacts for the community (past and present)
- Knowledge of the main social and ecological characteristics of the community
- Local crops and changes in farm practices

Option 1. Activities included

	Exercise	Objective
Day 1	Transect	Get to know the community and the main social and ecological characteristics
	Village map	Identify the main features and households of the community
	Semi-structured interview village authorities	Understand the decision-making structures within the community and most important internal and external institutions
Day 2	Historical timeline and climate trends	Identify the main historical and climatic events in the past and the consequences/responses
	Well-being ranking	Identify local indicators and categories of well-being Identify how different households access food Identify households that are food insecure and elements that increase their vulnerability to being food insecure Analyse how these factors are related to climate impacts
	Focus group women	Identify main sources and types of food used by different households
Day 3	Livelihood strategies and seasonal calendar	Identify main livelihood strategies Identify whether they are dependent on certain types of climate Identify periods of limited access to food and causes for shortage
	Changing farming practice (focus group with farmers) Crop preference ranking	Identify how farm practices have changed and why Identify different types of crops and reasons for preferring some over others
	Semi-structured interview health service provider	Identify main health issues in the community
Day 4	Climate risk ranking and coping mechanisms matrix	Identify main climate impacts in community Identify how they impact on different livelihood strategies, as well as on access to food Identify local capacity to adapt and limits to adaptation
	Food markets diagram	Identify the causal links between internal and external actors and access their role in food markets Analyse production processes and how these are vulnerable to climate impacts
	Semi-structured interviews households	Understand the situation of most vulnerable households in terms of livelihood strategies and food security
Day 5	Venn diagram	Identify main internal and external actors that influence decision-making within the community

Option 2. Activities included

	Exercise	Objective
Day 1	Livelihood strategies and seasonal calendar	Identify main livelihood strategies Identify whether they are dependent on certain types of climate Identify periods of limited access to food and causes for shortage
	Venn Diagram	Identify main internal and external actors that influence decision-making within the community
	Food markets diagram	Identify the causal links between internal and external actors and access their role in food markets Analyse production processes and how these are vulnerable to climate impacts
	Semi-structured interview village authorities	Understand the decision-making structures within the community and most important internal and external institutions
Day 2	Well-being ranking	Identify local indicators and categories of well-being Identify how different households access food Identify households that are food insecure and elements that increase their vulnerability to being food insecure Analyse how these factors are related to climate impacts
	Climate risk ranking and coping mechanisms matrix	Identify main climate impacts in community Identify how they impact on different livelihood strategies, as well as on access to food Identify local capacity to adapt and limits to adaptation
	Focus group women	Identify main sources and types of food used by different households

STEP 2 - Implementing the participatory vulnerability assessment

This section provides a detailed description of the different tools, as well as step-by-step guidance for facilitators on how to implement the tool in the locality.

1. Transect walk

Objective: The objective of the transect walk is for the research team to gain an understanding of the main social, physical and ecological characteristics of the community and its surrounding area (e.g. water wells, markets, fields)

Preparations: Identify a group of women and men who know the village territory and surroundings very well

Material: Notepad, camera

Estimated Time: 2-3 hours (depending on the size of the area)

Implementation: The transect walk is not only a way to obtain information about the main characteristics of the community. It is also an opportunity for the members of the research team to introduce themselves to the people as they walk around the area.

At the beginning of the transect walk, the researchers ask the participants to show them the most important sites within the location and its surroundings, where they work, where they buy/grow food etc. It is very important that the participants decide the route to walk, in order to understand the area from their perspective. It is nevertheless also important to note which areas they avoid, e.g. if they guide you away from areas where the most socially excluded households live. Throughout the walk the researchers ask questions to understand the main resources of the locality, different livelihood strategies, visible climate impacts and local food production. These include:

- Infrastructure (e.g. is there electricity, road, piped water)
- Water sources
- Useful plants (e.g. herbs used for health purposes, edible plants)
- Type of trees
- Location of productive activities (e.g. agriculture and livestock)
- Human settlements
- Type of soil
- Types of vegetation
- Plots and types of crops
- Grazing land/forest land
- Food processing activities and storage facilities,
- Visible problems that may affect food security, such as pests, conflict and drought
- Schools
- Places of worship
- Shops
- Sports grounds

- Services (water, electricity)
- Types of houses
- Neighbourhoods
- Detect possible damage of infrastructure, houses etc. cause by climate impacts

Examples of questions to ask (IFAD, 1999, p.58):

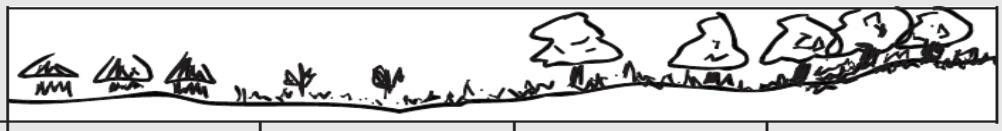
- When was the village established and registered?
- What is the size of the village? How many people live here?
- Have people migrated to this village, where do they live?
- Is there a school? Does everyone attend the school?
- Is there a health service? Who works there?
- Where do you buy food? Is it available all year long? Where do the venders come from?
- Where do you get your drinking water? Does everyone have access to it? How is the quality?
- Where does the human waste go?
- How is the soil fertility?
- Is it easy to expand fields or inherit plots? Can you rent land?
- What types of livestock are there in the village? Who owns them?
- Are there any coping strategies for bad times (e.g. storage, special crops)?
- What are inferior crops? What grows best? Where does it grow?
- Are the crops for food or for cash? Where are they sold, in what proportion?
- Do women and men grow different types of crops?

After the exercise: Due to the type of exercise, it is difficult to take extensive notes throughout the walk. It is thus crucial for the research team to take some time after the walk to capture all the relevant information.

Expected results

- Location of natural resources and ecosystem services that are the most relevant for the community
- Location of the areas of most important productive/commercial, social and political activities
- Identification of the most vulnerable households and neighbourhoods, in particular those that could be most affected by climate impacts
- Documentation of the community's infrastructure
- Documentation of the visible consequences of past climate impacts on natural resources, ecosystem services, livelihood strategies and food systems
- Results can feed into the village mapping exercise (if used)

Example of a Transect Focused on Food Security and Nutrition Issues



Zone	Central Village	Inner Fields	Outer Fields	Forest
Food production / gathering	• Household vegetable gardens, chickens, papaya, mango, and orange trees; • Goats fenced in during rainy season	• Groundnuts, corn, some hibiscus in women's garden, • Some tree products, • Small ruminant grazing during dry season	• Millet, sorghum, some rice; • Watering holes for animals; • Karite trees; • Cattle grazing during dry season	• Fruit from baobab, wild date, fig and other wild trees, honey, • Cattle grazing during rainy season
Food processing and storage	• Dried vegetables and fruits; • Groundnuts in women's fields	• Family granaries in or near fields	• Oil processed from karite nuts	
Health issues	• Some wells unkempt, not sanitary; • Health unit lacks trained nurse; • No use of mosquito nets			• Many medicinal plants harvested from forest area, • River at forest edge is source of XXXXXX
Food security and nutrition observations	• Many mangos rot ...possibility for processing? • Lots of insect damage to groundnuts in storage...possibility for improved storage?	• Conflict over goats and gardens leading to reduction in number of goats; • Family and individual granaries managed so as to secure food supply during agricultural season	• Serious striga problem reduces millet harvest significantly; • Water holes dry up before rains...lack of water reduces milk production	• Conflicts between neighboring villagers over harvest of baobab fruit which is an important hungry season food; • Collection of fruits by young boys adds important nutrients to diet...girls working at home have less access. • Theft of cattle common during rainy season

FIGURE 1 FREUDENBERGER, 1999, P.83

2. Village map

Objective: This tool is used to map the village, with members of the community themselves drawing it. The importance does not lie in obtaining a geographically correct map, but rather to understand the way the community perceives its village, resources, neighbourhoods etc. The map should reflect the most important characteristics of the community, the main roads, types of houses, plots, commerce, schools etc.

Apart from having a map of the village, this exercise allows engaging in a discussion about different natural and physical resources of the community, and who has access or control over them (e.g. land tenure, markets, water sources). It also allows to identify neighbourhoods on the map and engage in a discussion about where the poorest and most vulnerable people live, and why they live in that particular location. It is the first entry point to discuss patterns of access and control over resources, as well as identifying different groups within the community.

Preparations: Invite the community in advance to attend, prepare material

Participants: One big groups of people (>5)

Material: Big piece of paper, pens, post-its, board, flipchart

Estimated Time: 1,5 – 2 hours

Implementation

1. ***Introducing the exercise***

The facilitator introduces him/herself and explains the main objective of the exercise. If this is the first exercise the research team undertakes with a big group, the facilitator should introduce the team and explain the objective of the research and the activities in the coming days. If there are two facilitators available, the group of people can be divided into men and women, who will ideally be in separate rooms/locations. The following steps are the same for the two groups.

2. ***Identify the borders and a point of reference within the village***

The facilitator places a large piece of paper and pens on the floor and asks the group to draw the border of the village territory on the paper, as well as a main point of reference (usually a prominent site, e.g. place of worship, market place). It is suggested to leave some space between the borders of the community and the border of the paper, in order to indicate where neighbouring villages, roads etc. which are important to the community.

3. ***Location of main characteristics***

Once the area of the village is clearly demarcated, the facilitator asks the group to draw the main characteristics of the village and surroundings on pieces of paper. The questions and list of characteristics mentioned during the transect walk can be used as guidelines for the facilitator. The pieces of paper are collected on the floor and participants can decide where they are located on the map. The pieces of paper are not glued on to the map until the location is validated by the group. It is important that the participants take charge of mentioning characteristics, drawing them on pieces of paper and locating them on the map. The facilitator should only guide the exercise and stimulate the thinking, but should not influence the

answers of the participants. It is recommended to note as much information as possible on the map (e.g. historical anecdotes, types of plants/crops, family names of different households etc.)

4. ***"Interview the map"***

Once the participants decide the map is complete, the facilitator initiates a discussion of it. In order to identify different livelihood strategies and vulnerability to climate change and food insecurity of different groups within the community, the following questions could be asked:

- What are the different neighbourhoods within the village? What are their characteristics (type of house, socio-economic status, landless)?
- Which houses are most affected by extreme climate events?
- Which areas are most affected by climate risks and hazards? Which areas are affected by droughts/floods?
- Are there resources which the community could use in the past, but which are no longer available (e.g. water, wood, animals)?
- Who has access to the different resources? Has access and availability of resources changes over time and why?
- Is access to these resources different for men and women?
- Where do women work? Where do men work? Why?
- Where do you buy your food? Who buys the food?
- Where do you grow your food? Who grows the food?
- Is food available all year round?

5. ***Presentation of the map***

At the end of the exercise one person presents the map to the all the participants in order to close the exercise. In case there were two groups, they come together and one participant of each group presents each map. The participants are invited to add anything that was missed on the map(s). In case there were two maps according to gender, the comments made by the other group should be marked in a different colour to identify the different perspectives.

6. ***Summary and closure***

The facilitator summarizes the main findings of the discussion, explains what the main research steps will be and what the purpose of the group was. He/she thanks the participants and the focus group closes.

After the exercise: The community map can serve as a first basis to identify the location of most vulnerable households within the community, which can then be invited to semi-structured interviews or focus groups.

Expected results:

- Location of the main social and ecological characteristics of the community, as well as natural and physical resources
- Location of the different neighbourhoods within the community
- Identification of vulnerable households
- Identification of patterns of access and control over resources important for livelihood strategies and food security

3. Historical timeline and climate trends

Objective: This tool aims to identify changes and trends with relation to climate events and variability, availability of resources, changes in livelihood strategies and responses in times of shocks and stresses, including floods, droughts, hurricanes and also periods of food insecurity. It helps to get an insight into past hazards, changes in their nature, identity and behaviour. If there are regional climate projections, their relevance for the community can be assessed through this exercise.

The tool is focused on collective memory, and although it should include people of all ages, the older the members of the group the longer the timeline can extend.

It is very important to understand several potential limitations of the exercise. Firstly, memories are not only notoriously inaccurate, they can sometimes actually be false. The important issue is that the information is not necessarily accurate, but that the memories are conveyed and recorded (where possible in a cross-age group process) and the timeline that people believe has happened is actually noted. Secondly, the ability to determine a pattern of climate variability and climate change from this is not necessarily accurate. (It may be possible to check the timeline against meteorological records for a station in the vicinity to get some validation).

Preparations: For this exercise it is important to find a group of older people who are willing to talk about their memories. The research team should ask the village head whether he/she can identify older people who would be good for this exercise. But it is important that all age groups are represented. This is partly to cross-reference the things people say, and also for younger people to be aware of – and reflect on – the memories of the older people.

Participants: 5-8 older people (men and women) plus others. Older does not mean over 60 – to get a timeline going back twenty or thirty years requires people in their 40s or 50s.

Material: Big piece of paper, pens, post-its, board, flipchart

Estimated Time: 2-4 hours (this can be too long for some older people and it is recommended to split the exercise over two days)

Implementation:

1. ***Introducing the exercise***

The facilitator introduces him/herself and explains the objective of the exercise. If there are two facilitators available, the group of people is divided into a group of men and a group of women, who will ideally be in separate rooms. The following steps are the same for the two groups.

2. ***Agree on a starting point***

The facilitator draws a horizontal line on a large piece of paper on a board and asks the community when the community was founded. If the community is very old, the facilitator asks for the most important events in the past and then focuses discussion on the last 2-3 decades.

It is important to note that when outsiders use sheets of paper and draw a line that is meant to represent the progress of time (usually the past on the left, the present the right hand end the line) it is an abstract

way of representing time, and may not be immediately apparent to the participants. It may be important to initiate a discussion about how to represent the past and present in a diagram.

3. Identify crucial events

The facilitator asks participants if they could mention the main events that have happened in the community in the past. These can be political or social events (e.g. conflict, famine, foundation of an organization, death of someone important). These events serve mainly as points of reference, to help remembering the type of climate and extreme climate events that occurred around those events. Nevertheless, this step is also important, since it provides valuable insights into the social structure and past of the community. The main historical events are captured on the piece of paper along the historical timeline.

4. Identify climate trends

The facilitator keeps a section of the paper below the historical timeline, to record comments and capture climate shocks and trends, including perceptions of changes in temperature, rainfall, wind, storms, heat waves etc. and the impact these had on livelihood strategies and on access to food.

5. Identify extreme climate events

Likewise, the facilitator notes down in a different colour any extreme climate events that participants can recall, as well as the consequences these had on different livelihood strategies and access to food within the community.

6. "Interview the diagram"

Once the historical timeline is finished, the facilitator engages the participants in a discussion to analyse the impacts of certain climate events and trends on the community, and on food security in more depth.

- What are the most disastrous climate shocks and stresses? Has the frequency of these changed over time?
- Who was most affected by them? How did these people cope?
- Have coping strategies changed over the years? Why?
- What were the consequences for the community? Have these impacted on livelihood strategies?
- Did these events have any impact on your health and access to food?
- When did you face periods of hunger and famine? Were these related to climate impacts?
- How did climate impacts affect your access to food? Which other factors exacerbated this?

7. Presentation of the diagram

At the end of the exercise, one person in the group is asked to present the timeline to the rest of the group in their own words. In case the group was divided into men and women, the two timelines are presented to the whole group of participants.

8. Summary and closure

The facilitator summarises the main findings of the whole group discussion, explains what the main research steps will be and what the purpose of the focus group was. He/she thanks the participants and the group closes.

After the exercise: This exercise helps to identify some of the most important perceived climate trends and impacts for the community, their livelihood strategies and food security. These can be used as a basis for the climate risk ranking exercise later on. The diagram itself will be used again for the 'changing farm practices' focus group. It can be checked against available meteorological records, and this may help to assess the validity of the group memory. It is important to realise that there is no right or wrong in the way that the memories are presented: the data is what is presented, and evidence of incorrect memories is itself of interest.

Expected results:

- Identify the main climate events in the past
- Identify the main climate tendencies over the years
- Identify periods of food insecurity or even famine
- Identify their impact on livelihoods strategies, natural resources and food system

Box. Talking about 'climate change'

When working with people at the local level, we want to treat them with respect as to their knowledge and ideas, but at the same time we need to acknowledge that there may be confusion (over concepts and translation of key terms) and misperceptions. This is especially the case when dealing with “climate change”. Here are some points to consider:

People are aware that there is variability in their experience of “normal” climate – drought periods and less rain than is expected in the “rainy season”, etc. We often do not (scientifically) know if such variability is part of what we call 'climate change', or whether it is within the normal range of climate for that part of the world. When we approach people for projects and research, it is difficult for us and the local people to separate “climate change” from their experience of a range of different weather patterns in recent years. This *attribution problem* involves confusion: if we are involved with the people in a project, do we tell them it is related to climate change? There is a danger that we and they will start to attribute what they perceive as “new” patterns of weather as being a result of human-caused climate change.

Unless there is a weather station nearby, we will be relying on people’s memory to form an opinion of what changes there have been in recent years. We also do not know what “recent years” means: it relies on the ages of the informants, and memories are influenced when people discuss among themselves. It is also possible that people see that we are interested in climate change, and construct their memories into that framing.

People have false memories and evidence sometimes shows that the actual recorded meteorological data can be different from what people remember. This means there is a particular problem with this contradiction. One way to deal with this is just to share the data from the weather station and start a discussion about why they might be different.

In many local areas the people have their own weather forecasting methods based on traditional indicators. In some communities there are individuals who are regarded as experts in weather forecasting, and the vulnerability analysis that you are doing may cause anxiety or even conflict that we are treading on their territory. This clearly needs to be handled carefully, e.g. by explicitly including them in the process. There is no general guideline on how to deal with it as it is so context-specific.

People will not always easily understand what we mean by climate change, and the causes of it (fossil fuel burning mostly in other countries) are very remote from them. How to deal with this information is difficult, including how much to say. The key point to get across is that their experience of past climate may not be an effective guide for the future, because something has happened at the global scale which is affecting everybody on earth, and which will change rainfall, temperature, seasons, variability, and possibly affect extremes that cause more severe risks.

4.

4. Well-being ranking

Objective: The aim of this exercise is to deepen the analysis of the characteristics of different groups from a local well-being perspective. This helps understand the local perceptions of "being well" and the different factors that indicate high levels of well-being. Differences in wealth and well-being also affect people's coping strategies, and thus the exercise helps to identify target groups for projects that aim at increasing the capacity to adapt. It also gives an insight into the weight the people give to social, economic, health or ecological factors and their importance for individual and collective well-being.

In this vulnerability analysis, well-being is a way to assess what people in the locality understand as the factors that are relevant to them for a good quality of life. The research team should not impose a preconceived notion of well-being, but instead try to gain insight into how the people themselves perceive the quality of their lives, and differences between groups. This exercise needs to be implemented with care and respect towards participants, since it touches on sensitive issues. Some participants may also be reluctant to categorise members of their community, and the facilitator should leave it to his/her own judgment on how far to go with the questions. Where it is clear there is reluctance and difficulty in discussing such factors, this and the dynamics involved also constitutes evidence on how the different groups or individuals relate to each other, perhaps as a reflection of power dynamics. This in itself is a useful insight into the locality and its differences.

Preparations: Invite a group of men and women, place the community map in the space where the exercise will take place. The map can be used as a prompt for discussion, and to help identify specific groups or households.

Participants: 2 groups (one female, one male)

Material: large piece of paper, small pieces of different coloured paper, pens, flipchart, board

Estimated Time: 2,5 – 3 hours

Implementation

1. ***Introducing the exercise***

The facilitator introduces him/herself and explains the main objective of the exercise. If there are two facilitators available, the group of people is divided into a group of men and a group of women, who will ideally be in separate rooms. The following steps are the same for the two groups.

2. ***Brainstorming well-being characteristics***

The facilitator asks the group what well-being means for them (When do you think you are doing well? When are you well? Why?). The question has to be asked in a very general way so not to influence the answers, e.g. if the facilitator asks "when are you happy?" this refers to an emotional state, which not necessarily reflects a general sense of well-being. On the other hand asking "are you well when you have money?" already influences the answer and "money" being an indicator for well-being without it necessarily being one the participants would have mentioned. This is important since concepts of well-being can differ greatly within a location (and between men and women and different age groups), and it is crucial to understand what different groups consider to be the determining factors for their own well-

being. The facilitator writes the different characteristics of well-being on pieces of paper and pins them on the board.

3. Brainstorming ill-being characteristics

Once the participants mentioned all the well-being characteristics, the facilitator asks characteristics for ill-being are. If the mentioned "ill-being" characteristics are the opposites of the well-being ones, they are placed next to the corresponding well-being characteristics on the board. Otherwise they are placed on the "ill-being" side of the board, further below.

4. Define the conditions for well-being

Once the characteristics for "well-being" and for "ill-being" are established, the facilitator asks which conditions need to be in place to be well. If one of the well-being characteristics is for example, "being healthy" then the condition that needs to be in place might be "having access to health services" or having "an adequate diet". In this step it is also possible for the facilitator to ask in more depth about access to food and which set of conditions need to be in place for households to have food throughout the year. These can vary from proxy indicators of being able to afford food, e.g. money, to more direct indicators, such as growing enough food as smallholders for own consumption. It is important for the facilitator to focus the discussion on the characteristics and conditions that can be influenced and that do not depend on faith (e.g. "God will provide us with this"). The conditions can be resources, such as physical resources (cattle, land), financial resources (cash, income), or social resources (social networks which make it e.g. easier to migrate).

Throughout the brainstorming exercise participants may mention different levels of access to or quality of well-being conditions. It is also possible to have different conditions for the same kind of characteristic (see example below). These conditions can then be used as indicators to assess someone's well-being.

Example 1:

- Well-being characteristic: have food (buy it)
- Condition: have a source of income
- Levels of condition: income > 10.000 → income = 5.000 – 10.000 → income < 5.000

Example 2:

- Well-being characteristic: have food (grow it)
- Condition: own land to grow food
- Levels of condition: owns plot → rents plot for own production → has no plot or works on someone else's land

These different levels are written down next to the well-being conditions. Due to time constraints it is suggested to identify first the most important well-being characteristics and then focus only on these to elaborating the different condition levels.

5. Identify well-being categories

At this stage the most important characteristics and their conditions have been identified by the group. The facilitator now asks whether the different characteristics represent groups within the location that differ in terms of their well-being. Depending on the place, it may be that the participants are resistant to ranking people according to wealth, and this reluctance has to be respected by the facilitator. If the group is resistant to naming groups the facilitator can skip this step and continue a discussion on the basis of the

diagram. The problem can be noted as it is also a form of data for the exercise, and in follow-up semi-structured interviews it may be possible to find out more about the reasons.

The categories of people with different levels of access to well-being resources can vary a lot depending on the community. They could for example refer to land tenure and landholding structures (landholders, people who rent land, landless, seasonal migrants) or to social class (such categories as upper, middle and lower class) or the number of children in a household (using categories such as 6+ children, 3-5 children, 1-3 children, or households with no children). These categories are placed on top of the table with the well-being characteristics and conditions (see table).

Well-being Characteris-tics	Well-being Conditions	Well-being categories					Ill-being characteris-tics
		Upper class	Middle class	Lower class	Poor	Very poor	
Have enough food	Have an income	Business owner, large landowner, employers	Smallholders with own land, have surplus to sell	Land workers, Employees	Seasonal workers, migrants	No land, no work	**Have no food**
	Have small numbers of dependents in the household	0-2 children	2-4 children	4-6 children	6+ children	6+ children	
Have good health	Have access to health care	Has enough money to go to the city for treatment	Has some money to go to the city for treatment	Needs to borrow money to get treatment, but mainly seeks treatment traditional healer	Needs to borrow money for treatment from the traditional healer	Has no money to access any kind of health service	**Have bad health**
Have place to live	Have a house	Big house made of bricks and tin roof	Medium house made of bricks and tin roof	Wooden house with roof of palm leaves	House made of litter	No house	**Be homeless**

The crucial part is that the categories reflect different well-being levels and levels of access different groups have to the "well-being conditions". The causal links between the well-being characteristic, its conditions and the well-being categories do not have to be as linear at the table above suggests, nor do they operate in only one direction. For example, having sufficient food depends on a number of factors, such as the size of the household, amount of land, income, access to markets, the level of agricultural productivity of the household etc. Hence, the well-being categories can have different characteristics which do not have to apply to all households in that category, but which give a more complex understanding of their vulnerability, their coping strategies and their ability to adapt to stress and shocks.

6. ***"Interview the diagram"***

On the basis of the table and the community map, the facilitator can guide the discussion with questions like the following (made relevant to local circumstances):

- Are all categories present in the location? Which one is the most representative of the local people?
- Do the different groups live in specific neighbourhoods?
- Which households have access to the resources that are needed to be well?
- Has the level of well-being in the location changed? Why? For which households?

7. ***Presentation of the diagram***

At the end of the exercise, one person in the group is asked to present the table to the rest of the group in their own words. In case the group was divided in men and women, the two timelines are presented to the whole group of participants.

8. ***Summary and closure***

The facilitator summarizes the main findings of the whole focus group discussion, explains what the main research steps will be and what the purpose of the focus group was. He/she thanks the participants and the focus group closes.

After the exercise: The well-being characteristics help to understand the local vulnerability context and patterns of access and control over resources that are needed for higher levels of well-being. Due to the sensitivity of this exercise it might be difficult to discuss in depth the reasons for social exclusion and marginalization of certain groups within the community, hence the information gathered can be used to then conduct semi-structured interviews with members of the different groups.

Expected results:

- Identify local characteristics for well-being and ill-being
- Identify groups with different vulnerability profiles and their characteristics
- Identify the location of the different households

5. Livelihood strategies and seasonal calendar

Objective: The seasonal calendar is used to analyse the seasonality of events in the location, including the climate, livelihood strategies and food insecurity, as well as their interrelation (e.g. increased migration as a consequence of drought). It can provide some important insights not only into the relation between climate impacts and food security. This exercise helps to understand the seasonality aspect of vulnerability, which needs to be considered when formulating adaptation measures.

Preparations: A matrix (table) should be prepared on a large board or piece of paper, with 13 columns and several rows. The left-hand column should contain a row with the main factors that want to be analysed. Some of these can be established by the research team (e.g. weather, food, and cash) but there should also be some space left for any factors considered important by the participants during the exercise.

Example:

	Aug	Sept	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul
Weather												
Rain						***	***	***	***			
Heat			**	**	**	*	*	*	*			
Livelihood strategies												
Migration (men)	*	**	****	**	**							
Fishing (women)												
Illnesses/disease												
Diarrhoea						**	**	**	*			
Fever												
Household food security												
Food	*	**	**	*	*	*	*	**	**	***	***	***
Cash	++	++	+	+	+	0	0	0	+	++	+++	+++

Material: markers, board, flipchart

Participants: big group of people (at least 10), men and women

Estimated time: 2 - 2,5 hours

Implementation:

1. ***Introduce the exercise***

The facilitator introduces him/herself and explains the main objective of the exercise. If there are two facilitators available, the group of people is divided into a group of men and a group of women, who will ideally be in separate rooms/locations. The following steps are the same for the two groups.

2. ***Identifying the beginning and end of the year***

The facilitator asks when the year begins for the people here. This can be either the beginning of the calendar year, or the beginning of the productive cycle within the community. The table on the board thus starts with the month that marks the beginning of the year based on the local understanding of the annual cycle.

3. Brainstorm and rank livelihood strategies

The facilitator asks the participants to mention the most important livelihood strategies for the local people. Here it is important to differentiate between the main activities for men and for women. Rather than brainstorming all the different livelihood activities in the community, it is better to focus first on the ones the present participants are involved in. A special focus should also be on livelihood strategies that are 1) the most relevant for the household and 2) the most climate-sensitive. It should also be noted that out-migrants need to be counted in relation to possible income (remittances) and as part of possible household livelihood strategies. It needs to be noted what types of migration has taken place (e.g. is it seasonal, how long do people go for, does it enable capital accumulation, construction of better houses etc.) and from what types of households (related to their socio-economic characteristics) do migrants leave.

The facilitator notes all the livelihood activities on paper cards and sticks them on the flipchart. Once participants have mentioned all the activities they can think of, the facilitator asks them to vote for the most important ones. Each participant has 3 votes, which can be given either to different livelihood strategies or all to one. Each participant marks their votes with ticks on the card with the livelihood activity they selected. Once the voting is over, the facilitator takes the 3-4 activities with the most votes and puts them on the calendar. The rest are not analysed but captured by the note-taker.

4. Brainstorm weather conditions

The facilitator asks participants what the weather conditions in a "normal" year are for each month. The main focus here lies on the most frequent weather conditions that occur throughout the year (rain, heavy rain, heat, dry season).

5. Brainstorm availability of food

The facilitator asks participants what the availability of food is throughout the year for each month.

6. Brainstorming illnesses

The facilitator asks which illnesses or diseases are common in the community, and whether they have a seasonal outbreak.

7. Filling in the calendar

The facilitator now asks when each weather condition, livelihoods strategy or illness/disease is most frequent throughout the year. Different levels of intensity can be marked by repeating the symbols indicating the activity in a particular month.

8. *Impact on the household*

Once this is done, the facilitator asks about the main cash flows in the household (- outgoings, + income) and when are the household's most food secure months. It is important to note that this question is asked in general, but that differences in access to food will depend on the assets a household has to produce or purchase food.

9. *"Interviewing the diagram"*

After all the rows are filled in, the facilitator initiates a discussion based on the calendar in order to start establishing the links between the different activities and conditions. These could be:

- What are the foods commonly eaten during the different seasons, are there shortages and why?
- What are the most important constraints to achieve food security and how do different people cope?
- How and by whom are decisions made with regard to achieving food security or responding to problems of attaining food security?
- What measures are taken and what resources are needed to prevent food security problems from recurring?
- Do the prices for food rise? When and why?
- What do households do in times of cash shortage? Do times of cash shortage overlap with food shortage and high food prices?
- What do people do in times of food shortage? What do women do? What do men do?
- Is there a direct relation between the male migration and the rainy season?
- How do the different weather conditions impact on women's activities?
- When are particular health care services more accessible or not accessible, due to weather conditions (e.g. flooded roads, cannot access certain services due to cash shortage and inability to take a loan)?
- How are your livelihood activities impacted by the weather? What do you do to adapt?

10. Participants present the diagram

At the end of the exercise one person presents the calendar to all participants in order to close the exercise. In case there were two groups, men and women come together and one participant of each presents each calendar. The participants are invited to add anything that was missed on the map(s). In case there were two maps according to gender, the comments made by the other group should be marked in a different colour to identify the different perspectives.

11. Summary and closure

The facilitator summarises the main findings of the whole focus group discussion, explains what the main research steps will be and what the purpose of the focus group was. He/she thanks the participants and the focus group closes.

Expected results:

- Identify weather conditions throughout the year
- Identify their impact on livelihood strategies
- Identify correlation to illness, access to food and availability of cash at the household level

6. Changing farming practices and crop ranking

Objective: Use this tool to engage in a discussion with farmers who have extensive knowledge about the current local farming practices and crops, as well as about how these developed over time and how they have been adapted to the local climate. It can also foster a discussion on how the change in farming practice came about, what the decision-making processes behind these were and what the effects on people were. This exercise will serve to identify already existing coping strategies farmers use, as well as explore the potential for diversifying agricultural practice by using already existing knowledge and local crops.

Preparations: The research team should try and identify particularly knowledgeable men and women, who have extensive experience on farming practices and agricultural production. These people should be approached in advance and invited to participate in the focus group discussion.

Participants: approx. 5 male and female farmers

Material: large piece of paper, small pieces of different coloured paper, pens, flipchart, board

Estimated Time: 1 – 1,5 hours

Implementation

1. ***Introducing the exercise***

The facilitator introduces him/herself and explains the main objective of the exercise.

2. ***Discussion changing farming practices***

This step is focused on identifying the types of changes farmers undertook, the reasons why they did so, as well as the consequences the changes had. The facilitator will guide the discussion by having a set of questions which he/she can ask the group. The group dynamic should not be dominated by the facilitator and it should be encouraged that participants discuss the topics among each other.

Discussion questions (CCAFS and FAO, 2012):

- Which climate trends and shocks have caused the biggest change on your farming practice? And Why? Which other changes have occurred?
- Who decided to change the farming practice? Who implemented it (e.g. men/women, seasonal workers)?
- What was the effect of the changed farming practice?
- Did the change require new technology or know-how? How did you access it?
- How did the change impact on your daily life/workload? Did it impact on different groups of people in a different way?
- Did this change impact what you ate or how much you had to eat? Did members of your household have more or less food after this change? Was it better or worse food?
- Did the change create any problems? For whom?
- Did you keep this change or did you return to previous practices?
- What is the cost-benefit analysis of this change?

The facilitator/note-taker should take as many notes as possible from the discussion. In order to systematize the answers, a table like the one below can be used. He/she should also make note of any crops that farmers mention and start writing down a list, which will be discussed in more detail in the second phase of the discussion.

Type of practice	Major change	Impact (positive/negative)	Who decided?	Who implemented?	Resources needed	Consequence on food security?
Crops	Use more drought-resistant crops	In dry season yields were higher, but unexpected rainfall can destroy the plants	Landowner	Seasonal workers	Money and access to special type of seeds	If the season was dry the yields were higher, but in case of unexpected heavy rainfall all crops were lost
Irrigation	Increase irrigation due to dry season	More yields	Male head of household	Woman	Irrigation system	More food from own production

3. Crop ranking

This step will focus on discussing the different characteristics of local crops used for different types of farming practices.

3.1. List local crops

The facilitator lists the crops he/she wrote down during the first phase of the discussion and asks participants whether they know of any other types of crops that are being used locally. It is important to use the local names of crops when listing them.

3.2. List crop characteristics

Once the most important crops have been identified, the facilitator asks which crop characteristics are most important for farmers (e.g. drought-resistant, high yields, pest-resistant).

3.3.Make a ranking matrix

The facilitator draws a table on a large piece of paper on a board, with the varieties of crops in the first column and the crop characteristics in the top row . The facilitator asks the participants to evaluate whether the different characteristics apply to the crops. Participants have to allocate the following value to the crops:

0 = characteristic does not apply to crop

1 = characteristic applies somewhat to crop

2 = characteristics applies to crop

3 = characteristics applies very much to crop

	Drought-resistant	Heavy rainfall-resistant	Pest-resistant	High yields
Yellow maize	3	2	2	1
Red maize	2	0	2	3
Black beans	1	1	3	2

4. Concluding discussion

Once the discussion topic or the time is exhausted, the facilitator summarises the main discussion points and asks participants whether they agree or would like to add something. The facilitator thanks participants for their contributions.

Expected results:

- Identify main changes in farming practices, their causes and consequences
- Identify the main impacts of changes in farming practices
- Identify who engaged in these changes and which resources where needed
- Identify impacts in food security
- Identify main characteristics of local crops

7. Climate risk and coping mechanisms matrix

Objective: Identify climate-related risks which have the biggest impact on the community and their livelihood strategies. The identified risks are ranked according to the level of impact they have on people's lives and the community's current coping mechanisms are assessed.

Preparations: A matrix is a drawn on a board with up to 8 columns and 10 rows. Furthermore, 3 pieces of differently coloured paper are attached on one side of the matrix:

1. Levels of impact (yellow paper)
   0 = no impact
   1 = small impact
   2 = medium impact
   3 = disastrous impact

2. Type of impact (red paper)
   How does it affect livelihood strategies of different people?
   Who does it affect most?

3. Coping mechanism (green paper)
   What do you do to mitigate the impact?
   What would you need to be able to respond better?

Participants: a large group of people of men and women (min. 10)

Material: cardboard paper, different coloured paper, flipchart

Estimated time: 2,5 – 3 hours

Implementation steps

1. Introducing the exercise

The facilitator explains the objective of the method.

2. Brainstorming climate risks

The facilitator asks the participants what the main climate-related risks are in the community and lists them on a flipchart. If participants mention more than 3-4 risks, the facilitator asks them to do participatory voting to select the most important ones (see step 3 seasonal calendar). Once the 3-4 most important ones have been selected, they are put on the top row of the matrix (from left to right in order of importance). The others are not analysed as part of the matrix, but are captured by the note-taker.

3. Brainstorming livelihood strategies

Then the facilitator asks what the main livelihood strategies are that people pursue (the question posed could be "What kind of activities do you do in a day?"). These can be productive as well as domestic activities. In order to speed up the process, these livelihood activities can be taken from the calendar exercise, but need to be validated and complemented with the present group of participants.

4. Validating the list of risks and activities

The facilitator reads out the main risks and livelihood strategies listed on the board and asks the participants, whether they consider them all relevant and whether any additional ones should be added.

5. Ranking the most important risks and activities

It is important to capture the most important risks and livelihood strategies, yet one should be careful not to end up with a list that is too long. Hence, it is suggested to ask participants to pick 3 risks and 3 activities which they consider most important and mark this on the flipchart behind the risk/activity. At the end of the brief ranking exercise there should be max. 5-6 risks and 6-8 activities left. The risks are then written on the top row of a prepared matrix and the activities on the left-hand column.

6. Assess the level of impact

(Steps 3 to 7 should be followed to assess the impact of each listed risk on one particular strategy. On the matrix this means moving from the left to the right, and then down to the next livelihood strategy)

Once the different risks and livelihood strategies have been validated and placed on the matrix, the facilitator explains the different levels of impact classified in a rank from 0-3. The percentage for each level applies to the estimated level of destruction and impact it has caused. For example, flooding that destroys the cultivation of a certain crop would be 3, whilst erratic rainfall might 'only' affect the amount and quality of the harvest (e.g. 1 or 2).

Levels of impact (yellow paper)
0 = no impact
1 = small impact
2 = medium impact
3 = disastrous impact

Then the facilitator starts with the first livelihood strategy on the left-hand side of the matrix and asks the participants to classify the level of impact of each risk on that particular livelihood strategy. The agreed level of impact is written down in the respective field in the matrix.

7. Type of impact (How does this affect you? Who does it affect most?)

If the level of impact is assigned a 2 or 3, the facilitator asks how this impact manifests itself (e.g. lower yields due to drought). When asking how the risk impacts on the livelihood strategies, it is important to take into account the indirect effects as well. For example, if someone is a seasonal worker employed by a farmer, the indirect effect of too much rain on them would be that they can't work and that they will have to look for alternative sources of income.

The second question is related to who is mostly affected by the risk. In this case it is particularly important to draw distinctions between different types of groups and gender. The information on how the impact affects different groups of people and who it affects the most is written down on a red piece of paper.

8. Coping mechanism (What do you do to cope with this risk?)

Sticking to the same risk, the facilitator asks what people do to prevent or mitigate the negative impacts of that risk. Once the coping mechanisms are mentioned, the facilitator should try to identify the limits to these mechanisms (e.g. how much longer can you undertake this coping strategy until it is no longer

possible?). The obtained information is summarized on a green piece of paper and attached in the corresponding field of the matrix.

Once the 3 questions are answered for one type of risk on one livelihood strategy, the facilitator moves on to the next risk and applies the same set of questions.

		Climate Risks			
		Heavy Rain	Heavy Wind	Risk x	Risk y
Fishing	*Level of shock*	3	0		
	Impact	Sea level rises, saline waters enter freshwater system	-		
	Coping mechanism	Stop fishing and start selling household assets	-		
Home	*Level of shock*	2	2		
	Effects	House floods, children get ill	Roof is blown away		
	Coping mechanism	Go to Rural Medical Practitioner	Build stronger roof (but only when money is available)		
Maize					

9. "Interviewing" the diagram

- *Do all groups within the community have the same capacity to respond? Who does not?*
- *Which group of people is affected the most by which kind of risk? Why?*
- *Which resources do you need to adapt? Does everyone have access to these resources?*
- *What were the indirect consequences of climate risks?*
- *How do these risks impact on men? How do they impact on women?*
- *What are the impacts on food security?*

10. Presenting the diagram to the group

Once all the risks have been discussed in relation to all livelihood strategies, the facilitator asks one of the participants to present the results captured in the matrix.

11. Summary and closure

The facilitator summarises the main findings of the whole focus group discussion, explains what the main research steps will be and what the purpose of the focus group was. He/she thanks the participants and the focus group closes.

Expected results:

- Identify types of climate risks that impact most on people and their livelihood strategies
- Identify consequences of climate risks
- Identify existing adaptive capacity

8. Food systems analysis – causal flow diagram

Objective: A causal flow diagram shows the causes and consequences related to a particular problem and raises awareness of the relationships between the cause and the effect. By linking the different elements and making sense of how they are related, one can start to identify ways to address or even solve the problem.

In this particular case, the objective of the tool is to detect the causal links between different actors and processes within the local food system. This includes the range of actors that are involved in producing, consuming, buying and selling food locally, as well as links to external markets. The idea is to capture the complexity of the local food systems, identify relationships of dependency and understand the local production processes.

Participants: a large group of people (10-15) representing the different actors in the food system previously identified.

Material: paper, board, markers

Estimated Time: 2-2,5 hours

Implementation

1. ***Introducing the exercise***

The facilitator introduces the exercise and explains its objective.

2. ***Identify locally produced goods***

The causal flow diagram will have at its centre the local food production. In order to symbolize this, the facilitator can draw a farm in the middle of a large piece of paper and explain to the group, that this farm represents what is produced locally. The facilitator asks participants to list the main crops and livestock that people produce and asks them to indicate whether these are for food or cash, or both. A symbol for each good is drawn on a small piece of paper which is put at the centre of the larger piece of paper, around the farmhouse. This exercise can also be speeded up by taking the information already gathered on local goods, from previous exercises. There should also be an initial audit on what proportion of food may be brought into the locality from outside, and for which groups it is relevant – in other words the non-local part of local food access.

3. ***Identify different destinations of goods***

The facilitator asks participants, where or to whom the goods produced for cash are being sold. The facilitator writes the name of the different markets or middlemen on cards and asks participants to place these close to the goods and draw arrows between the different goods and their destinations. Different goods can have many different destinations and it is important to capture the complexity of this web of relations and causal flows in the diagram as well as in the notes taken by the note-taker.

Examples:

- Consumption own household
- Sold or bartered directly to other households

- Local market
- Local store
- Producer sells goods directly in market in city x
- Producer sells goods directly in market in city z
- Producer sells goods to middleman

4. Interview the diagram

Once the web of production and consumption processes is finished, the facilitator initiates a discussion with and among the participants on the mayor challenges local producers and consumers face, in order to produce, sell and access food. It is important to stress how different groups of people within the community are affected by these processes and what their bargaining position is within them (e.g. middlemen, producers, seasonal workers, women, poor).

Discussion

- What are the main difficulties producers face when selling their food?
- What are the main difficulties consumers face when buying food?
- Are these difficulties seasonal?
- Are these production processes influenced by weather events? How? What did the different groups within the community do in those cases? (ask about each group identified in the well-being exercise)
- Do all groups have access to all markets? If not, why not?
- Has there been any conflict between the different actors? Why?
- Why do some producers use middlemen and others sell their goods in the markets? What are the advantages/disadvantages of both?
- How do you access information about market prices?
- Are there seasonal price fluctuations?

5. Participants present the diagram

One of the participants is invited to present the diagram to the rest of the group and the main findings are discussed with the group.

6. Summary and closure

The facilitator summarises the main findings of the whole focus group discussion, explains what the main research steps will be and what the purpose of the focus group was. He/she thanks the participants and the focus group closes.

Expected findings:

- Identify the main locally produced goods
- Identify production processes and market chains
- Identify relations between producers, consumers and buyers at different levels
- Identify causes for vulnerability of different market actors

9. Institutional mapping and Venn diagram

***Objective*:** The Venn diagram helps identify the main actors within the locality, as well as their relationship to external institutions and actors. When identifying the internal groups and actors the main focus lies on uncovering which are the most powerful in terms of *decision-making* within the community. When identifying the external actors, the main focus lies on analysing the quality of the relationship with the people, in terms of *presence and importance* of the external actor. This exercise will generate valuable information on the relationships between the people and local government actors, which will highlight entry points as well as existing barriers to introducing policy options. Other non-government actors need to be identified as well, including politicians, entrepreneurs, land owners, and others from private sector.

This exercise includes two methods, the first one is the Venn diagram, which consists of identifying internal groups and actors, and how close these are in relation to the decision-making processes of the people. The second one is the institutional mapping, where external institutions and their relationship with the community are identified and discussed. The two activities are reflected in the same diagram, in order to make the links between internal groups with external institutions, as well as identify those groups within the locality that have little access to resources and low levels of influence. Another important element is to identify individuals or groups that act as brokers or mediators between the internal group and the external actors, such as having linkages to political parties, political bodies, development bureaucracy etc.

The facilitator needs to be aware that some of the information relevant to this may be sensitive, and that people may have some reluctance to even identify some actors if there are power relations within which they feel vulnerable. It is also possible that some key actors are involved in illegal activities that also pose a threat to people and may make them unwilling to say some things that are highly relevant to their situation. Some of this information may become apparent in other activities, including interviews.

Preparation: prepare material

Material: round pieces of paper of different colours and of three sizes, markers, board

Participants: a large group of men and women (10-15)

Estimated Time: 1,5 – 2 hours

Implementation:

1. ***Step - Introducing the exercise***

The facilitator introduces him/herself and explains the main objective of the exercise. If there are two facilitators available, the group of people is divided into a group of men and a group of women, who will ideally be in separate rooms. The following steps are the same for the two groups.

2. ***Venn diagram***

2.1. Identify internal groups

The first step of the Venn diagram is to brainstorm groups and actors within the location, which can be associated with a particular productive activity (e.g. farmers association) or a particular social, religious or political group. The name of each group that is mentioned by the participants is written on a round piece of

paper and is placed on the board. The pieces of paper for the internal groups can be different colours to identify different types of groups, but in comparison to the external actors they should all be the same size.

2.2. Identify the main authority within the location

Having identified the main groups within the location, the facilitator asks which of these is considered to be the main authority. It is then placed on the board, in the middle of a circle, which represents the location. Then, the facilitator asks which of the other groups are closest to the authority and have influence on decision-making processes. The most influential groups are placed nearest to the authority, and the least influential ones further away at the margins of the circle. It is worth reminding the participants that what is being identified is the power each group has, rather than the social/cultural importance it has for the people.

3. Institutional mapping

3.1. Identify external actors

Once all the internal groups are identified and placed on the board, the facilitator asks which external institutions and actors the participants know of, particularly those related to climate change adaptation and food security. Before writing the external actors on round pieces of paper, the facilitator asks how important these actors are for the community. Depending on the importance, small, medium or big pieces of paper are chosen for each actor.

3.2. Link the external actors with Venn diagram

Once all the external actors are identified, the facilitator asks whether they are related to a particular group(s) within the community. This can e.g. be the internal group that is in direct contact with an external institution or depends directly on it. This will help to identify particular groups or individuals within the locality that act as brokers or mediators with external actors. Then the facilitator asks whether this relationship is good (in terms of how accessible the external actor is to the internal group). Depending on the quality of the relationship, the external actor is placed closer or further away from the local circle. When the quality of the relationship is being identified, it is always good to draw comparisons to other external actors (e.g. so is this relation better or worse than the one you have with e.g. the Health Ministry?).

Once all cards are placed around or within the local circle, the facilitator asks which internal—external relationships are the most important, and a line is drawn between the external and internal and external groups. It is important to mention that the arrows or lines connecting the external and internal actors refer to direct interaction. So whilst the e.g. Health Ministry might be very relevant for the households, the ones that are directly in touch with it are probably the health care providers. Hence, only an arrow/line is drawn between the external actor (Health Ministry) and the internal actor (health care provider).

4. Discussion

When the diagram is finished, the facilitator can initiate a discussion around the relationships. It is particularly interesting for example to analyse whether some external actors that are considered to be important are placed far away from the people on the diagram. What are the main reasons for this? Also, the facilitator can draw attention to groups that have little influence in the local decision-making processes, and probably have weak ties to external actors. These groups can thus be considered vulnerable, since they

depend on the actions of more powerful actors within and outside the locality. This can provide a basis to analyse the institutional, social and political factors that contribute to the vulnerability of certain groups.

The facilitator can pick up issues discussed previously in the matrix scoring exercise to cover both institutional relations, and issues considered relevant for the participants in order to adapt to climate risks and be food secure.

- Who are the main actors in charge of implementing adaptation measures?
- Who are the main actors in charge of implementing food security and nutrition measures?
- How is their relationship with the people?
- Do all groups within the locality have access to these actors?
- What do these actors do in times of crisis?

5. Presentation of the diagram

At the end of the exercise, one person in the group is asked to present the diagram to the rest of the group in their own words. In case the group was divided in men and women, the two diagrams are presented to the whole group of participants.

6. Summary and closure

The facilitator summarises the main findings of the whole focus group discussion, explains what the main research steps will be and what the purpose of the focus group was. He/she thanks the participants and the focus group closes.

Expected findings:

- Identify main external and internal actors related to climate change adaptation and food security interventions
- Identify the type and the quality of the relationship with the community
- Identify whether all groups within the community have equal access to these actors
- Identify what the decision-making processes are for collective interventions

STEP 3 - Analysis of fieldwork findings

Throughout the fieldwork the note-taker is responsible for documenting the discussions during the different exercises, as well as taking pictures of the diagrams. This information will be the basis for a field report and for the vulnerability analysis. In order to facilitate the process of systematizing and analysing the information, the following section provides tables which can assist in emptying the findings in a systematic way. It is recommended to start the process of recollecting the findings as a team right after implementing the different exercises with the local people. This will allow to identify any gaps that might exist and which can be addressed during the next exercise/visit to the locality.

Dimensions of vulnerability

Table 1 indicates the contribution each tool makes to each DoV. This will help to identify which tool will provide information for the analysis of each DoV. The following tables provide a structure which can be used to fill in the information from each tool.

TABLE 1 DIMENSIONS OF VULNERABILITY

Tool	Livelihoods (DoV1)	Well-being (DoV2)	Individual capacity (DoV3)	Collective capacity (DoV4)	Governance (DoV5)
Phase 1: Resources – Access & control					
Transect walks					
Community map					
Well-being ranking					
Phase 2: Perceptions of change					
Historical timeline and climate trends					
Phase 3: Livelihoods and resources					
Livelihood strategies and seasonal calendar					
Changing farming practices and crop ranking					
Phase 4: Food security					
Food systems analysis – causal flow diagram					
Phase 5: Risks and adaptation measures					
Climate risks ranking & coping mechanisms					
Phase 6: Institutional mapping					
Institutional mapping and Venn diagram					

High contribution to that dimension (i.e. it is highly relevant)
Medium contribution
Low contribution

TABLE 2 DOV 1 - LIVELIHOOD STRATEGIES AND ASSETS

Livelihood strategies	**Assets/resources** (financial, physical, natural, human, social, political)		**Access** (Who has access to this asset?)	**Control** (Who controls it?)
Livelihood strategy 1: farming	Financial assets	Credit	Farmers with collateral	Microfinance organization
	Physical assets	Tools	Everyone who can afford it	Owner
		Seeds	Everyone	Middlemen, surplus farmers, seed vendors
	Natural assets	Soil quality	Household	Male household head
	Human assets	Workforce	Wealthy farmers	Wealthy farmers
		Knowledge on traditional practices	Everyone	Older farmers and traditional leaders
Livelihood strategy 2: migration	Financial assets	Money	Wealthy households	Wealthy household
			Poor households who borrow	Lender
Livelihood strategy 3: backyard farming	Human assets	Workforce	Household	Women
	Natural assets	Water	Households with water tanks/access to pipes	Water committee

TABLE 3 DOV 2 - WELL-BEING

Well-being characteristic	**Well-being condition**	**Well-being categories**					**Ill-being characteristic**
		Category 1	**Category 2**	**Category 3**	**Category 4**	**Category 5**	
Characteristic 1	Condition 1						**Characteristic 1-**
	Condition 2						
Characteristic 2							**Characteristic 2-**
...							...
...							...
...							...
Percentage of community in each category							

TABLE 4 DOV 3 AND 4 - INDIVIDUAL AND COLLECTIVE ADAPTIVE CAPACITY

Climate Risks	Impacts on livelihood strategies		Individual adaptive capacity	Collective adaptive capacity
Climate risk 1: Drought	Livelihood strategy 1: farming	Harvest failure	Try to plant drought-resistant varieties, but this is a gamble due to unpredictability of weather Diversification of crops Access to high quality seeds is limited for farmers	Low, community is in need of weather information Traditional knowledge to predict weather is less reliable and held by only a few members of the community
	Livelihood strategy 2: migration	Increased levels of migration	...	...
	Livelihood strategy 3:	...	...	...
Climate risk 2:	...	...	...	...
...	...	...	...	...
...	...	...	...	...
...	...	...	...	...

TABLE 5 DOV 5 - LOCAL GOVERNANCE STRUCTURES AND PUBLIC POLICIES

Internal actors	Responsibilities	Access	Importance for building community resilience to cc (high, medium, low)	Decision-making power (high, medium, low)
General assembly	Discuss community matters	Community members	high	medium
Executive committee	Decides on community matters	Authority and executive committee members	high	high
Water committee	Manages community water supply	Members	high	low
External actors	**Responsibilities**	**Local intermediary**	**Importance for building community resilience to cc (high, medium, low)**	**Relationship with community (good, medium, bad, non-existent)**
National water commission	National water supply and management	Village authority	high	Non-existent
Ministry of Agriculture	Provide extension services and inputs	Extension officer	high	Medium (delivery of inputs unreliable and untimely)

Food Security Outcomes

Method	Utilization	Access	Availability	Stability
Phase 1: Resources – Access & control				
Transect walks				
Community map				
Well-being ranking				
Phase 2: Perceptions of change				
Historical timeline and climate trends				
Phase 3: Livelihoods and resources				
Livelihood strategies and seasonal calendar				
Changing farming practices and crop ranking				
Phase 4: Food security				
Food systems analysis – causal flow diagram				
Phase 5: Risks and adaptation measures				
Climate risks ranking & coping mechanisms				
Phase 6: Institutional mapping				
Institutional mapping and Venn diagram				

High contribution to that dimension (i.e. it is highly relevant)
Medium contribution
Low contribution

Definitions of Food Security Outcomes[x]

Utilization: focuses on how the body takes advantage of the various nutrients. It is influenced by care and feeding practices, food preparation, dietary diversity, and intra-household distribution.

Availability: is the supply side of food security, determined by production, stocks and trade.

Access: is influenced by incomes, markets, and prices.

Stability: brings in the time dimension. Periodic shortfalls in food availability are a sign of food insecurity, even if
current consumption is adequate.

Food Security Outcomes			
	Description	**Most vulnerable groups** *(who has least access/ is most affected)*	**Climate sensitivity** **1) Level = high, medium, low** **2) Type of impact**
Utilization			
Which food do different households in the community consume?			
Does the community/household have access to different sources of nutritious food throughout the year?			
Who makes the food and how? How is the food prepared?			
What are the sources of water in the community? How is the quality? Who has access to them?			
Access			
What are the main food crops?			
What are the different livelihood strategies that allow different types of household to access food? (e.g. subsistence farming, income-generating activities)			
What kind of local exchange mechanisms exist? (e.g. food exchange, seed exchange)			
Are there formal or informal social support systems? (e.g. loans, sharing food)			
Other coping mechanisms in times of food shortage			
Markets: Who has access to market? What are the institutional norms that mediate relations with markets?			
Price fluctuations			
Availability			
Storage facilities/capacity (household and community level)			
How much and which types of food are available through local production?			
Length of periodic shortfalls in food availability			
Exchange mechanisms (e.g. food exchange, seed exchange)			
Formal/informal social support systems (e.g. loans)			
Stability			
Are there any seasonal fluctuations in the availability of food? What are the main causes?			

STEP 4 - Recommendations for adaptation measures

The aim of the DoV analysis is to provide information for planning adaptation measures. These should take into account the different factors that make people vulnerable to climate change, as well as the consequences for food security.

Vulnerability analysis								**Adaptation measure**		
Climate risk	**DoV 1**	**DoV 2**	**DoV 3**	**DoV 4**	**DoV 5**	**Most vulnerable group**	**Implications for food security**	**Adaptation measure**	**Timescale of adapt. measure**	**Monitoring and evaluation indicators**

- What are the different dimensions of vulnerability within the community and between groups?
- How are these affected by climate impacts? How?
- What are the consequences on the utilization, access, availability and stability of food for different groups of people within the community?

Selecting adaptation measures

Possible adaptation interventions should be discussed with the project team, the relevant stakeholders and the community. This can occur in one big focus group or in separate sessions. In order to select the most appropriate adaptation measures it is necessary to consider which ones are the most important to counter the negative consequences of the identified climate impacts, and what the limitations and advantages of each adaptation measure are for each group within the community. Criteria need to be agreed for selecting the interventions. Possible criteria for ranking include those that:

- Will benefit the majority of the community
- Will target the most vulnerable groups
- Are sustainable in the long-term
- Are effective in the short-term
- Address livelihood strategies *and* food system vulnerabilities

When a set of interventions have been defined, a participatory ranking exercise (see box below) can help to set criteria and rank measures in a participatory way. Other tools that can be used to select adaptation measures are for example *CRiSTAL* and *CEDRA*[xi], which focus on identifying and evaluating existing strategies before deciding on new activities. Participatory scenario building may also be a useful exercise to help communities define future strategies based on existing capacities[xii].

Box 4. Participatory Ranking and Evaluation Exercise

1. Choose adaptation measures
List the recommendations for adaptation measures and discuss with the community. If some measures are considered inappropriate for the local context they can be taken off the list. At the same time new measures recommended by the community can be taken on board and added to the list.

2. Brainstorm and rank criteria
Ask the community to mention criteria they consider important for potential adaptation measures (e.g. sustainability without external support, number of beneficiaries). If the list of criteria is too long, ask the participants to rank them through a participatory voting exercise (see step 3, seasonal calendar). Criteria should be concrete, distinct and clearly defined and understood by all participants.

3. Weigh criteria and decide maximum score
Once the most important criteria are identified, ask the participants whether they are all equally important, or whether some are more important than others. If some are considered to be more important, decide with the participants to give each criterion a weight according to its importance on a scale from 1-5 (1 being the lowest and 5 the highest score). The weight for each criterion will be the maximum score each measure can obtain for that criterion. Make sure the note-taker captures the reasons why the weights between criteria differ. If the audience is mostly illiterate, you can use stones instead of numbers and symbols for the different measure.

5. Rank each measure
Now work your way from the top-down and from left to right, evaluating each adaptation measure according to all criteria. If the maximum score for one criterion is 4, then you need to rank that adaptation measure from 1-4 for that criterion. See Table 6 for an example.

TABLE 6 RANKING ADAPTATION MEASURES ACCORDING TO CRITERIA (ADAPTED FROM CHEVALIER AND BUCKLES, 2013, P. 51)

Rating criteria	Weight, from 1 to 5	Seed bank	Micro-credit	Farmer schools
Equitable (gender)	**5**	4	2	3
Sustainable	**5**	5	2	4
Cost efficient	**4**	3	1	3
Time efficient	**3**	2	3	1
Max score	**17**	**14**	**8**	**11**

6. Calculate scores
Once all the measures have been evaluated, you need to calculate the score for each measure based on the total of all scores.

7. Presentation of results and discussion
Invite a participant to present the results.

8. Closure and next steps
Thank the participants for their participation and explain the next steps for putting the different measures into practice.

Reference: Chevalier, J.M. and Buckles, D.J. (2013) *Handbook for Participatory Action Research, Planning and Evaluation*. SAS2 Dialogue: Ottawa.
http://www.participatoryactionresearch.net/sites/default/files/sites/all/files/manager/Toolkit_En_March7_2013-S.pdf (Accessed 22.04.2014)

Part of the participatory approach is to foster relationships with the local people and make each step in the process as participatory as possible. For the vulnerability analysis to be participatory and not merely extractive (collecting data and taking it away), it is crucial to report the results back to the participants. A return visit to the locality should be planned and announced to the participants before the vulnerability assessment is concluded. The return visit is important as it provides participants with a sense of continuity of the project and also allows the project team to validate their findings with the local people, as well as fill any information gaps that might have been detected during the analysis of the findings.

In order to build continuity and relationships with the community it is recommended that the members of the field team be the ones who return to report back on the findings. The team that reports back should know what the next steps in the project will be in order to communicate this to the community (e.g. will there be a project, who will benefit from it, who will implement it etc.). If the vulnerability assessment served the purpose of research and no concrete projects will follow, it is important to communicate this openly to the community to avoid raising false expectations.

The presenter should avoid using technical language and present the findings with the same words as the community used. It should be informative, but also participatory. Throughout the process community members are actively encouraged to comment on the findings, correct the presenter in case some of the findings were misinterpreted and add their perspective to the analysis. The validation of the findings through the community is important to ensure authenticity of the findings, as well as include the participants in the analysis. Depending on the purpose of the vulnerability analysis and the project context, it is also crucial to involve relevant stakeholders in this process.

Objectives of reporting back:

- **Present findings** - The field team should communicate clearly the objectives of the vulnerability assessment, what the context of the project is, as well as the main findings from the field work. This should be done in a dynamic and illustrative way, e.g. through a graph or poster using pictures from the field work.
- **Fill information gaps** - During the analysis of the findings, the research team might have identified some information gaps. Returning to the community is an opportunity to fill these and consult them with the community.
- **Consult recommendations for adaptation measures with the community**
- **Rank potential adaptation measures** - If the PVA resulted in some recommendations for adaptation measures, returning to the community provides an opportunity to present these to the community and rank them according to local criteria.

Annex

Glossary

Adaptive capacity: capacity of communities or households to adjust in order to reduce vulnerability to climate variation, to moderate potential damage, cope with, and recover from the consequences

Climate impacts: can be both climate shocks and stresses that impact on the community

Climate variability: expected variation around the mean in climate parameters

Climate change: a change in means and the variations around the mean

Coping strategies: livelihood response strategies mobilized in front of shocks.

Ecosystems: The interactive system formed from all living organisms and their abiotic (physical and chemical) environment within a given area. Ecosystems cover a hierarchy of spatial scales and can comprise the entire globe, biomes at the continental scale or small, well-circumscribed systems such as a small pond.[xiii]

Ecosystem services: Ecological processes or functions having monetary or non-monetary value to individuals or society at large. There are (i) supporting services such as productivity or biodiversity maintenance, (ii) provisioning services such as food, fibre, or fish, (iii) regulating services such as climate regulation or carbon sequestration, and (iv) cultural services such as tourism or spiritual and aesthetic appreciation[xiv]

Food security: "all people, at all times, have physical and economic access to sufficient, safe and nutritious food to meet their dietary needs and food preferences for an active and healthy life."[xv]

Food system: the food system encompasses the set of activities and actors that are involved in all the processes of food from the farm to the end consumer

Livelihood adaptation strategies: livelihood response strategies in front of changes or trends.

Livelihood assets: the resources people possess or have access to and use to gain a livelihood

Livelihood strategies: ways in which households utilize and combine their assets to obtain food, income and other goods and services

Shock: sudden or surprising event

Social organization: decision-making structures within the community which allow them to take collective action

Stressor: a factor that provokes stress (there are structural stressors, seasonal stressors, shocks or changes)

Resilience: capacity of communities or households to resist, cope with or recover from shocks and stress.

Vulnerability: an indication of people's exposure to external risks, shocks and stresses and their ability to cope with, and recover from, the resulting impacts

Template semi-structured interviews

Questions guide for semi-structured interview at a household level[xvi]

Livelihood strategies and climate impacts

1. General information (type of house, number of household members, origin, age)
2. What are the main livelihood strategies of the household members?
3. What type of resources do you need to pursue these activities? Do you have sufficient access to these?
4. Have your livelihood strategies been affected by climate impacts?
5. How have you tried to adapt to these?
6. What kind of support have you received from the government?
7. Do you belong to a certain group in the society (church, associations, societies)?

Health and nutrition (Callens and Seifert, 2003, p.55)

7. What are the major health problems during the different seasons?
8. What are the most important constraints to achieving good health and how are these overcome?
9. How and by whom are decisions made in the household with regard to health or responding to health problems?
10. What measures are taken and what resources are needed to prevent health and nutrition problems from recurring?
11. What are the foods commonly eaten during the different seasons, are their shortages and why?
12. What are the most important constraints to achieve food security and how do different people cope?
13. How and by whom are decisions made with regard to achieving food security or responding to problems of attaining food security?
14. How are resources allocated to achieving food security and reallocated in case of food insecurity?
15. What measures are taken and what resources are needed to prevent food security problems from recurring?

Questions for semi-structured interviews with health workers, traditional healers[xvii]

Examples of key questions:

1. What are the most important health problems and how important are nutrition problems?
2. What do local people see as the causes of their health and in particular nutrition problems?
3. What is the local treatment for specific health and nutrition problems?
4. Who is (more) affected by what health/nutrition problems and why?
5. What age groups, gender, socio-economic groups, etc. are more affected and why?

If a group of people with similar background is available this can turn into a focus group discussion. An appointment is made with key informants, either individually or in a group. The informants are asked to:

- Describe the commonly seen health problems in the community. What problems are specific for children, adults and women?
- Rank for each group (children, adults and women) the health problems according to their importance. Ten marks are given to the most important problem and one mark to the least important problem. A mark between 1 and 10 is given to the remaining problems.
- Explain why more importance was given to one problem than to another? *(e.g. higher incidence, more severe, etc.)*
- Identify those problems that are important for nutrition *(i.e. marasmus or the fact that a child's weight is significantly low for its age; kwashiorkor or protein malnutrition with symptoms like potbelly, oedema, dry skin and discoloration of the hair; night blindness; diarrhoea; anaemia, etc.)*?
- Describe for each of these nutrition-related problems, what local people see as the causes.
- Explain what local people in general do to treat these problems? *(Draw a matrix with the problems, their perceived causes, and how they are treated).*
- Identify on the village map those households that have frequently such nutrition-related problems and for each of these households mark with a symbol the type of nutrition-related problems they suffer from.
- For each of the households that were marked, explain the reasons why these households are having the nutrition-related problems that were mentioned.

Focus group with women

- What food do you produce at home?
- What do you buy? Where? Do prices vary?
- Do you exchange food with others?
- Do you sell food?
- What types of food do you consume on a daily basis? How does this vary depending on the season?
- Who manages the distribution of food in the household? Who manages the money to buy food?
- Who prepares the food?
- Who gets the water? Where do you get it? How is the quality?

REFERENCES

[i] The conceptual framework underlying the design of this toolkit, as well as particular tools, draws from a study for the German Development Cooperation (GIZ) and the Mexican Commission for Protected Ecological Areas (CONANP) in rural communities situated in a biological corridor in Mexico, as well as from collaborative work between IDS and Bioversity International in Tanzania and Colombia.

Ulrichs, M., Newsham, A., Shankland, A., Cannon, T. (2013) *Herramientas para el Análisis de Vulnerabilidad Social a los Impactos Climáticos a nivel local en Áreas Naturales Protegidas.* Comisión Nacional de Áreas Naturales Protegidas (CONANP) y Deutsche Gesellschaft für Internationale Zusammenarbeit (GIZ) GmbH. México.

Newsham, A., Pulido-Silva, M. T., Muñoz Cruz, R., Ulrichs, M., Camacho Castillo, E., Cantellano Ocón, X., Gonzalez Áviles, B. Y. and Shankland, A. (2012a) 'Análisis de los resultados de la aplicación de herramientas de metodología participativa para el análisis de vulnerabilidad de estrategias de vida (AVEV) al cambio climático: Comunidad de La Trinidad, Xilitla, San Luis Potosí', 31 pages. Institute of Development Studies, Universidad Autónoma del Estado de Hidalgo, Universidad Iberoamericana de Puebla, GIZ: Brighton.

Newsham, A., Pulido-Silva, M. T., Muñoz Cruz, R., Ulrichs, M., Camacho Castillo, E., Cantellano Ocón, X., Gonzalez Áviles, B. Y. and Shankland, A. (2012b) 'Análisis de los resultados de la aplicación de herramientas de metodología participativa para el análisis de vulnerabilidad de estrategias de vida (AVEV) al cambio climático: Comunidad de Laguna de Mante, Ciudad Valles San Luis Potosí', 31 pages. Institute of Development Studies, Universidad Autónoma del Estado de Hidalgo, Universidad Iberoamericana de Puebla, GIZ: Brighton.

Newsham, A., Pulido-Silva, M. T., Muñoz Cruz, R., Ulrichs, M., Salvatierra Guerra, A., Cantellano Ocón, X., Gonzalez Áviles, B. Y. and Shankland, A. (2012c) 'Análisis de los resultados de la aplicación de herramientas de metodología participativa para el análisis de vulnerabilidad de estrategias de vida (AVEV) al cambio climático: Comunidad de Xaltepec, Huauchinango, Puebla', 30 pages. Institute of Development Studies, Universidad Autónoma del Estado de Hidalgo, Universidad Iberoamericana de Puebla, GIZ: Brighton.

Beltran LM, van Etten J, Arenas C. 2015. Evaluación de la efectividad de los métodos participativos en estimar vulnerabilidad al cambio climático en Colombia. CCAFS Working Paper No. 107. Copenhagen, Denmark: CGIAR Research Program on Climate Change, Agriculture and Food Security (CCAFS).

Ulrichs M, Cannon T, van Etten J, Morimoto Y, Yumbya J, Kongola E, Said S, van de Gevel J, Newsham A, Marshall M, Kabululu S, Kiambi D, Nyamongo D, Fadda C. 2015. Assessing climate change vulnerability and its effects on food security: Testing a new toolkit in Tanzania. CCAFS Working Paper No. 91. Copenhagen, Denmark: CGIAR Research Program on Climate Change, Agriculture and Food Security (CCAFS).

[ii] IPCC (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, Annex I., M.L. Parry,

O.F. Canziani, J.P. Palutikof, P.J. van der Linden and C.E. Hanson, Eds. Cambridge University Press: Cambridge.

[iii] Wilby, R. L. & Dessai, S. 2010. Robust adaptation to climate change. *Weather,* 65**,** 180-185,10.1002/wea.543 http://dx.doi.org/10.1002/wea.543.

[iv] Blaikie, P, T Cannon, I Davis y B Wisner 1996. *Vulnerabilidad: el entorno social, político y económico de los desastres* (Tercer Mundo Editores for Intermediate Technology Development Group)

Hulme, D. & Shepherd, A. 2003. Conceptualizing Chronic Poverty. *World Development,* 31**,** 403-423,

Eriksen, S. H. & O'Brien, K. 2007. Vulnerability, poverty and the need for sustainable adaptation measures. *Climate Policy,* 7**,** 337-352.

Tanner, T. & Mitchell, T. 2008. Entrenchment or Enhancement: Could Climate Change Adaptation Help to Reduce Chronic Poverty? *IDS Bulletin,* 39**,** 6-15

[v] Ericksen, P. J. (2008b). What is the vulnerability of a food system to global environmental change? Ecology and Society, 13(2).

[vi] These dimensions of vulnerability (DoV) have been adapted from the analytical framework used in a study conducted for GIZ-CONANP in Mexico (Newsham *et al*., 2012a; Newsham *et al*., 2012b; Newsham *et al*., 2012c; Quintero *et al*., 2012).

[vii] Chambers, R. 1983. *Rural Development: Putting the Last First,* Harlow, Longman.

Chambers, R. 1997. *Whose Reality Counts? Putting the First Last,* London, ITDG Publishing.

[viii] Stevens, J. (2011) *A Brief Introduction to Participatory Approaches,* Participation Resource Centre, Institute of Development Studies: Brighton.

[ix] HIV/AIDS Alliance (2006) *Tools Together Now! 100 participatory tools to mobilise communities for HIV/AIDS*. International HIV/AIDS Alliance: Brighton.

[x] FAO (2009) Declaration of the World Summit on Food Security. Security. Rome. http://www.fao.org/fileadmin/templates/wsfs/Summit/Docs/Final_Declaration/WSFS09_Declaration.pdf

[xi] IISD (International Institute for Sustainable Development) (2012) *CRiSTAL User's Manual Version 5: Community-based Risk Screening Tool – Adaptation and Livelihoods* Winnipeg, IISD. http://www.iisd.org/cristaltool/download.aspx

Tearfund (2009) *CEDRA: Climate change and Environmental Degradation Risk and Adaptation assessment*. http://tilz.tearfund.org/Topics/Environmental+Sustainability/CEDRA+guide+and+forms.htm

[xii] ENDA (Environnement et Développement du Tiers Monde) and SEI (Stockholm Environment Institute) (2012) *Adaptation Toolkit* http://weadapt.org/knowledge-base/adaptation-decision-making/adaptation-tool-kit-navigation-page

Naess, L. O., Sullivan, M., Crahay, P. and Khinmaung, J. (2009) *Household level research on adaptation to climate change: Case studies in pastoralist and agro-pastoralist communities from Ethiopia and Mali - Methodology manual.* Final draft manuscript. Unpublished.

[xiii] IPCC (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, Annex I., M.L. Parry, O.F. Canziani, J.P. Palutikof, P.J. van der Linden and C.E. Hanson, Eds. Cambridge University Press: Cambridge.

[xiv] IPCC (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, Annex I., M.L. Parry, O.F. Canziani, J.P. Palutikof, P.J. van der Linden and C.E. Hanson, Eds. Cambridge University Press: Cambridge.

[xv] FAO. (1996). Rome Declaration and World Food Summit plan of action. Rome: FAO.

[xvi] Ulrichs, M., Newsham, A., Shankland, A., Cannon, T. (2013) *Herramientas para el Análisis de Vulnerabilidad Social a los Impactos Climáticos a nivel local en Áreas Naturales Protegidas.* Comisión Nacional de Áreas Naturales Protegidas (CONANP) y Deutsche Gesellschaft für Internationale Zusammenarbeit (GIZ) GmbH. México.

[xvii] Callens, K. and Seiffert, B. (2003) *Participatory Appraisal of Nutrition and Household Food Security Situations and Planning of Interventions from a Livelihoods Perspective: Methodological Guide* [online]. Food and Agricultural Organisation of the United Nations (FAO): Rome. Available from: ftp://ftp.fao.org/docrep/fao/006/ad694e/ad694e00.pdf

RESEARCH PROGRAM ON
Climate Change, Agriculture and Food Security

CGIAR

CCAFS

The CGIAR Research Program on Climate Change, Agriculture and Food Security (CCAFS) is a strategic initiative of CGIAR and Future Earth, led by the International Center for Tropical Agriculture (CIAT). CCAFS is the world's most comprehensive global research program to examine and address the critical interactions between climate change, agriculture and food security.

For more information, visit www.ccafs.cgiar.org

Titles in this Working Paper series aim to disseminate interim climate change, agriculture and food security research and practices and stimulate feedback from the scientific community.

CCAFS is led by:

CIAT

Strategic partner:

futureearth
research for global sustainability

Research supported by:

CGIAR Fund

Danida

European Commission

IFAD

Schweizerische Eidgenossenschaft
Confédération suisse
Confederazione Svizzera
Confederaziun svizra
Swiss Agency for Development and Cooperation SDC

IICT

UKaid from the British people

Australian Government
Australian Centre for International Agricultural Research

Irish Aid
Ireland's commitment to a world without poverty and hunger

Ministry of Foreign Affairs of the Netherlands

Government of Canada / Gouvernement du Canada

NEW ZEALAND MINISTRY OF FOREIGN AFFAIRS & TRADE
MANATŪ AORERE