Practical guide to Participatory Scenario Planning:

Seasonal climate information for resilient decision-making

ASDSP

HARAMBEE

care

Acknowledgements
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CARE Climate change: **http://careclimatechange.org/our-work/alp**
Agricultural Sector Development Support Programme (ASDSP), MoALF: **http://asdsp.co.ke**
Kenya Meteorological Department (KMD): **http://www.meteo.go.ke**

Cover image: Jane Wairimu Ndungu a farmer from Muranga County, Kenya
Credit: Francesco Fiondella/IRI

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Foreword from ASDSP

Extreme and increasingly uncertain weather and climate conditions are affecting millions of Africa's rural poor in a profound way. Climate change is having a negative impact on food security and on the ability of nations to prosper from increased agricultural production, employment and income. To overcome this challenge, agricultural value-chain actors must improve their ability to cope with climate change impacts and adapt to unpredictable weather.

The Agricultural Sector Development Support Programme is a sector wide programme implemented by the Government of Kenya in collaboration with development partners designed to facilitate the implementation of the Agricultural Sector Support Strategy. Strengthening environmental resilience for value chain development is a key component of the programme in the face of the changing climate and weather patterns.

ASDSP in collaboration with partners proactively addresses climate related issues through strategies aimed at building environmental resilience among communities. Specific areas include raising awareness and knowledge on the causes and effects of climate change, the importance of environmental sustainability and use of technologies and services to improve natural resource managements. Access to weather information by value chain actors especially the vulnerable is a vital component that helps communities make timely informed and flexible decisions on their planned activities.

In Kenya, the Kenya Meteorological Department (KMD) is charged with providing weather and climate information. However, the department has limited capacity and resources to enter into new areas of service delivery, and therefore the provision of climate information on which to base agricultural extension messages and other advisory services is limited. As a result, agricultural value-chain actors have limited access to relevant climate information and limited support in making informed decisions and choices. This calls for partnerships to collectively:

- improve the translation of weather and climate information into a form and language that agricultural, natural resource management, disaster risk reduction and other stakeholders can understand and use
- conduct effective forums for stakeholder-led analysis of the implications for local production, marketing and service delivery
- Communicate advisories through locally available communication channels.
- Together such actions would support the delivery of locally relevant climate information services and improve stakeholder decision making in the face of uncertainty.

A partnership between CARE International's Adaptation Learning Programme (ALP), KMD and the Agricultural Sector Development Support Programme (ASDSP) has played a key role in mainstreaming Participatory Scenario Planning (PSP) in Kenya. PSP is an approach that supports the inclusion of stakeholder-focused climate information services in agricultural and development planning across all counties in Kenya. The partnership has benefited from the technical climate adaptation experience of ALP, the methodological expertise of KMD and the ability of the ASDSP to reach value-chain actors throughout Kenya. Initial feedback from value-chain actors, county governments, KMD and the Ministry of Agriculture, Livestock and Fisheries (MoALF) indicates that the PSP process is a useful and highly effective approach for stakeholder-led analysis and use of climate and weather information, and that local stakeholders are keen to continue applying this approach in the future. This is evidence that the PSP is supporting more effective decision making to manage climatic challenges, which is resulting in strengthened resilience of value-chain actors to the impacts of climate variability and change.

Finally, I wish to acknowledge that the success of the PSP partnership could not have been achieved without the contributions of other partners, including the Kenya county governments, the MoALF, parastatals, civil society organisations, business sector players and, of course, the agricultural value chain actors themselves.

It is my hope that stakeholders in other African countries and other continents will find this guide useful in adopting and applying the PSP approach to the design and implementation of climate information services that are responsive to local decision-making needs.

Phoebe O Odhiambo
Programme Coordinator
Agricultural Sector Development Support Programme

Foreword from KMD

Climate change is no longer a myth – it is a reality. One of the immediate impacts of climate change has been increased variability in weather and climate patterns both from place to place and from time to time. Rainfall patterns in Kenya have been showing variations in many aspects such as onset dates, distribution within the season and overall amounts experienced. This, in effect, is translating into additional challenges to people's lives, livelihoods and development, all of which are already sensitive to weather and climate. It has been estimated that about 90% of natural disasters globally occur as a result of severe weather and extreme climate events and about 60% of activities in various socio-economic sectors are heavily dependent on weather and climate. In Kenya, the severe impacts associated with extreme climate events have made communities and other stakeholders in different socio-economic sectors more aware of the importance of weather and climate information for their planning and activities.

The Kenya Meteorological Department (KMD) has a mandate to provide timely early warning information on weather and climate for the safety of life, the protection of property, and the conservation of the natural environment. Timely dissemination of this information is necessary to ensure that early warning information gets to end users in good time to inform decision-making. Even more critical is the interpretation of weather and climate information so that it relates to local decisions that need to be made to ensure livelihoods and development remain climate resilient in a changing climate. However, the KMD does not have the capacity to carry out the interpretation and dissemination of weather and climate information single-handedly. Collaboration with other key institutions is critical in ensuring wider distribution and increased use of this important information. It is in light of this that the department has been partnering with the Adaptation Learning Programme, implemented by CARE International, and with stakeholders in key sectors such as agriculture, to interpret and disseminate user-friendly climate information through the Participatory Scenario Planning process at county level.

The Participatory Scenario Planning (PSP) process started as a pilot in Garissa County but has gained a lot of latitude and is now carried out in all the 47 counties of Kenya, with support from the Agricultural Sector Development Support Programme. The impact in terms of information access, use and informed decision making by users has been quite good. It is, therefore, imperative that the PSP process be sustained and taken up by other players. However, its effectiveness, if taken up by other stakeholders, will depend on how well the process is understood – which highlights the need to develop practical guidelines so that whoever comes on board can effectively apply the same process in different contexts. Use of the practical guidelines will ensure that gains already demonstrated by the PSP process are sustained in order to minimise the negative impacts of severe weather and extreme climate events, especially on vulnerable communities, and to support climate resilient development.

Mr. Peter G. Ambenje
Director of Kenya Meteorological Department
& Permanent representative of Kenya
with the World Meteorological Organisation (WMO)

Foreword from CARE International

The challenges facing poor and marginalised communities in Africa are multiple and complex. Climate change is increasing the frequency and intensity of climatic hazards and extreme events, resulting in significant impacts on livelihoods and affecting the drivers of poverty. Increasing the capacity of vulnerable people, particularly rural women who depend on natural resources in sub-Saharan Africa, to have a voice in decisions that affect their lives and adapt to the impacts of climate variability and change is essential for sustaining development progress and future economic growth. CARE International launched the Adaptation Learning Programme in 2010, implemented in Ghana, Niger, Mozambique and Kenya, in partnership with local civil society and government institutions to address these issues. The programme identifies successful approaches to Community-Based Adaptation (CBA) through working directly with vulnerable communities as well as learning with other organisations practising CBA, and supporting incorporation of these approaches into development policies and programmes in the four countries and their regions in Africa. CBA is about empowering vulnerable communities and their local governments and service providers to understand and analyse how the climate is and will continue to impact on their lives, make informed and anticipatory decisions on priority adaptation actions, and constantly adjust their livelihood and risk management strategies in response to new and uncertain circumstances. This is the starting point for effective adaptation, bringing decisions under the control of those affected by them and avoiding predetermined solutions.

In this light, ALP recognised the value and need for climate information to play a strong role in informing adaptation decisions at different timescales. The communities ALP works with are primarily involved in farming and expressed the need for better information to make seasonal decisions. Climate science has also turned its attention to climate services to support adaptation and climate resilience. In 2011, ALP linked up with the Kenya Meteorological Department to develop an approach which would enable better access and use of seasonal forecasts at the local level, informed by both the met services scientific forecast and local knowledge and forecasts, and finding ways to translate these into downscaled, meaningful and actionable advice. In Garissa County the Agriculture Sector Development Support programme was also looking for ways to support farmers and pastoralists to manage the impacts of climate change in their agriculture value chains. These connections led to the first meeting for the October to December season in Garissa in 2011. To meet the objectives, CARE developed a participatory approach, drawing from social learning and scenario planning, to facilitate a multi-stakeholder structured dialogue resulting in co-development and communication of localised forecasts. In this way the Participatory Scenario Planning approach to interpreting seasonal climate forecasts, PSP, was born. Working with KMD and ASDSP enabled PSP to be adopted in all 47 counties by 2014. By 2017, PSP has been adopted at different scales in 12 countries in Africa.

We are proud to present this technical guide to PSP in practice. The guide is the product of six years of work developing and refining the PSP approach, training practitioners and meteorologists, monitoring the outcome and impacts to see how PSP has supported access to climate information and informed adaptation decisions, and supporting its adoption and upscaling. PSP provides a valuable platform which other core climate services are beginning to link to. The guide is a timely contribution to support the current rapid development of user centred climate services and supporting projects. It is my hope that actors concerned with climate change across Africa will benefit from the PSP guide and use it to support capacity building and to catalyse effective adaptation and resilience to climate variability and change, especially for the most vulnerable populations. I wish readers and users of this guide every success and welcome your feedback.

December 2017

Fiona Percy
Regional Coordinator Adaptation Learning Programme
CARE International

Notes on this guide

Why a guide to participatory scenario planning?

Climate variability and change are bringing new and increasing risks and uncertainty to the current and future livelihoods of vulnerable people in Africa and to sectors such as agriculture, food security, water, and disaster risk management, among others. This is because many livelihoods and sectors in much of sub-Saharan Africa are heavily reliant on rainfall, which is already showing erratic patterns and is projected to change over the long term. As these sectors are climate sensitive, the uncertainty of the changes brought about by climate variability and change have significant impacts on development in much of sub-Saharan Africa.

As climate continues to change, stakeholders must find ways to improve their management of climate variability, change and uncertainties so that they can continue to have productive and resilient livelihoods and development. Stakeholders need access to climate information and the knowledge of how to use that information to inform agricultural decision making and planning. Often, accessing climate information, understanding it – especially the uncertainty of much information – and using it are major challenges, mainly because:

- **Climate information tends to be supply driven, not demand driven** – information coming out of climate science is often driven by those who produce it, not by those who use it – so the information may not meet the needs of all the stakeholders who require it for decision making and planning.
- **Uncertainty is seen as a problem to avoid** – part of the complexity of climate science is that the information has varied levels of accuracy and certainty. Uncertain information on future climate is taken as a barrier to using the information, even though it is more useful for planning than no information at all.
- **Planning for the unknown is challenging** – visualising the short- or long-term impacts of predicted climate variability and change on daily life is challenging enough, but more so when the most certain estimates, from the Intergovernmental Panel on Climate Change (IPCC) Fifth Assessment Report (2014) are that future weather/climate patterns and events will be increasingly volatile and extreme.

This guide presents Participatory Scenario Planning (PSP) as an approach to collaborative design and delivery of user-focused climate information services through working with: national meteorological services; all value-chain stakeholders in agriculture; government ministries/departments in other climate-sensitive sectors (such as water, environment, energy, health, development, disaster risk management); and communities, organisations and institutions. The purpose of this guide, therefore, is to give practical and easy-to-follow guidance so that readers have:

- a good understanding of the PSP approach and its contribution to leveraging climate information as a valuable resource for decision making and planning for climate resilient and sustainable agriculture and wider development
- practical knowledge of the steps in the PSP process and how to facilitate the process in different contexts
- comprehensive reference material to support quality assurance of the PSP approach and process as implemented in different contexts
- information for use in promoting widespread adoption, upscaling and replication of PSP in Africa and beyond, contributing to the design and development of innovative climate information services that are responsive to diverse and changing local decision-making needs.

Who is this guide for?

This guide to PSP is aimed at stakeholders who can facilitate the dialogue and planning process required to make climate information a relevant resource and a regular service that contributes to action to build climate resilient agriculture and development. These stakeholders include (note that this list is indicative and not exhaustive):

- local and national government officials working in technical and administrative capacities in the various climate-sensitive sectors
- meteorological services at national and sub-national levels, as well as regional and international climate science institutions/organisations
- community-based organisations such as farmer groups, disaster risk reduction committees, natural resource management committees and women's groups
- national and international institutions/organisations involved in agricultural systems support, climate resilient (or smart) agriculture, climate change adaptation, climate resilient/sustainable development, natural resource (particularly water) management, disaster risk reduction and early warning.

The target audience for this guide may already be familiar with climate change and adaptation issues. The document does not presuppose expertise in climate science or weather/climate forecasting. Rather, it introduces some basics on weather/climate information needed to understand the PSP approach. Web links are included in the 'Works Referenced and Relevant Resources' section at the end of the publication.

What does the guide contain?

This guide has been developed to provide practical and easy-to-understand guidance for facilitating the PSP approach. The document contains:

- concepts and explanations that need to be understood before and while implementing the PSP process
- practical steps for facilitating PSP as an iterative learning process, giving the purpose of each step, expected outcomes of each step, how to conduct each step and how the steps feed into each other
- several short case studies that present experiences of the PSP process in different contexts, aimed at providing practical understanding for readers of this guide
- recommendations to stakeholders seeking to fit PSP into other climate information services, for example into the work of institutions mandated to provide climate information and services, and into decision-making processes on adaptation and agriculture.
- references within the text and a list of useful resources and materials for implementing the PSP process, including links to other resources and further reading

The guide has a special focus on implementation of PSP to support climate-resilient decision making in agriculture, which is one of the most climate-sensitive sectors on which lives, livelihoods and economies depend in many sub-Saharan Africa countries. The focus on agriculture (i.e. crops, livestock and fisheries) allows us to demonstrate the practical application of PSP so as to enable understanding and replication of the approach. PSP can, however, be used as a decision-support approach in all other climate-sensitive sectors.

Many examples and case studies are drawn from Kenya, where PSP was first piloted in Garissa County by the Adaptation Learning Programme – implemented by CARE International – with support from the Kenya Meteorological Department, the Agriculture Sector Development Support Programme (ASDSP) – in the Kenyan Ministry of Agriculture, Livestock and Fisheries and other actors in Garissa County. Collaboration between CARE, KMD and ASDSP, and financial support from ASDSP has led to the up-scaling of PSP in all 47 counties in Kenya, since the March to May 2014 rainfall season in Kenya. Where appropriate, examples from other countries in Africa where PSP has been implemented are given.

How to use this guide?

The PSP guide is presented in 9 chapters. Chapters 1 and 2 give some background to the context, importance of and key concepts behind PSP. Chapter 3 introduces PSP and its key elements. Practical guidance on how to conduct the PSP process step by step is found in Chapters 4 to 8. These chapters follow the same format, describing key concepts and practical how to notes for each part of the PSP steps. If you are undertaking the PSP process for the first time, it will be necessary to go chapter by chapter here, as each step builds on the previous step and each chapter leads to the next one. When conducting the PSP process on a regular basis, use the guide as a reference when planning each step of the PSP process. Chapter 9 concludes with some final thoughts for sustainability and future developments and connects the PSP approach to other climate services approaches in Africa.

For ease of reference and navigation, here are the chapter titles and a brief summary of the chapters in the guide:

- **Chapter 1** introduces PSP in the context of climate resilience and makes a case of the need for climate information in decision making and planning for different sectors,
- **Chapter 2** presents key concepts in climate services
- **Chapter 3** presents the conceptual elements of participatory scenario planning used in the guide.
- **Chapters 4 to 8** are introduced collectively and provide practical guidance for facilitating all the 5 steps in the PSP process. Each of these practical step chapters is structured in the same way, showing the purpose and expected outcomes of the step, duration, budgeting guidance, key concepts and theoretical explanations, practical implementation 'how to' guidance, brief illustrating case studies and useful resources.
  - **Chapter 4, Step 1** Initiate and design the PSP process
  - **Chapter 5, Step 2** Prepare and plan for a PSP workshop
  - **Chapter 6, Step 3** Facilitate the multi-stakeholder PSP forum
  - **Chapter 7, Step 4** Communicate with impact
  - **Chapter 8, Step 5** Monitoring, feedback and learning
- **Chapter 9** deals with the linkage between PSP and regional processes for climate information services in Africa and takes the reader through suggested next steps for implementing and scaling PSP in Africa.

The annexes are at the end of the document and contain examples that demonstrate theoretical or practical aspects of certain concepts or steps in the PSP process.

CHAPTER 1

Climate resilience: the context for PSP

Implementing community adaptation plans in Niger. Awaiss Yahaya/CARE International, 2012

1.1 The climate challenge

Climate change is not only a concern for the future. Ongoing and noticeable changes in temperature and rainfall patterns – and the increased frequency, severity and limited predictability of extremes in weather and climate events such as droughts, floods and storm surges – are already having devastating impacts on productivity, economies and, above all, on the livelihoods of the world's poorest and most vulnerable people in sub-Saharan Africa. Added to these, longer-term, slow-onset impacts of rising temperatures and sea levels threaten development and economic growth at local, national, regional and international levels.

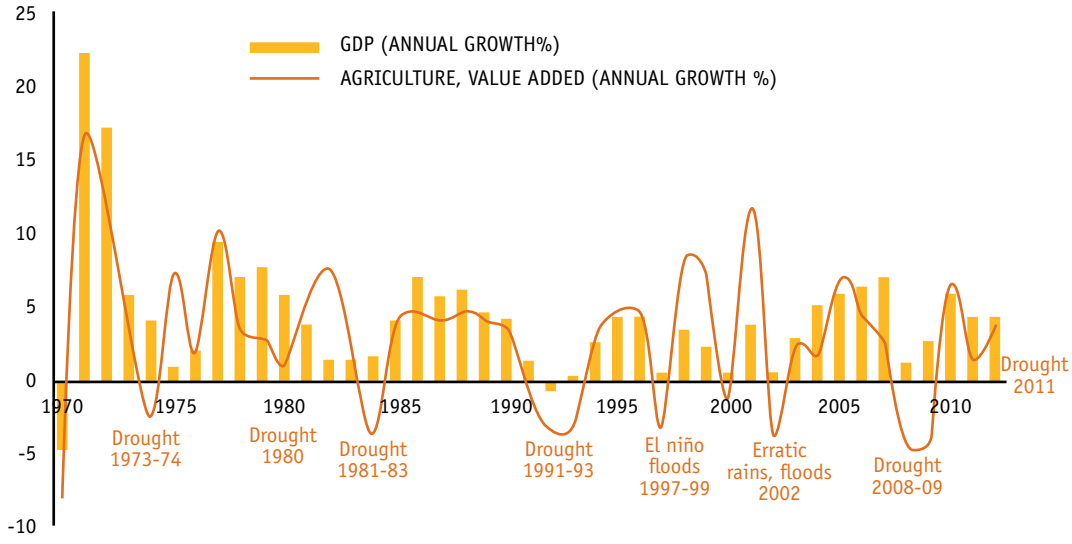
As global efforts under the UNFCCC (United Nations Framework Convention on Climate Change) Paris Agreement aim to limit temperature rises to 1.5°C above pre-industrial levels, recognising that this would significantly reduce the risks and impacts of climate change (UNFCCC, 2015), the world is already committed to increased warming that makes further climate change inevitable in the coming decades (CDKN & ODI, 2014). Subsequently, increasing magnitudes of warming increase the likelihood of severe, pervasive, and irreversible impacts IPCC (2014) though at the same time, localised future climate patterns and events and the resultant risks and impacts are uncertain.

The reality of climate change therefore means that continuous adaptation to its risks and impacts is unavoidable and is fundamental to sustainable and climate resilient development and livelihoods. With climate change threatening to undermine the progress that sub-Saharan African countries have made in tackling poverty, disease and malnutrition as well as gains in agricultural productivity (CDKN & ODI, 2014), adaptation and building resilience is an urgent concern. Towards addressing this concern, most of the nationally determined contributions (NDCs) in sub-Saharan Africa prioritise adaptation in actions to address climate change under UNFCCC (World Bank; IFC; MIGA, 2016). However, planning for and implementing adaptation and building resilience is a wicked problem because of the complexity created by three defining features of climate change risks and impacts: they are diverse; they are both short- and long-term; and they are not easily predictable. This means business as usual or 'one size fits all' interventions towards adaptation will not suffice. It is critically important to enhance people's and systems' adaptive capacity (Percy & Oyoo, 2016).

1.2 Why do we need climate information and services in various sectors?

Agriculture, water and health are some of the major sectors that drive livelihoods and economic development in sub-Saharan Africa. These sectors are rainfall dependent and susceptible to temperature rises, making them highly vulnerable to risks associated with ongoing and future climate variability and change (see Figure 1). Subsequently, NDCs for many countries in sub-Saharan Africa integrate adaptation and climate risk management in these sectors.

Figure 1. *Growth of Kenya's GDP is highly correlated with agricultural performance, which is highly affected by climate hazards. (World Bank Group, 2016).*



Maize harvesting in Garissa, Kenya CARE-Ahmed Hassan/CARE International, 2011

It should be noted, however, that adaptation is place- and context-specific, with no single approach for reducing climate risks that is appropriate across all settings IPCC (2014). This is due to continuing uncertainty about the severity and timing of climate-change impacts on the different sectors, and dynamic context changes in vulnerabilities, capacities, development goals and priorities, among other factors, over time. Successful adaptation therefore depends upon developing resilience in the face of uncertainty. This involves decision-making processes and enhancing adaptive capacity to continually make informed, appropriate and forward-looking responses to climatic and other changes (IPCC 2014); (CDKN & ODI, 2014); (Percy & Oyoo, 2016). Climate information and services therefore play an integral role in decision making and planning for adaptation in climate-sensitive sectors and climate-resilient development, through enabling and supporting the following:

1. **Understanding past climate patterns and trends and their influence on risks and vulnerabilities in the different sectors:** For example, past climate information can be used to understand shifting agro-climatic zones, with implications for the types of crops that can best be grown and livestock types and breeds that do well in different areas. Agricultural transitions are already occurring: in marginal areas, reductions in length of growing period due to shifting rainfall patterns and increased variability is driving change from a mixed crop–livestock system to a rangeland-based system, as farmers find growing crops too risky in those marginal environments (Thornton et al., 2009a). On the other hand, in some arid and semi-arid lands (ASALs), changes in climate – among other determining factors – are influencing a change in livelihoods from traditional pure pastoralism to agro-pastoralism.

   While diversification of agricultural livelihoods is an important strategy for spreading climate risk and building resilience in the ASALs, new strategies come with exposure to new risks (see case study 1). Consequently, climate information focuses on stakeholders' constant need to make decisions on agricultural value chains, practices and strategies best suited to variable and changing local climate contexts and risks.

2. **Anticipation of future climate conditions and events, and their potential impacts, so as to take action on risk preparedness, early warning and early action:** For example, forecasts offer an opportunity to anticipate constantly evolving risks caused by ongoing processes such as urbanisation, environmental degradation, and the influence of climate change. The information can provide early warning on changing risks as they happen by integrating forecasts of weather and climate hazards with advances in knowledge on dynamic patterns of differential vulnerability in different locations and sectors to enable early action and adaptation to evolving risks (Stephens, Coughlan de Perez, Kruczkiewicz, Boyd, & Suarez, 2016). The information is useful for preparing, reviewing and updating disaster preparedness and contingency policies, plans and programmes across sectors (UNISDR, 2015).

3. **A service that enhances the capacity of people and systems to manage climate risk and uncertainty and to optimise opportunities and investments.** For example, connecting knowledge and information on rising average annual temperatures and shifts in rainfall timing and distribution with decision making on new crop choices, water conservation and timely provision of inputs can increase agricultural and livestock yield for smallholder farmers and enhance food security.

In summary, adaptation and climate resilience in agriculture, water, health and other sectors demands building stakeholders' adaptive capacity through access to, and understanding and use of, climate information and services that are relevant to decision making.

Case Study 1

CLIMATE INFORMATION FOR ADAPTIVE AND RESILIENT AGRICULTURAL LIVELIHOODS

In Garissa County, one of the ASAL counties in Kenya, observed trends of warmer temperatures and drier conditions, and the effects of these changes on livestock production, have driven some communities to transition to a more sedentary, agro-pastoral way of life. Communities are combining traditional livestock rearing with irrigated crop production for food and income, taking advantage of their year-round access to water from River Tana. While this transition represents an innovation for communities in Garissa County and has generated new opportunities, it has also exposed them to new and evolving climate risks. New knowledge and skills are required to maximise productivity and protect crops from rainfall fluctuations and drought. The River Tana provides an important source of water for agriculture and domestic use, but proximity to the river increases exposure to flood risks, and there is a risk of conflicts over water needed for livestock and wild animals. Communities and local government services in Garissa County realise that to engage in decision making and planning that will enable them to adapt and be resilient to climate variability, access to climate information is critical. Access to and use of climate information enables communities to evaluate climate risks, weigh options and make decisions on how and when to invest their resources and apply different strategies to protect their livelihoods.

Noor Jelle, a farmer from Nanighi village, in Garissa, Kenya, with his bumper maize harvest. After hearing the seasonal forecast for good rains, Noor decided to plant more improved maize seed supplied by the Kenya Ministry of Agriculture. Credit: Joseph Ndiritu/CARE Kenya, 2011

Adapted from 'Adaptation Planning with Communities', Dazie, 2015.

CHAPTER 2

Key concepts in climate services

Harvesting onions during the dry season in Tanganga, Ghana. Nicola Ward/ALP CARE International, 2013.

The concepts described in this guide have been defined in various publications and are in common use, especially in climate services, in the IPCC Reports and in disaster risk reduction (DRR). In this guide, the concepts are elaborated to improve understanding, interpretation and communication of seasonal climate forecasts, as is done using the PSP approach.

2.1 Introduction to climate services

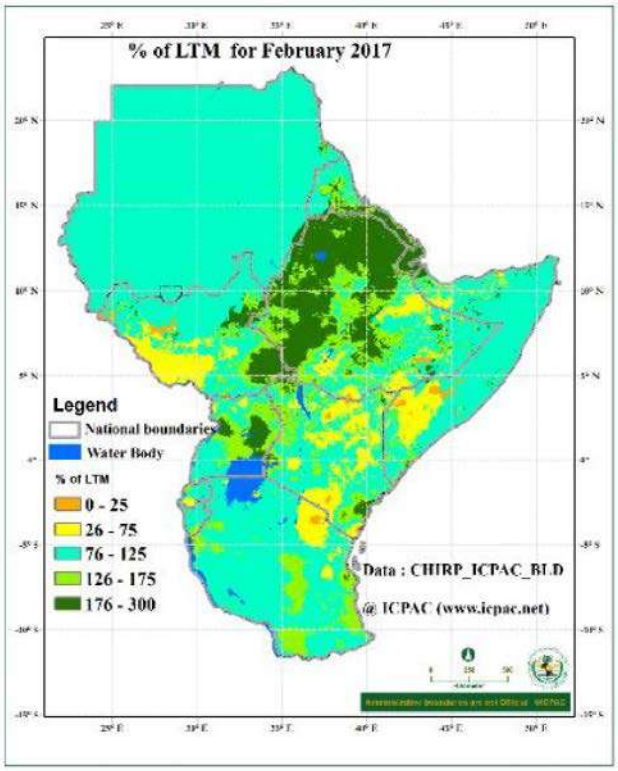
2.1.1 Climate information

Climate information is information about weather and climate conditions and events at past, present and future dates as well as the resulting implications for stakeholders' lives and livelihoods, development and the environment.

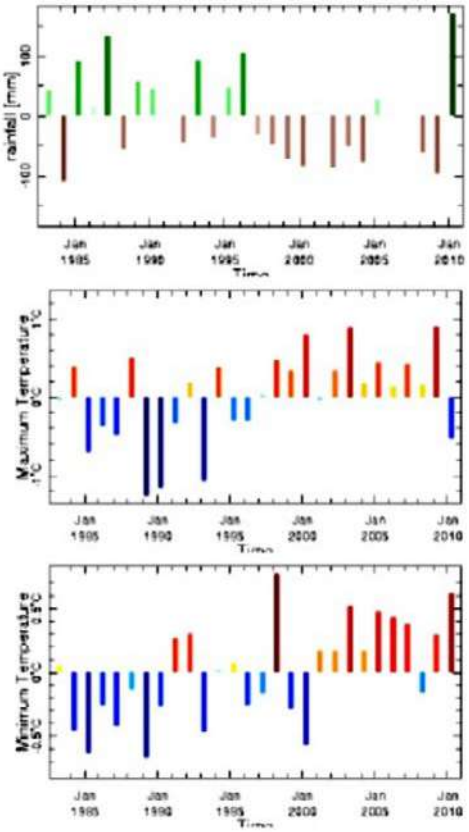
'Past' or 'historical' climate information from meteorologists (climate scientists) refers to data on weather elements collected using measurement instruments such as rain gauges, thermometers, barometers and satellites, among other instruments. The data is analysed to define different define weather and climate patterns and trends, for example monthly and yearly rainfall variations (see example in Figure 2b) or temperature trends and climatological summaries of all other weather elements. Past climate information from local sources is based on memories and experience of previous seasonal patterns and changes observed by different groups and communities. The combination of historical climate information from both meteorological and local sources helps us to understand past climate variability patterns and possible trends in climate variations. This analysis can identify trends in the frequency of extreme climate events (for example, trends in unusually high temperatures, droughts, heavy rainfall) and the influence of particular phenomenon such as El Niño on climate in specific areas (see Annex 1).

Figure 2: *a) Percentage of average rainfall for February 2017 (Source: ICPAC http://www.icpac.net/); b) Trend in rainfall (top) max T (middle) and min T (bottom) for the Belg rainy season (February-May) in Ethiopia (Source: ENACTS http://iri.columbia.edu/resources/enacts/)*

a)



b)



'Present' climate information is data on weather elements – such as millimetres of rainfall – recorded in real time and short-term weather forecasts from one to ten days (see Table 1). It also includes monitoring of and alerts on climate-related hazards such as flooding and disease.

Table 1. Weekly weather forecast for Migori County, Kenya

	TUESDAY 9 MAY 2017	WEDNESDAY 10 MAY 2017	THURSDAY 11 MAY 2017	FRIDAY 12 MAY 2017	SATURDAY 13 MAY 2017	SUNDAY 14 MAY 2017	MONDAY 15 MAY 2017
Morning							
Afternoon							
Night							
Rainfall distribution							
Maximum temperature	29.4c	30.0c	28.3c	27.8c	27.2c	28.2c	28.9c
Minimum temperature	18.2c	18.3c	18.3c	18.9c	18.3c	18.3c	18.3c
Hazards	Green	Green	Green	Green	Green	Green	Green

Key to rainfall distribution symbols:  rain likely to fall in few places (less than 33%),  rain likely to fall in many places (33–67%),  rain likely to fall in most places (more than 67%). Green – No weather-related hazards are expected.

Box 1

WHAT IS MEANT BY WEATHER, CLIMATE AND CLIMATE VARIABILITY?

Weather: This is the day-to-day state of atmospheric variables such as temperature, rainfall, wind, cloudiness and humidity in a given place. Weather is what is happening now, or is likely to happen tomorrow or in the very near future (i.e. from minutes to days ahead).

Climate: Loosely said, 'Climate is what you expect and weather is what you get.' Climate is the average weather in terms of the mean and its variability over a certain time-span and a certain area. It defines typical weather conditions for an area based on averages over at least 30 years. For example, northern Kenya is expected to be hot and dry in January and February but cold in June, July and August; however, there may be year-to-year deviations from this. Climate varies from place to place, depending on latitude, distance to the sea, vegetation, presence or absence of mountains or other geographical factors. Climate varies also in time – from season to season, year to year, decade to decade or on much longer timescales (Baede, Ahlonsou, Ding, & Schimel, 2001).

Climate variability: This refers to the deviation of a climatic variable, such as rainfall, from its long-term average (calculated using data covering at least 30 years) in a specific location.

'Future' climate information gives forecasts of the possible future state of the weather and climate from weeks, months or seasons ahead. Future climate information also includes projections of climate at one to ten years and of climate change at several years ahead (see IPCC Assessment Report Five (AR5): Atlas of Global and Regional Climate Projections (IPCC, 2013).

Future climate information also refers to local knowledge that forecasts from a season to a few years ahead, often at village or watershed level. Local forecasters use a range of observable environmental indicators – such as trees, wind patterns and the behaviour of animals – and make judgements based on tradition, experience and comparison of indicators with historical memory of climatic occurrences.

2.1.2 Sources of climate information, scientific and local

Scientific climate information is based on data that is generated using measuring instruments and analysed to develop information on the past, present and future climate. This information is produced by a range of institutions such as:

1. National Meteorological and Hydrological Services (NMHS)
2. Regional meteorological centres such as the IGAD Climate Prediction and Applications Centre (ICPAC) and the African Centre of Meteorological Applications for Development (ACMAD), as well as agro-meteorological centres such as the Agrometeorology, Hydrology and Meteorology (AGRHYMET) Regional Centre
3. Global climate monitoring centres such as the UK Met Office and International Research Institute for Climate and Society (IRI)
4. Agricultural research institutions in different countries such as the Kenya Agricultural and Livestock Research Organisation (KALRO) and the Savannah Agricultural Research Institute (SARI) in Ghana
5. Scientific research programmes such as the Coordinated Regional Downscaling Experiment (CORDEX) and the World Climate Research Programme (WCRP).

Some schools, colleges and large farms, such as those growing tea or coffee, also keep records of weather variables like rainfall. Different climate information products from meteorological services can be accessed through their websites, radio and television and through forums such as the Regional Climate Outlook Forums in Africa e.g. for the Greater Horn of Africa (GHACOF), Southern Africa (SARCOF) and West Africa (PRESAO); see details in Chapter 9. Users can also request specific information that may be available depending on the capacity of meteorological services.

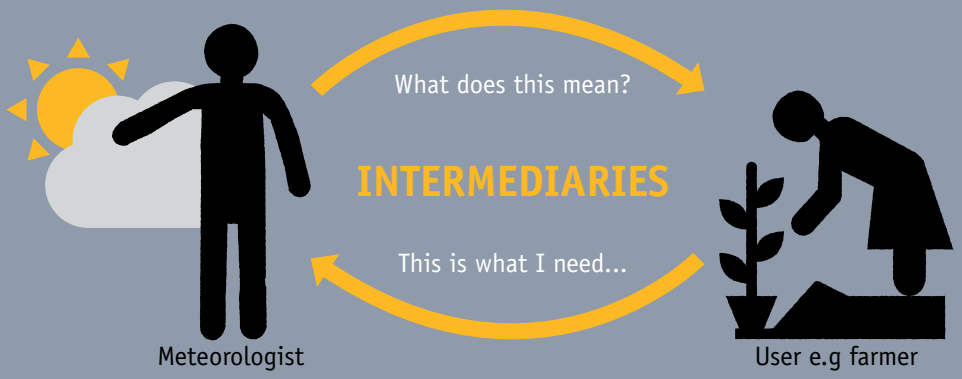
Local climate information is based on observation and monitoring, over long periods of time, of indicators such as plants, insects, animals and winds among other environmental indicators, as well as the movement of the sun, moon and stars. Observation and monitoring of these indicators, combined with experience and understanding of the relationship between these indicators and climate in a particular area, form a knowledge system used by local stakeholders to predict the weather and climate for a village or ward and in timescales ranging from a few hours, a season, to a few years in the future. The local climate observation and prediction system allow for a better understanding of an area's micro-climate and contributes to the body of knowledge on past and future climate in the local context. In addition, stakeholders of different ages, genders, social roles and responsibilities contribute different local knowledge and experiences of the impacts of climate management strategies. This local knowledge is often a combination of tradition passed from generation to generation (such as in local forecasting) and other sources of information – e.g. learning from formal/informal education, local stakeholders' farming and livestock keeping practices, TV/mass media, social media, travel to other areas, social and economic interaction, etc. Local climate information and knowledge leads to greater understanding of the environment by adding a local spatial scale and presenting information at a timescale closer to the present, while contributing to the body of knowledge on past and future climate in a local context.

2.1.3 Climate services

The term 'climate services', as used in this guide, refers to systems for generating, interpreting, communicating and using relevant weather and climate information and uncertainty, for climate-informed decision making and planning. In order to continually respond to diverse and changing needs for information, climate services require collaboration between, and sustained engagement of, stakeholders who produce climate information, intermediaries (see Box 2), and stakeholders who use the information. In particular, services must engage with users to understand their needs, to develop effective communication mechanisms, and to involve them in co-design and co-evaluation of information products and services (Tall, Hansen, Jay, Campbell, Kinyangi, & Aggarwal, 2014). Providing a climate service enhances risk management to reduce losses due to weather patterns and extreme climate events, and supports capitalising on opportunities for enhanced productivity and development.

Box 2
WHO ARE INTERMEDIARIES?

Intermediaries provide a link between all stakeholders involved in climate information services by facilitating two-way communication and dialogue for co-generation of downscaled information that is relevant and useful in the local context. Intermediaries in climate information services include government extension and research in agriculture and other climate-sensitive sectors, the private sector, community leaders, non-governmental organisations (NGOs), community-based organisations (CBOs) and the media, among others.



Intermediaries can enable the integration of climate information (from both local and scientific sources) with other information (e.g. soil types, socio-economics, vulnerability, capacity, risk, etc) so as to generate downscaled information that is relevant for local decision making. They work directly with decision makers and are therefore in a position to effectively communicate climate information and highlight information needs and demands. Intermediaries are essential in developing and supporting effective service delivery systems through participatory processes, information systems, building the capacity of different stakeholders, building trust, and advocating for resource flows and an enabling institutional framework for multi-stakeholder engagement in climate information services.

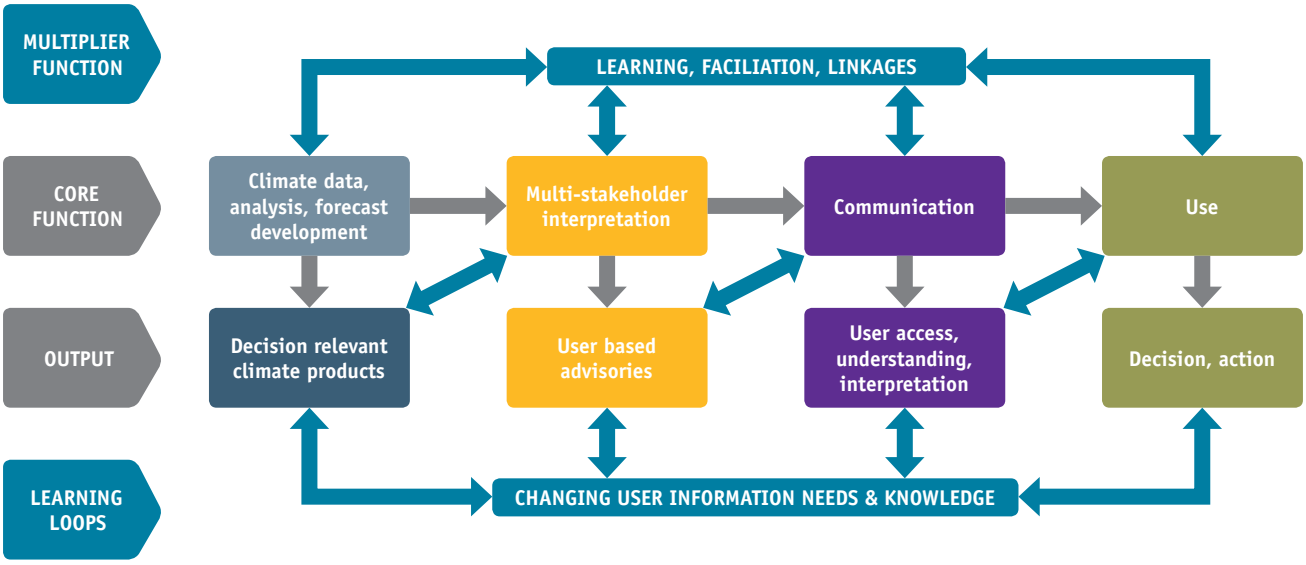
2.1.4 Role of knowledge brokering in climate information services

Sectoral services, especially in agriculture, and other intermediary actors such as NGOs, play a critical role in helping to develop and make available climate services that are responsive to diverse decision-making needs. They act primarily as intermediaries between the producers and the users of climate information – which mostly involves communicating information. This 'knowledge brokering' enhances the design and delivery of climate services better tailored to meet users' needs, and also facilitates and maintains links between actors at different levels and the various roles they play (see Figure 3). Climate knowledge brokering is essentially a multiplier function in the value chain, which involves facilitating:

1. **Multi-stakeholder engagement and dialogue platforms**, enable stakeholders to share, filter, integrate and interpret information from producers, intermediaries and users across different disciplines, sectors and levels to co-produce information relevant to the decision-making context (Bauer & Smith, 2015) – for example, by integrating information on climate, water and agricultural technologies and practices to co-produce information on climate resilient strategies. Such links also facilitate dialogue on provision of services that support the implementation of the strategies – for example, connecting input suppliers with farmers to meet the demand for particular crops or livestock that are best suited to future climate conditions.
2. **Two-way communication, feedback and learning loops**, can be facilitated by sectoral services, especially in agriculture. As they work with stakeholders from household to national level, sectoral services can interact with various users to understand how they access and use climate information, and therefore can highlight changing information needs and knowledge. Connecting user needs to effort spent producing the information will enable the development of tailored climate information products. This then feeds back to facilitating communication, understanding and building trust in the climate information produced to inform decision making and action.

Institutional frameworks and resource flows, create connections between existing institutions to enable integration of climate services into mainstream sectoral planning processes. This can strengthen collaboration to deliver user-based climate services, as well as to inform strategies for adaptation and climate resilience in various sectors.

Figure 3: *A knowledge value chain for co-developing and co-delivering user based climate services*



2.2 Key factors in delivery of climate services

2.2.1 Uncertainty

Uncertainty refers to a state of incomplete knowledge about the future state of the climate that can result from a lack of information or from disagreement about what is known or even knowable. Uncertainty may have many types of causes, from quantifiable errors in the data to ambiguously defined concepts or terminology, or uncertain states of future human behaviour that affect the climate (IPCC, 2013).

Although characterisation of uncertainty may be scientifically workable, for example by giving probability in a forecast, reducing uncertainty in climate depends on further progress in understanding the underpinning climate science. Hawkins & Sutton, 2009; Wilby & Dessai, 2010; and Osbahr & Viner, 2006, argue that climate science may only be partially successful in reducing these uncertainties in the next ten years. Their recommendation is that efforts should be directed to improving the communication of uncertainty, and how uncertainty can be better addressed in the future without causing decision paralysis.

2.2.2 Probability

Probability refers to the chance or likelihood that a particular climate event or condition will occur in the future – for example, a 40% chance of a drier than average (or normal) season in the following year.

Seasonal forecasts produced by meteorological services are usually presented in the form of probability of future climate values (e.g. rainfall) falling within three terciles. Each tercile contains an equal number of values that have been recorded over a 30-year period (see Table 2). The hypothesis used is that if the past climate in a specific location was to repeat itself exactly, then the probability that future climate values would fall in any of the three terciles is one-third, or 33.3%. This means that if the situation could be rerun many times, each outcome would occur one out of three times.

Table 2. An example of historical rainfall values that have been grouped to form a tercile

ABOVE NORMAL RAINFALL		NORMAL RAINFALL		BELOW NORMAL RAINFALL	
Year	Rainfall total	Year	Rainfall total	Year	Rainfall total
1985	1,217.43	1995	873.12	2000	498.93
1996	1,156.71	1982	824.17	1993	428.92
2002	1,097.28	2009	758.53	1999	339.46
2007	1,074.82	1997	754.22	2005	258.93
1988	1,055.64	1981	699.35	2010	209.96
1984	1,037.83	1989	686.40	2008	189.78
1994	1,025.94	1991	641.24	2006	152.02
1987	959.08	2001	630.90	1986	130.97
1998	940.87	1992	590.87	1983	116.27
2003	903.87	2004	532.89	1990	110.86

Probabilities of the different terciles provide the direction of the forecast relative to the average from long-term observations as well as the uncertainty of the forecast. For example, suppose a forecast shows rainfall probabilities of 20% 'below normal', 35% 'near normal' and 45% 'above normal'. Since the 'above normal' tercile is more than 33.3% and the 'below normal' tercile is less than 33.3%, this forecast suggests that 'above normal' rainfall is more likely and 'below normal' rainfall is less likely than has been historically observed.

A potential pitfall in interpreting such a probabilistic forecast is that most attention will be given to the tercile with highest probability, yet there is much uncertainty implied in the forecast. Even though the forecast is in the direction of 'above normal' rainfall, the probability of 'below normal' rainfall is still 20%, implying that in one out of five cases of this climate situation 'below normal' rainfall would be expected (definition adapted from the IRI).

The use of terciles in presenting a forecast is therefore an attempt to break down climate uncertainty into discrete possible future outcomes, to which probabilities can be assigned. This is because uncertainty in climate makes forecasting of exact values (e.g. exactly 17°C temperature or 450mm of rainfall) difficult as large errors are often likely. Errors in forecasting are, however, smaller than errors that would result from random guessing or from always forecasting the long-term average climate.

2.2.3 Scenarios

A scenario is a plausible, and often simplified, representation of future conditions or states of being, resulting from a well-worked answer to the question: 'What can conceivably happen in the future (e.g. due to forecasted climate in a season)?'

Asking that question recognises that the further ahead into the future we look, the more complex the climate system and its interaction with socio-economics, livelihoods, agriculture, and other climate-sensitive sectors become, meaning that uncertainty about the future increases. Scenarios, therefore, are a powerful planning tools that help to uncover and explore future uncertainties (in different aspects of life) in order to identify potential risks and opportunities (Lindgren & Bandhold, 2003). Scenarios make risk-management possible by prompting interpretation of a probabilistic seasonal forecast into information that is useful for strategic planning, with consideration of all possible seasonal climate futures and the resulting implications. They help in preparing for not one but many possible futures, which prompts diversification and risk spreading, combination of strategies, and building flexibility into planning to manage climate risks and opportunities in a season.

2.2.4 Downscaling

Downscaling refers to transforming information that covers a large geographical scale (e.g. a region such as the Greater Horn of Africa or an entire country) into local information (e.g. to cover a district, watershed or village). The transformation aims to capture local effects, like topography, that affect climate in a specific geographical area, so as to provide more detailed information for that locality.

Downscaling of climate forecasts is important, as actors need climate information that is relevant to the geographical scales for which decisions are to be made: for example, a river basin, an agro-climatic zone, a particular farm, etc. Presenting local climate information is critical, especially in Africa, because of large variability in climate over short distances (see case study 2). In addition, vulnerability and exposure to particular hazards (with implications for risk levels) are often location-specific: for example, poor agro-pastoralist households living next to a riverbank would be more vulnerable to flooding due to heavy rains, compared to households living a significant distance away from a river. In each of these two cases, local climate information would be more useful for decision making and action.

Case Study 2

COMMUNITY-MANAGED RAIN GAUGES HELP TO UNDERSTAND RAINFALL VARIABILITY

Aiming to involve users in co-generation of climate information, CARE International's Adaptation Learning Programme (ALP) in partnership with the National Meteorological Services in Niger have installed rain gauges in 30 communities in the Department of Dakoro, Maradi region.

Rain gauges form part of a community system for early warning and emergency response, commonly known as Système d'alerte précoce et de réponse aux urgences (SCAP/RU). SCAP/RUs engage a dedicated team of community members to regularly record and interpret information on vulnerability, with a focus on the food security, nutrition and health of humans and animals, on market prices, and on climate and environment.

Dela Jari, Community Early Warning Volunteer from Aman Bader village, Niger. Credit: Agnes Otzelberger/ALP 2015

Information from the community-managed rain gauges is creating a local rainfall record and is helping stakeholders in Bader Goula District of Dakoro to have a better understanding of local rainfall variability. "The data [from the rain gauges] teaches us how much the amount of rainfall differs between the different villages. Before the Early Warning and Response System was established, we only had one rain gauge here in Bader Goula. Thanks to the new rain gauges, we now know that our own rain gauge tells us nothing about the villages around. It's possible to get 60mm of rainfall here in Bader Goula and 0mm in the village just down the road…", says Issa Sokola, the local Mayor and President of the vulnerability monitoring committee in Bader Goula district.

Adapted from Integrating disaster risk reduction and adaptation to climate change, Otzelberger, 2014.

Seasonal forecasts generated by national and international meteorological services typically apply to much larger areas such as regions or entire countries. There are currently several ongoing initiatives aiming to downscale seasonal forecasts in Africa to smaller geographical areas – one of these is work being undertaken by the Kenya Meteorological Department (KMD) (see Figure 4). However, these initiatives are facing significant challenges in downscaling, such as:

1. **limited scientific knowledge on local level drivers of seasonal climate** – to deal with this challenge, the Africa Climate Research for Development (CR4D) is engaging in collaborative research linking African scientists with those from developed countries
2. **the lack of good-quality historical climate data in all geographical areas and over a sufficiently long period of time that is needed to inform downscaling processes** – this is observed particularly in rural and dryland areas in Africa, due to few and declining numbers of weather recording stations, which are also unevenly distributed (see Figure 5) (Dinku T. , Cousin, del Corral, Ceccato, & Thomson, 2016). Initiatives such as Enhancing National Climate Services (ENACTS) are working directly with National Meteorological and Hydrological Services (NMHS) to address this challenge (see Box 3).

While downscaling forecasts is a major concern, 'right scaling' the information is of even more importance. Right scaling means focusing on the climate-informed decisions that need to be made based on the context and concerns of the user, so as to provide information at the relevant scale. For example, consider a water manager in a district that is downstream of a river. The district needs rainfall forecasts:

- downscaled for their district to assess how much water would be available in the coming season. This would inform decisions such as allocation of water use across small- and large-scale irrigation, domestic and other uses.
- at a larger watershed level to cover upstream districts. This would take into account, for example, heavy rainfall that might occur in the upstream districts which could result in flooding downstream, and hence provide an opportunity for water harvesting downstream.

Figure 4: *Downscaling of the March to May 2014 seasonal forecast from national to county level, undertaken by KMD. Panel a) is the national seasonal forecast showing areas with different tercile probabilities, b) shows the expected range of rainfall amount based on the probabilistic forecast, and c) shows the downscaled forecast for Machakos County, Kenya*

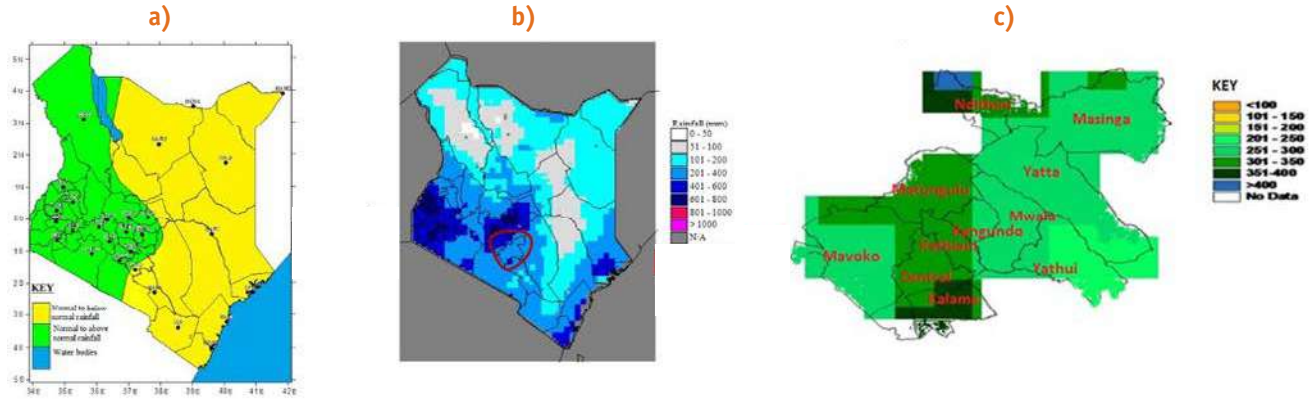
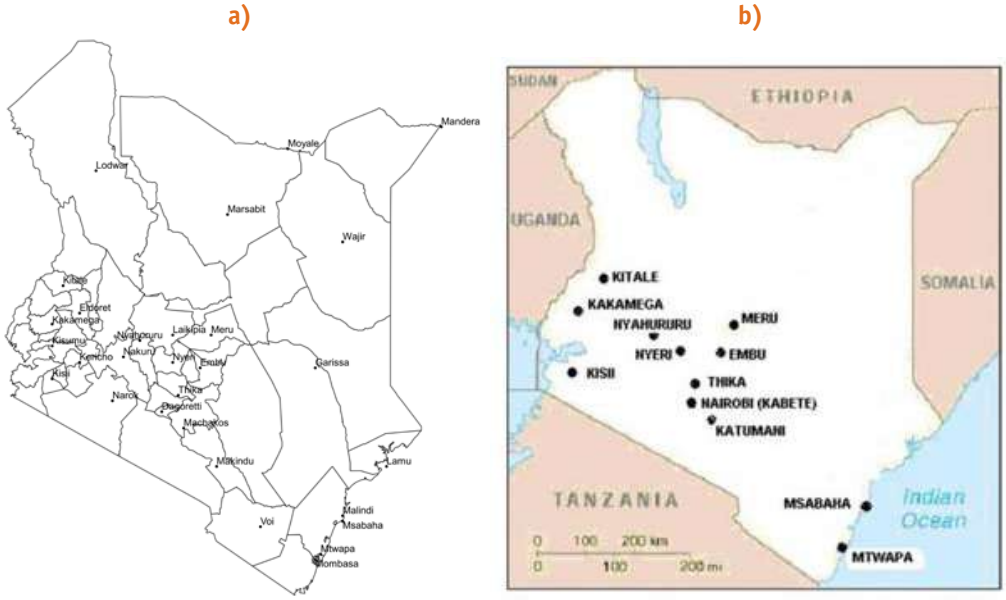


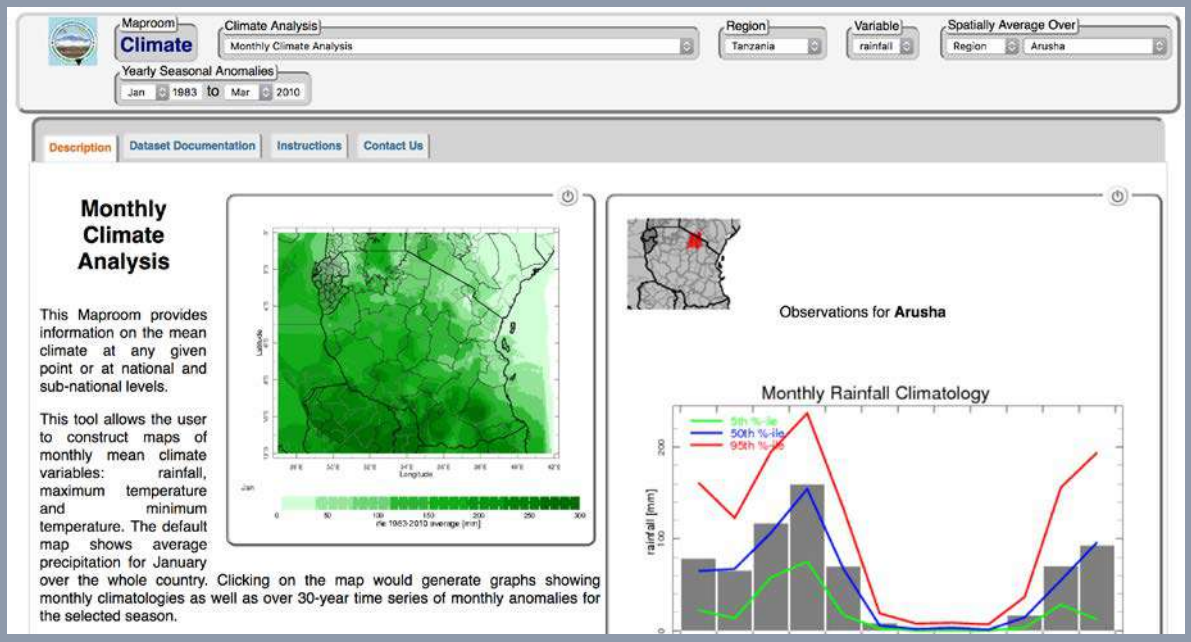
Figure 5: *Geographical distribution of a) meteorological observation stations on land and b) observation stations specialised in generating meteorological data for agriculture, in Kenya. Adapted from Kenya's National Climate Change Action Plan, Adaptation Technical Report 8: Availability and Accessibility to Climate Data for Kenya, August 2012*



Box 3
ENHANCING NATIONAL CLIMATE SERVICES

The Enhancing National Climate Services (ENACTS) initiative, led by the International Research Institute for Climate and Society (IRI) of Columbia University, is improving the availability, access to and use of climate data. This includes generating quality-controlled historical rainfall and temperature data at local, national and regional levels. Data is generated by combining climate records from national meteorological services in Africa with data from satellite and other proxies. Access to and use of this information is further improved by making information products openly and readily available through online maprooms (see Figure 6) (Dinku, Kanemba, Platzer, & Thomson, 2014).

Figure 6: *A page from the ENACTS maproom for Tanzania. Visit https://iri.columbia.edu/resources/enacts/ to access maprooms for several other countries in Africa and for two regional climate centres (ICPAC and AGRHYMET)*



Through the Weather and Climate Information Services for Africa (WISER) programme, data from ENACTS is being used in the Strengthening Climate Information Partnerships – East Africa (SCIPEA) project to test the skill of seasonal rainfall forecasting in East Africa. The work recognises that skill in seasonal forecasting is strongly related to its potential utility and economic value, and aims to improve the reliability of seasonal rainfall forecasts (Vuguziga & Owusu, 2016). Over time, this work could further improve the accuracy of downscaled seasonal forecasts.

2.2.5 Climate hazard

A climate hazard is a climate event (such as heavy rainfall) or condition (such as persistent high temperatures) with the potential to cause: loss of life; injury or other health impacts; damage and/or loss of property, infrastructure, livelihoods, service provision, ecosystems and environmental resources; or social and economic disruption ((UNISDR), 2009). Examples of climate hazards are heavy rainfall, drought and storms, as well as long-term change in climatic variables such as rises in average temperature and decreases in annual rainfall. A climate hazard tends to have an associated timeline of occurrence; it may be:

- a short-lived event – e.g. heavy rains that last a few hours
- a recurrent event with an identifiable start and end – e.g. a thunderstorm or sandstorm
- an event that occurs once in a long period of time – e.g. intense hailstorms
- slow trends such as multi-decade droughts or multi-century sea-level rise
- a more permanent change such as a transition from one climatic state to another – e.g. an area shifting from being generally hot and dry to becoming warm and wet, such as may be shown in long-term climate change projections.

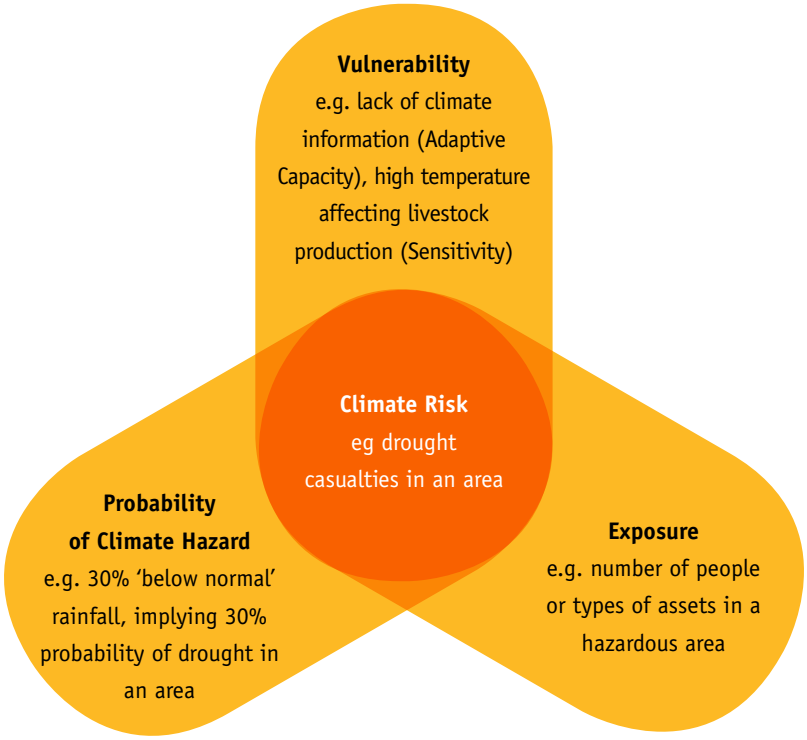
2.2.6 Climate risk

Climate risk refers to the potential for negative consequences due to climate, where something of value is at stake and where the outcome is uncertain. Due to the use of the words 'potential' and 'consequences', climate risks are represented as probability of occurrence of a climate hazard multiplied by vulnerability (of stakeholders, community, assets, environment, system, etc) and exposure to the hazard (see Figure 7).

Vulnerability refers to the characteristics and circumstances of a community, system or asset that make it susceptible to the damaging effects of a climate hazard (UNISDR, 200 ((UNISDR), 2009); (IPCC, 2013)). As the focus is on the characteristics of the element of interest (e.g. community, system or asset), vulnerability is a combination of sensitivity to a climate hazard and adaptive capacity to manage that hazard. Further, sensitivity is the degree to which a system is affected, either adversely or beneficially, by climate variability or change. The effect may be direct (e.g. a change in crop or livestock yield in response to a change in the mean, range or variability of temperature) or indirect (e.g., damages caused by an increase in the frequency of coastal flooding due to sea-level rise) (IPCC, 2013).

Exposure is the presence of stakeholders, assets, livelihoods, ecosystems, environmental functions, services and resources in areas that could be adversely affected by a climate hazard.

Figure 7: *Example of climate risk due to interaction of (probability of) a climate hazard, vulnerability and exposure to the climate hazard*



It should be noted that there is not much control over the occurrence of a climate hazard but we can manage vulnerability and exposure to the hazard, which, by extension, enables management of the level of climate risk. To illustrate this, if in an area:

- probability of occurrence of a climate hazards such as heavy rainfall is 45% (or 0.45), considering a seasonal forecast
- vulnerability to the climate hazard is zero due to actions that build adaptive capacity and reduce/eliminate sensitivity – e.g. ensuring functional drainage systems, etc
- exposure to the hazard is managed to almost zero – e.g. through living some distance from a flood-prone area
- then mathematically, climate risk in the area = 0.45 x 0 x 0 = 0, meaning there is no climate risk. In reality, this is never the case as there is always some level of vulnerability and exposure, and therefore some level of climate risk in a season. This is especially true for rain-fed agricultural systems and other climate-sensitive sectors.

2.3 Opportunity in the climate context

An opportunity is potential benefit that could be gained from the occurrence of particular climatic conditions or events in a season. For example, heavy rainfall presents an opportunity for water harvesting and conservation strategies such as tapping water from the roofs or channelling floodwaters into a pan or dam to use for irrigated agriculture when it is dry. If the area is in a flood plain, receding waters provide soil moisture for cultivation of crops and pasture.

Opportunities are often linked to activities undertaken in the area by local stakeholders themselves, by government work in different sectors, and by projects and programmes run by different institutions and organisations. But for stakeholders to take advantage of possible opportunities, it is necessary to build their adaptive capacity – for example, by communicating climate information in good time and to all the actors who need it, providing technical support, improving access to financial and physical resources, etc.

members of a village savings and loans group in Garissa, Kenya. Credit: Tamara Plush/CARE 2011

2.4 Climate impacts

Climate impacts refer to positive or negative outcomes on stakeholders' lives, livelihoods, activities and strategies, resources, capacities and socio-economics caused by a combination of climate hazards, risks and opportunities. These can be potential or residual impacts.

Potential impacts are those that might occur as direct or primary outcomes of climate hazards, risks and opportunities, without considering adaptation and risk management actions taken due to a seasonal climate forecast, for example. Examples of potential impacts include:

- massive livestock mortality due to heat stress and drought, with implications for food and nutrition security, income and capital assets, businesses and economies in areas dependent on livestock

- an area receiving either high maize yields because of sufficient rainfall or loss of maize harvest due to heavy rainfall at harvest time
- movements of animals or people in search of water due to low amounts of seasonal rainfall in a particular area.

Residual impacts are those that would occur after adaptation and risk management actions have been taken by different actors through use of climate information. Examples of residual impacts include :

- functional early warning systems are informed by seasonal climate information so that there is timely provision of human and animal vaccination services to minimise the risk of waterborne diseases
- access to and understanding of climate information prompts input suppliers to stock up on specific inputs well in advance of a season or agro-processors to make provision for high inflows of agricultural produce considering highest probability of rainfall in a season being 'above normal'
- vulnerable stakeholders living in marginal lands, who have been involved in PSP, demand government support to reduce the risk of landslides that might be triggered by torrential rain
- government, organisational and institutional plans are adjusted to provide better support for all actors to manage seasonal climate risks and opportunities.

PSP discussions often have a greater focus on potential impacts than on residual impacts. This is because bringing out residual impacts in advance of a season would mean predicting human reactions to seasonal climate information, and the interaction between these reactions, all of which are uncertain. The extensive and complex links between the different climate risk factors, uncertainties, and direct or indirect influence of actions taken by different actors in different sectors and different areas makes the multi-stakeholder forum provided by PSP workshops a crucial approach for addressing the climate challenge, through building the adaptive capacity of all stakeholders.

2.5 Advisories

Advisories are locally relevant and actionable information bulletins on options that different actors can take to manage risk, uncertainty and opportunities, based on a climate forecast. Rather than 'instructions' to be followed, good advisories present options for actors to consider and make their own decisions and plans for the coming season.

Some national and regional meteorological services (such as KMD, ICPAC and AGRHYMET) and programmes provide climate advisories to various users on a sustained basis. The field of agrometeorology has a long track record of delivering information and management advisories to farmers based on monitoring and forecasting at the weather timescale (Tall, Hansen, Jay, Campbell, Kinyangi, & Aggarwal, 2014). Agrometeorological advisories are often online bulletins that review the previous ten days and give an outlook of the forthcoming ten days.

The challenge is that these information advisories may be very broad, covering an entire sector or large geographical area, they may not consider the uncertainty in a forecast, or they may not be easily accessible to many users, among other challenges. And yet effective climate information and advisory services have great potential to inform decision making in the face of increasing uncertainty, to improve management of climate-related risk on livelihoods and sectors, and to help actors successfully adapt to climate variability and change (Tall, Hansen, Jay, Campbell, Kinyangi, & Aggarwal, 2014).

CHAPTER 3

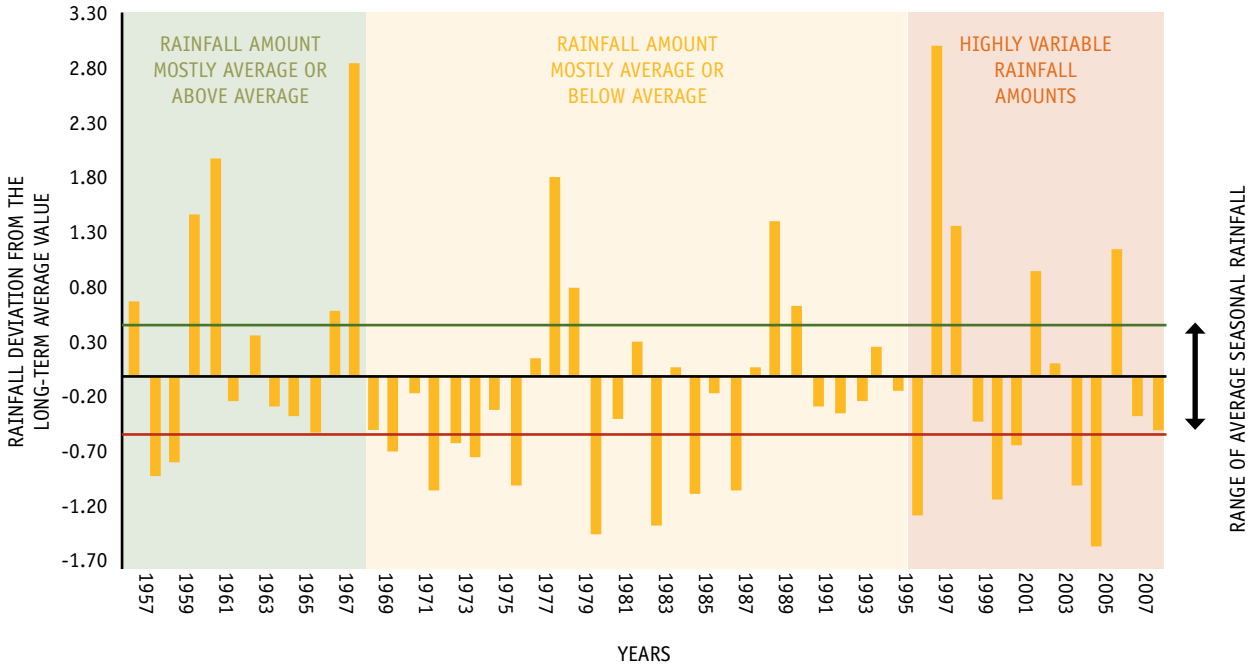
Elements of Participatory Scenario Planning

Female watermelon farmer carrying water in Northern Ghana. Credit: Sebastiaan Soeters / 2017

3.1 The challenge PSP is designed to overcome

There has always been variability in rainfall amounts and patterns. As revealed by analysis of historical data, variability means there can be large differences in rainfall between two subsequent seasons or years (see an example in Figure 8). Climatic variability is even more pronounced in recent times, and may increase into the future as the climate continues to change.

Figure 8: *Data from 1957 to 2008 in Garissa County, Kenya, shows observed large differences in annual rainfall amounts from one year to the next (i.e. high level of rainfall variability), especially in the recent ten years. Data source: Global Historical Climatology Network* https://www.ncdc.noaa.gov/ghcnm/v2.php



In rain-fed systems, resource endowments and productivity (crops, pasture, water, etc) will be available only at a given point in time – a time period that will change from year to year following rainfall patterns, with sharp differences even across short distances. The productive potential of these resources, as well as their efficient and sustainable use, depends largely, or even entirely, on people's ability to strategically manage the resources and make real-time adjustments (IIED 2015). This means that variability in rainfall has a significant effect on resource availability and on productivity. Valuing and adapting to climate and broader variability in the future, and the risks and uncertainty that poses, is therefore a key part of enhancing the resilience of livelihoods and development in rain-fed systems.

It is increasingly recognised that scientific climate information and local knowledge are essential resources for adaptation, managing climate risk and building resilience to the climate (Dazé, A, 2015). However, access to information is limited, and if available, it is often not useful for decision making by all who need it. Users need information, but even more critical is their need for a climate information service that makes information:

1. **Accessible** – While different types of climate information may be available, potential users of the information are not able to access the information due to the presentation formats and channels used in dissemination. Further, focus on dissemination rather than communication of information falls short on ensuring differential access to the information through use of communication channels that target users based on gender, livelihood types, level of operation (e.g. county, district, community, village, etc), among other factors. Participatory approaches are essential to identify the best combinations of communication channels and information content for a given context (Tall, Hansen, Jay, Campbell, Kinyangi, & Aggarwal, 2014).

2. **Relevant and actionable** – Consideration must be given to the decision-making context, taking into account the right spatial scale and timing of the information needed. It is critical to go a step further and translate climate information into a form which can be understood so that it is useful for decision making and planning. Translation works best when it involves climate-affected communities, intermediaries or knowledge brokers, and climate information providers, through dialogue between different stakeholders towards translating climate information into useful advisories (Ambani & Percy, 2014) (Tall, Hansen, Jay, Campbell, Kinyangi, & Aggarwal, 2014).
3. **Useful for diverse and changing needs** – Changes in decision-making contexts – for example, a shift from purely pastoral to agro-pastoral livelihoods – creates a demand for useful climate information to inform water management for crops, as well as information for livestock management. Climate services must engage users in two-way communication and feedback so that users and knowledge brokers continually inform production of new and improved climate products and services to meet various needs, as well as ensure that users can access and use new and existing climate information.
4. **Reliable and of good quality** – This makes use of available data and information to enhance the accuracy of information presented and interpreted (Dinku T. , et al., 2016). It also means explaining the uncertainty in future climate in a manner that enables stakeholders' understanding of the information, and their trust and confidence to use it in taking informed action.

3.2 What is Participatory Scenario Planning using seasonal forecasts?

In recognition of these needs, the Participatory Scenario Planning (PSP) approach was developed by the Adaptation Learning Programme (ALP) as a climate services approach to enhance development of useful climate information and its delivery to support seasonal climate-informed decision making.

3.2.1 PSP purpose

PSP is a multi-stakeholder approach designed to enable access to, and understanding and collective interpretation of, seasonal climate forecasts and associated uncertainty into locally relevant information that is useful for decision making and planning. PSP seeks to create an approach for regular dialogue and engagement of all actors, including users, to co-develop and deliver climate services that are responsive to user needs at seasonal timescale. In this way, PSP contributes to building actors' adaptive capacity and resilience to changing risks, uncertainties and opportunities posed by climate variability and change.

Pastoralist woman selling milk in Garissa. Tamara Plush/CARE, 2011.

3.2.2 PSP objectives

The PSP approach aims to facilitate a regular multi-stakeholder forum for:

1. continuous access to and collective interpretation of seasonal climate forecasts and associated uncertainty, so as to co-produce information that is relevant to local decision making, planning and actions
2. two-way climate communication that respects, reviews and combines knowledge from local actors, including different communities, and sectoral service providers, with advances in climate science
3. developing climate-informed plans, strategies and actions to enhance climate resilience in all livelihoods, sectors, and development processes
4. iterative learning and dialogue to continuously co-develop climate information services that are responsive to users' changing decision-making contexts
5. creating links between actors and advising on their collaboration and coordination to deliver user-based climate services.

3.2.3 PSP outcomes

PSP supports the design and delivery of a seasonal climate information service that is driven by and inclusive of users and that contributes to building climate resilience and people's adaptive capacity. This is demonstrated through:

1. more informed, anticipatory, precautionary and flexible decisions to manage climate uncertainty, risks and opportunities
2. integration and implementation of effective climate risk management in all livelihood, sectoral and development planning processes
3. enhanced climate resilience of livelihoods and development, through adaptation to a range of future seasonal climatic possibilities.

3.2.4 PSP principles

Work towards achieving the purpose, objectives and outcomes of PSP is guided by seven principles (Ambani and Percy, 2012):

1. **Principle 1: Involve all relevant stakeholders**, recognising their roles and utilising their specific knowledge and capacities to enable a participatory process that is responsive to user needs.
2. **Principle 2: Conduct PSP workshops as soon as seasonal forecasts are available** from national meteorological services.
3. **Principle 3: Multi-stakeholder interaction, dialogue and co-production** of information with scientists, communities and other stakeholders is vital for designing and developing relevant and user-based climate information services.
4. **Principle 4: Communication, understanding and interpreting climate probabilities and uncertainty** is essential for flexibility in decision making on adaptation and resilience.
5. **Principle 5: Apply user experiences and results from previous seasons** for reflection and iterative learning and to inform discussions during PSP workshops, development of advisories and plans for the coming season.
6. **Principle 6: Advisories should be presented as options**, rather than instructions, to encourage actors to make their own decisions and take actions relevant to their local contexts.
7. **Principle 7: Communication of advisories should be inclusive**, reaching all genders and groups, local governments, organisations, private sector and other users within the chosen geographical level. Timely communication of advisories is critical to empower stakeholders to take appropriate action.

A fruit and vegetable market in Muranga County, Kenya. Credit: Francesco Fionalla/IRI

3.3 Why a participatory, multi-stakeholder approach to climate services?

The PSP approach is grounded in multi-stakeholder engagement, in recognition that:

1. **Design and delivery of a relevant service requires the involvement of all stakeholders** – This is because decision support is most effective when it is sensitive and responsive to dynamics in the context and the diversity of decision types, decision processes, and constituencies (Intergovernmental Panel on Climate Change (IPCC, 2014). Further, diverse interests, circumstances, social-cultural contexts, expectations and changing risk perceptions influence the type of climate information needed for decision making. For a climate service to be relevant to changing contexts and to meet the diversity of needs over time, it must create feedback loops that inform its continuous readjustment. This is a challenge that requires the support of multiple stakeholders applying their capacities and roles to ensure the service continuously evolves to meet specific contexts and needs.
2. **Building trust and confidence in climate information is a dialogue process** – This involves interaction between scientists, local forecasters, intermediaries and users to understand and combine different forms and sources of information and knowledge, and highlight its relevance for stakeholders. It also involves generating evidence and reflecting on it together to understand how different users are applying climate information in decision making and the value of this. This requires building stakeholder networks and relationship, a process that requires persistence of effort and a long timeframe (Ambani & Percy, 2014). Further, continuously involving users in co-production and communication of necessary climate information, and incorporating their feedback on the information's usefulness to improve the service, increases user confidence in taking action on the information.
3. **Moving from accessing to using climate information is enabled by responsive support services** – Adaptation planning and implementation can be enhanced through complementary action across levels – from individuals to governments (Intergovernmental Panel on Climate Change (IPCC, 2014). Dialogue between communities, sectoral departments and the private sector, among other stakeholders, leads to sharing knowledge of possible adaptation measures based on a seasonal forecast and developing mutually supportive plans and actions. This then ensures that as users access climate information and advisories to inform their decisions, various services will be made aware of the possible demands for support. For example, in response to a possible increase in livestock disease or the need for a particular crop variety due to probable high rainfall amounts in a season, input suppliers use the forecast and advisories to stock the necessary medicines and seed varieties, while the relevant sector departments provide the required extension service. Support services can also coordinate actions in response to a forecast to avoid duplication of effort and ensure efficiency and cost effectiveness in service provision.

3.4 Why scenario planning?

3.4.1 The future is uncertain

'Uncertainty' is an integral part of the future simply because it is yet to happen. Stakeholders constantly face change and uncertainties in all aspects of life that relate to future situations. This is true when looking at economics (e.g. availability of markets, fluctuation in commodity prices or exchange rates), politics, demographics, jobs and other areas of life where 'risks' are accepted on a daily basis. With all the constant changes in every aspect of life – including stakeholders' aspirations, capacities and needs – and the interaction between all these changes, increasing uncertainty has become the 'new normal'. Yet these uncertainties collectively form an environment in which stakeholders must live and continually adjust in order to remain resilient and on a positive development path.

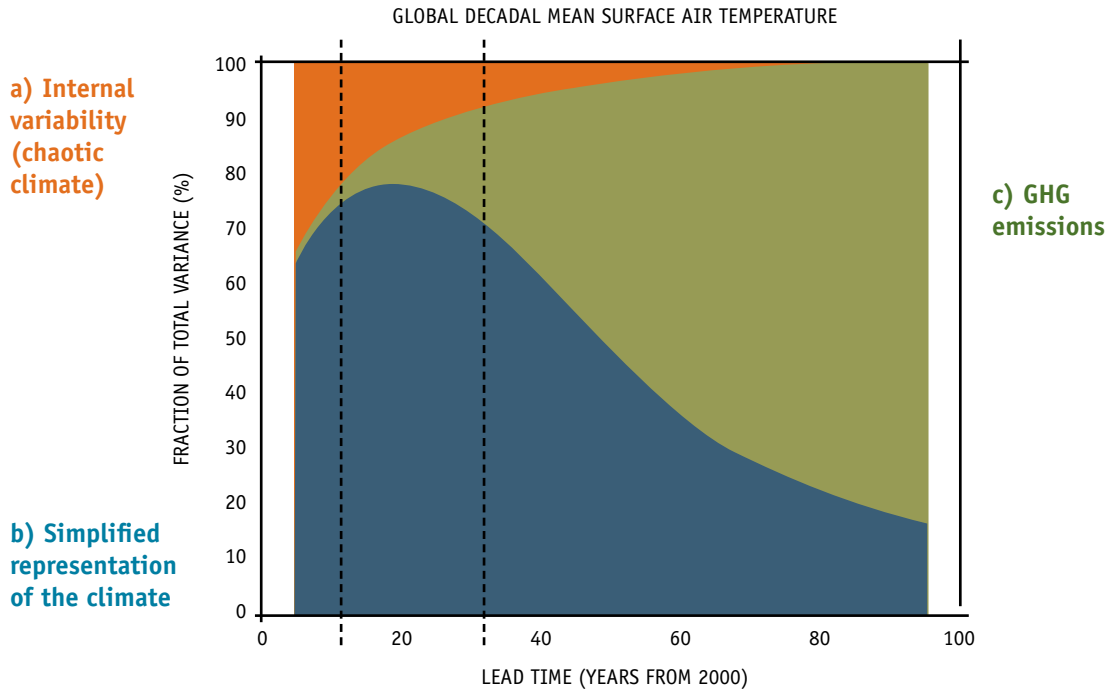
'Uncertainty' is equally inherent in future climate information for several reasons. First, the science behind climate processes is not completely understood because climate is naturally variable and chaotic, as observed and experienced from erratic weather patterns and the occurrence of more extreme events in the recent past. In an attempt to understand and predict the behaviour of the chaotic and complex climate system, scientists develop simplified representations of the climate system. These representations often cover large areas and may miss out on smaller-scale events that exert some influence on the climate over small as well as larger areas of the world. Second, over the long term, future emissions of greenhouse gases (GHGs) – for example, carbon dioxide from burning petroleum, methane gas released by livestock, and rice paddies – and the resultant response of the climate system to these emissions, bring another form of uncertainty. This is because the future level of GHG emission is not known due to uncertainty in future population sizes, technology development and uptake, economic development, and emission mitigation policies and strategies, among other factors. Third, a combination of incomplete (but improving) scientific understanding of the climate, the chaotic and complex climate system, simplified representations of the climate system, unknown future levels of GHG emissions and imprecise information on the climate system's response to (unknown) levels of GHG emissions result in the imperfect predictability of future climate (see Table 3) and persistent uncertainty in future climate over different timescales (see Figure 9).

Conversely, (Osbahr & Viner, 2006) argue that climate science may be only partially successful in reducing these uncertainties in the next ten years. Their recommendation is that efforts should be directed to improving the communication of uncertainty, and how uncertainty can be better addressed in the future without causing decision paralysis. PSP acts on this recommendation through using scenarios to unpack uncertainty in the climate and broader contexts, and transform it into information that will be useful for local decision making.

Table 3. Types of forecasting timescales and related predictability. Adapted from Tall et al., 2014.

TYPE OF FORECAST	TIMESCALE	SOURCE OF PREDICTABILITY	TREATMENT OF UNCERTAINTY IN THE FORECAST	EXAMPLE OF FORECAST
Weather	1 to 10 days	Data on observed past weather	Deterministic: forecasts of a weather event, of a specific magnitude, at a specific time and place	Daily rainfall or temperature forecast
Monthly and seasonal climate forecast	1 to 3 months	Sea surface temperatures	Probabilistic: forecasts of the probability of a climate event of a certain (or range of) magnitudes that may occur in a specific region, in a particular time period	Total amount of rainfall in a season
Decadal forecast	1 to 10 years	Current state of the climate and multi-year variability of sea surface temperatures	Probabilistic, scenarios	Temperature difference relative to a certain time period in the past
Climate change	Beyond 2 decades	GHG emissions from human activities, natural changes in atmospheric composition	Scenarios: projections of plausible future climate statistics with unknown uncertainty	Change in seasonal climate patterns, change in intensity and frequency of extreme climate events

Figure 9: *There is uncertainty in scientific climate information across different timescales (the horizontal axis in this figure) due to influence from different sources of uncertainty. Climate forecasts at seasonal to ten-year (decadal) timescales have uncertainty mostly due to the a) naturally chaotic nature of the climate, which leads to an incomplete understanding of it and b) simplified representations of the complex climate system during forecasting. In timescales beyond ten years, the influence of uncertainty due to c) GHG emissions becomes most prominent.*



3.4.2 Climate resilience means managing uncertainty and risk

For agriculture and other climate-sensitive sectors to remain sustainable and resilient, any information relating to uncertain futures is more useful than no information at all. Rather than dismissing climate information, especially from science, as not useful because it does not say exactly what will happen in the future, it makes more sense to get out of it as much information as is available. Consideration, understanding and interpretation of uncertainty aids the development of proactive plans and actions to contend with a range of future possibilities so that shocks do not come as surprises and risks can be anticipated, reduced, managed or turned into opportunities. Just as private entrepreneurs thrive on analysing risk and taking chances, embracing and managing uncertainty in future climate as an ongoing fact of life can be a powerful adaptation tool."Uncertainty is not a problem to be solved; it can be understood, managed and used to inform adaptation decisions, early warning and risk management." (Ambani and Percy, 2014)

3.4.3 Managing uncertainty and risk using scenarios

Scenarios developed using the PSP approach enable the interpretation and management of uncertainty, in recognition of the complexity in the climate system and its limited predictability, by creating a picture of possible climatic futures and resulting impacts. For example, uncertainty in seasonal climate forecasts from meteorological services is typically presented in terms of probabilities, with a percentage likelihood of having rainfall that is below average, average and above average. In order to develop future scenarios of climatic impacts on livelihoods, economic sectors, natural resources and disaster risks, a probabilistic forecast is interpreted by combining local knowledge and experience on climate risks and impacts with technical expertise. A range of proactive options are developed from the scenarios, so that risks can be managed – such as by spreading the risks across multiple strategies – and potential opportunities can be identified and capitalised.

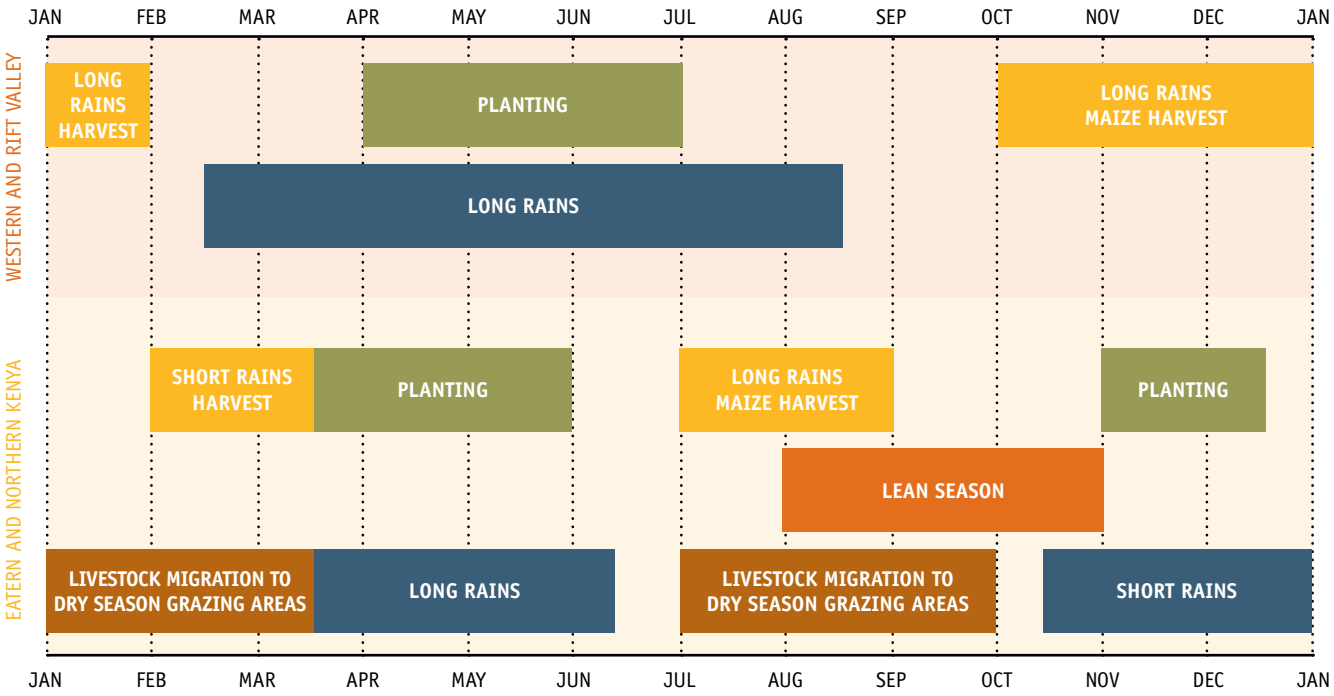
For example, based on the spread of probabilities, scenarios can enable:

- anticipation and planning for strategies that integrate investment and risk management
- crop farmers to make better decisions on which mixture of crops to plant (e.g. early maturing and drought-tolerant varieties), when to plant them and how much of each to plant to avoid total crop loss due to climate-related hazards
- pastoralists and livestock keepers to engage in risk management livelihood and income-generating strategies such as rearing different types of livestock, mixing improved and local breeds, integrating management of water and pasture/grazing resources, integrating economic trees that also provide protection against strong winds, and engaging in other non-farm income-generating activities in addition to livestock rearing. This prompts livelihood diversification and environmental management as effective climate adaptation strategies
- agro-dealers to invest in stocking different volumes of certain inputs and products in anticipation of market demands in relation to the coming season
- decision making and action on rainwater management such as through rainwater harvesting, micro-irrigation, actual agronomy (e.g. conservation agriculture or ridging, etc)
- government service providers in the different sectors to tailor plans and actions to reflect different potential needs in the season.

3.5 Why does PSP focus on the seasonal timescale?

In a rain-fed system, activities in agriculture, water, natural resource management and other climate-sensitive sectors – and the livelihoods and development that depend on them – often follow seasonal rainfall patterns (see the seasonal calendar in Figure 10). This means that decisions and plans that need to be made for those activities, and the required support services, will also occur on a seasonal timescale.

Figure 10: *A typical agricultural seasonal calendar for Kenya; the activities in the calendar follow the two rainfall seasons in the country. Retrieved from FEWSNET* http://www.fews.net/east-africa/kenya/seasonal-calendar/december-2013

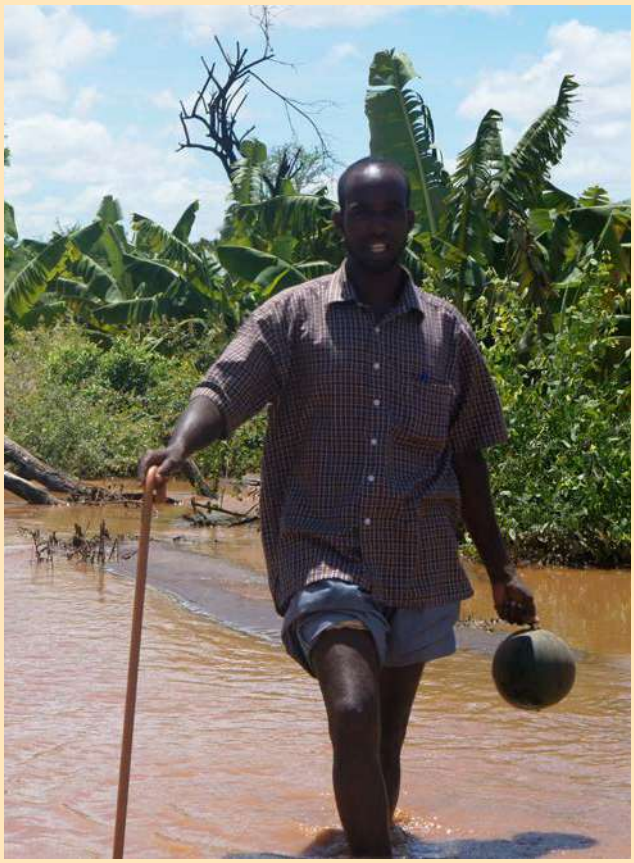


Case Study 3

FORWARD-LOOKING PLANNING FOR EARLY WARNING AND EARLY ACTION THROUGH SEASONAL SCENARIOS

During the PSP workshop for the March to May 2013 rainy season in Garissa County, Kenya, the forecast showed that normal to below normal rainfall was most probable. In addition to discussing what was most probable, participating stakeholders also developed an impacts scenario and action plan in the event that above normal rains occurred.

As the season progressed, part of the county experienced flooding similar to that caused by above normal rainfall, although the flooding was actually due to an overflow of the River Tana as a result of heavy rainfall in counties upstream. Based on information on possible actions in case the above normal rainfall scenario occurred in the area, officers from the Department of Agriculture monitored water levels in the River Tana. According to Abdullahi Gedi, an elderly man from Nanighi community, it was very useful to have prior knowledge of actions to be taken if above normal rainfall occurred. When the area chief received a phone call about the impending floods along the river, he informed the community about it. Community members did not ignore the early warning as they used to do previously. They quickly acted on the information by moving their irrigation pump sets away from the riverbanks; those that could not be moved were tied to large trees. Those living close to the riverbanks relocated to higher grounds, while some crops were harvested and livestock were moved to the wet season grazing zones.



Ahmed Rage from Nanighi in Garissa, Kenya at his flooded farm. Credit: Stanley Mutuma/CARE Kenya, 2013

Using scenario development to unpack uncertainty in seasonal forecasts and generate locally relevant climate information is building actors' capacity for flexible and forward-looking decision making and proactive planning. Flexible and forward-looking decision making and planning strengthens the integration of agricultural livelihood strategies with preparedness, monitoring, early warning and early action to manage climate risks. This underscores the realisation that not one strategy, actor or sector can work alone in addressing climate challenges: a combination of strategies as well as collaboration and coordination among stakeholders are imperative to building adaptive capacity and resilience.

The types of climate hazards, their intensity and the resultant risks are also highly dependent on the seasonal climate. For example, extreme climate events such as rainstorms that cause flooding are more likely to be experienced in a rainfall season than in a dry season. Consequently, climate impacts will be determined by stakeholder vulnerabilities and capacities, as well as by the actions of different stakeholders to manage climate risks and take advantage of opportunities within a season.

Learning to manage climate risks and uncertainties – especially through collaborative and participatory approaches that bring together all stakeholders, strengthen communication systems for anticipating and responding to climate risks, and increase flexibility in adaptation and risk management options (such as is created by PSP) – provides potential pathways for strengthening stakeholders' adaptive capacities to manage climate change in the long term (Niang, et al., 2014).

3.6 Who is involved in PSP?

Figure 11. *An example of types of stakeholders who are usually involved in PSP. Note that this list is not exhaustive and is subject to change based on context.*

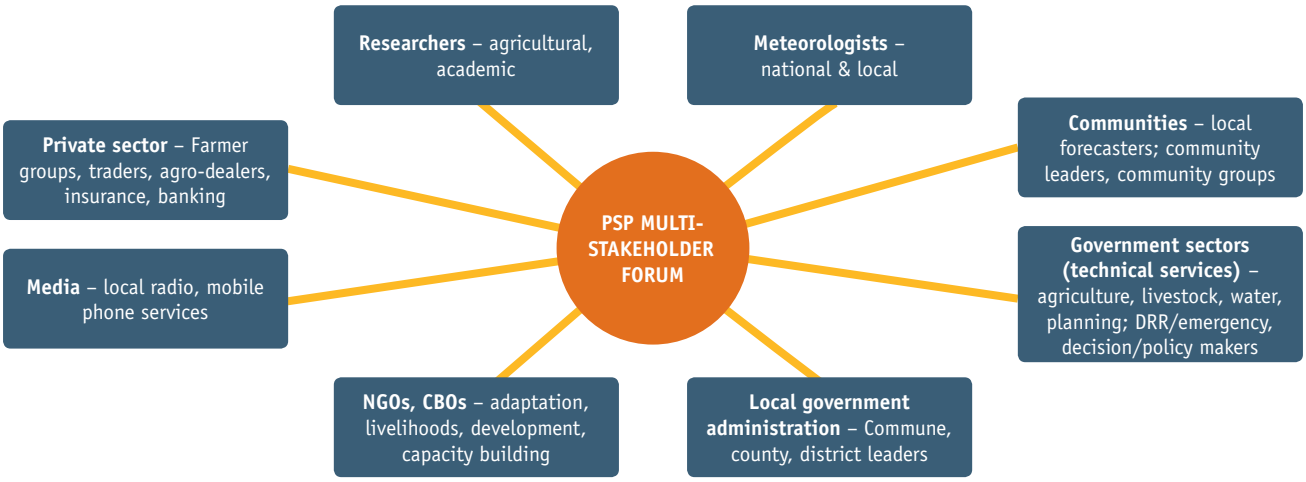


Figure 11 illustrates the different key stakeholders typically involved in the PSP process. The stakeholders are referred to differently depending on their roles and involvement in the PSP process. For clarity, the guide uses the following naming convention: stakeholders, actors and partners, as defined in the paragraphs below.

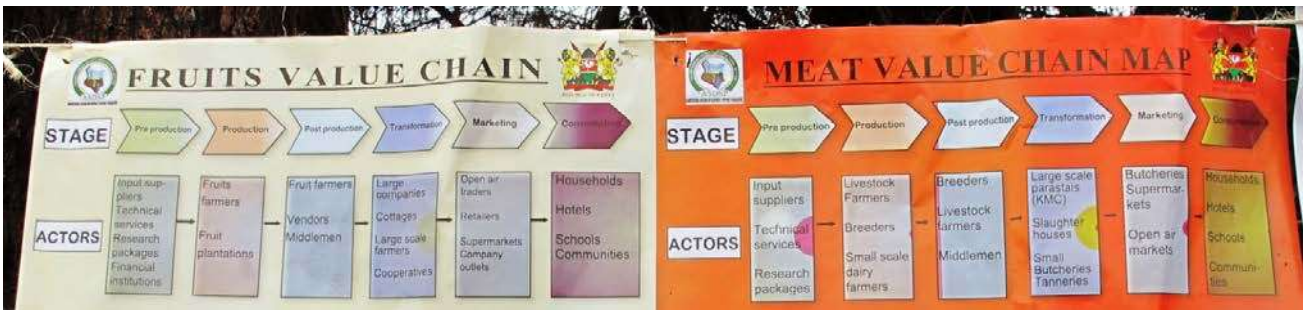
'Stakeholders' refer to everyone involved in PSP, that is, both those who support implementation of the PSP process – such as meteorological and agricultural services – and those who need to access and use the climate information coming out of the PSP process. Collaboration and coordination between all these stakeholders is important to achieving the PSP purpose and objectives.

'Actors' are a subset of stakeholders composed of those who need to use or act on climate information. For example, actors may refer to groups involved in a specific stage of the agricultural value chain, for example:

- pre-production actors such as input suppliers, and research, technical, financial and agricultural extension services
- production actors such as crop farmers, livestock keepers and farmer groups
- post-production and transformation actors such as vendors of agricultural produce, agro-processing companies, retailers and marketers
- consumers such as households and communities.

Actor groups may also refer to government institutions, projects and programmes, NGOs and CBOs, whose work is not limited to a specific stage of agricultural production but who work on issues that cut across more than one climate-sensitive sector and who possess the technical, operational, policy and funding support needed in PSP. These actors include those working in adaptation, DRR, drought management, resilient and sustainable development, climate-smart agriculture, water resources, livelihoods, poverty reduction, social inclusion, etc.

Figure 12. *Examples of agricultural value chain actors who might be involved in the PSP process*



'Partners' are a second subset of stakeholders, including institutions, organisations, projects and programmes supporting implementation of the PSP process. There are three kinds of partners, defined by their role and contribution to the PSP process (see more details in PSP process Step 1 – Initiating and designing the PSP process):

I. '**Initiating partners**' set up discussions on PSP in an area to create wider stakeholder demand and to mobilise motivation and buy-in for implementing the PSP approach to manage climate risks, uncertainties and opportunities in all climate-sensitive sectors. An initiating partner could be an organisation, institution, project, programme or individual (also referred to as PSP 'champions') who already understands and appreciates the value of PSP in leveraging climate information to manage climate risks, uncertainties and opportunities and in providing climate information services that contribute to building stakeholders' adaptive capacity and resilience. This understanding may have come from, for example:

   a) interaction with others who have experience of implementing PSP at capacity building and learning events – e.g. at the East and Southern Africa Learning Event on Community-Based Adaptation (CBA) and Resilience, and at the West Africa Learning Event on CBA, etc (see Works Referenced at the end of the document)
   b) presentations and discussions during conferences and workshops – e.g. at the 9th International Conference on Community-Based Adaptation
   c) publications emphasising the value of PSP, for example the PSP brief. (see Works Referenced at the end of the document)

   This guide aims to build such understanding – hopefully turning readers into initiators of the PSP process.

   Initiating partners also appreciate the potential of PSP to multiply the impact of their work and that of others (e.g. in projects/programmes on adaptation, DRR, early warning/early action, resilience, climate-smart agriculture, etc). They therefore take the initiative to help others realise the value of adopting and implementing the PSP approach as part of their work.

   After PSP has been initiated in an area and there is stakeholder buy-in and adoption of the approach, initiating partners then become facilitating partners.

II. '**Facilitating partners**' or simply '**facilitators**' are those implementing all the steps in the PSP process (see Chapters 4 to 8). They are play the role of climate knowledge brokers through bringing together and coordinating all the stakeholders involved in PSP. Often, facilitating partners also play the role of intermediaries (see definition in Box 2); as such, they become part of those involved in providing climate information services in a local area. Examples of PSP facilitating partners in various countries are presented in Table 4.

Table 4. Partners in five countries who have been involved in brokering linkages, and convening and facilitating the PSP process

KENYA	GHANA	NIGER	ETHIOPIA	MALAWI
3. Agriculture Sector Development Support Programme (ASDSP) 4. Kenya Meteorological Services Department (KMD) 5. Adaptation Learning Programme (ALP) – CARE International	1. District Assembly 2. Ministry of Food and Agriculture 3. Ghana Meteorological Agency (GMET) 4. Presbyterian Agricultural Station 5. Rural Development and Empowerment	1. CARE International – ALP, Building Resilience and Adaptation to Climate Extremes and Disasters (BRACED), Gender, Agriculture and Climate Risk Management project (GARIC) 2. Niger Meteorological Services (DMN) 3. AGRHYMET Regional Centre	1. Pastoral Resilience Improvement & Market Expansion (PRIME) project 2. Zonal- and district-level Disaster Preparedness and Prevention Office (DPPO) 3. National Meteorological Authorities	1. Civil Society Network on Climate Change 2. Enhancing Community Resilience Project 3. Churches Action in Relief and Development 4. Department of Climate Change and Meteorological Services 5. Developing Innovative Solutions with Communities to Overcome Vulnerability through Enhanced Resilience (DISCOVER)

'Funding partners' are those who provide funding and administrative support for the PSP process. These include county/district governments, development organisations working in different sectors, projects and programmes, etc.

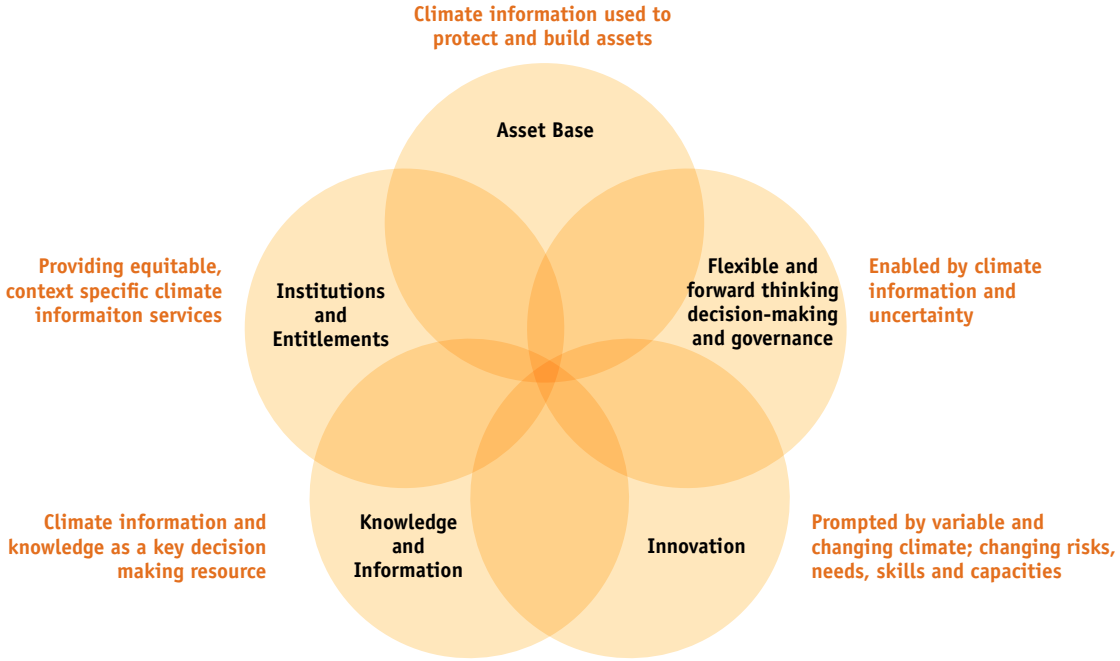
As will be realised, some partners may play more than one role in the PSP process; this needs to be defined and agreed by all partners (see details in Step 1, Chapter 4).

3.7 PSP is about building adaptive capacity and enhancing resilience

A commonly accepted definition of adaptive capacity – taken from the IPCC – is: the ability of systems, institutions, humans and other organisms to adjust (due to climate change, including climate variability and extremes) to potential damage, to take advantage of opportunities or to respond to consequences (IPCC, 2013). In practice, research by the Africa Climate Change Resilience Alliance (ACCRA) reveals that adaptive capacity refers to the potential of individuals and societies to respond to change, so it is not currently possible to measure it directly as defined by the IPCC. To make this definition applicable in practice, ACCRA focuses on five dimensions that are considered to contribute to adaptive capacity: 1) the asset base (including physical and non-physical assets); 2) institutions and entitlements; 3) knowledge and information; 4) innovation; and 5) flexible forward-looking decision making and governance (Levine, Ludi, & Jones, 2011).

PSP goes further to actualise the five dimensions of local adaptive capacity in practice (see Figure 13), starting with a heavy focus on climate information and knowledge that feeds into the other four dimensions; this is explained in the following paragraphs.

Figure 13. *PSP is actively and regularly contributing to building local adaptive capacity (Source: Levine, Ludi & Jones 2011)*



Turning climate information into knowledge: It is not enough for stakeholders to 'access' seasonal climate information; even more critical is turning that information into contextualised knowledge that prompts action. PSP creates space for actors to question seasonal forecasts, understand the uncertainty in the forecasts, analyse and combine forecasts from different sources, and collectively apply local and technical knowledge to co-generate information and knowledge that is more useful for informed decision-making, planning and action in different local contexts.

Learning to read a rain gauge in Garissa County, Kenya. Jospeh Ndiritu/CARE Kenya/2011

An agro-pastoralist in Garissa, Kenya, reading climate advisories. Credit: Eric Aduma/CARE Kenya, 2014.

Forward-looking and flexible decision making and planning: Seasonal climate information generated from PSP has a strong emphasis on understanding uncertainty in seasonal climate forecasts, through development of scenarios. Scenarios explore a range of possibilities in future seasonal climate, prompting actors to think about the range of hazards, risks, opportunities and impacts that may occur in the season in a given area. Such thinking puts actors on a path of forward-looking decision making and planning for strategies and actions that manage risks and also capitalise on potential opportunities. Further, as there is consideration of different possible futures, actors' capacity is built to: 1) sense change in weather within the season and resultant risks and impacts; 2) conceptualise responses to that change; and 3) reconfigure resources and strategies to execute actions in response to the change (see case study 3). In essence, scenarios enable actors to build proactive responsiveness and flexibility into decisions, plans and actions. Scenarios also encourage organisations and institutions to build flexibility into in their support services and funding so they can scale up or scale down certain actions, depending on how a season progresses. (IFRC; OXFAM; Save the Children; WFP; FAO)

Local innovation: Consideration of options generated from different scenarios fosters actors' capacity for local innovation, through experimenting with new strategies and modifying existing strategies using information, learning and links (such as with research institutions) gained during a PSP forum. Innovation is especially vital to dealing with the changing and uncertain climate and realities in different local contexts, which necessitate the continuous development of new and context-specific solutions, even on a seasonal basis.

Assets: Use of seasonal climate information for forward-looking decision making and planning as well as for innovation enables actors to protect their assets (DFID, 1999) (especially natural assets such as water, land and forests; physical assets such as buildings, tools and equipment for production; and financial capital in the form of savings and credit, seeds, livestock, etc) through early warning and early action to manage climate risks, opportunities and impacts. The information can help local actors make climate-smart investments that build their assets, through taking advantage of opportunities for income generation and for sustainable and resilient productivity and development.

Institutions, entitlements and governance: PSP forums create space for interaction on a seasonal basis among multiple stakeholders who would normally not sit together to plan. The interaction empowers all actors – including vulnerable stakeholders – to demand, access and act on climate information that is relevant to their needs and aspirations. As a consequence, meteorological services, local governments, institutions, organisations and private sector services are persuaded to be more responsive to the specific climate information needs and services of actors in a local area. The regular interaction and dialogue builds stakeholder relationships to co-develop and deliver climate information services that are responsive to users' needs. This also promotes good governance in climate information services through creating accountability mechanisms between service providers and local actors. The result is climate information services that are equitable and effective in building local adaptive capacity and resilience to the climate now and in the long term.

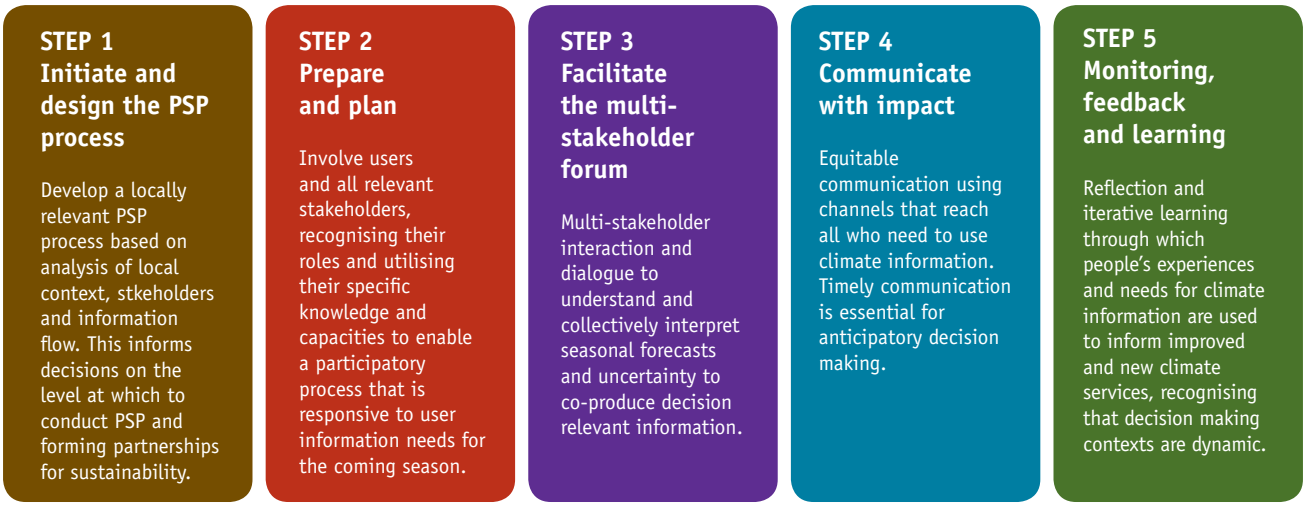
Introduction to Chapters 4-8

Female farmer showing her maize crop in Ghana. Credit: Charlotte Kneidfelt/CARE Denmark 2015

Practical guide to facilitating the Participatory Scenario Planning process

For clarity on the PSP process – what needs to be done at different stages, working out who is involved, and the roles and responsibilities of different actors – we have broken down the PSP process into five steps, as illustrated in Figure 14.

Figure 14. *Steps 1 to 5 in the PSP process*



Steps 1 to 4 are sequential, with each step feeding into the next one. As indicated before, the PSP process is an iterative learning process and therefore requires stakeholders to continually evaluate how things have been done and what the outcomes were – hence the fifth step.

The steps have been detailed in Chapters 4 to 8 in the guide, as follows:

- **Chapter 4 presents Step 1:** Initiate and design the PSP process
- **Chapter 5 presents Step 2:** Prepare and plan for PSP workshop
- **Chapter 6 presents Step 3:** Facilitate the multi-stakeholder forum
- **Chapter 7 presents Step 4:** Communicate with impact
- **Chapter 8 presents Step 5:** Monitoring, feedback and learning

The chapters are structured as follows:


The purpose of each step


Expected outcomes of each step


Duration of the step, and budgeting – how to, what to budget, noting flexibility to match resources


Key concepts and theoretical explanations that are needed to understand the steps together with practical advice or guidance on how to conduct each step


How To - details of how to conduct of the step

Brief case studies are included to illustrate some key concepts in different steps and to show how the steps have been conducted in different parts of Africa. Most of the case studies are from Kenya, where PSP has been scaled to all 47 counties in the country, but where relevant, case studies from other countries in Africa are included. Other useful examples that illustrate different aspects in the steps are presented in annexes at the end of the document. Useful resources for more information and also referenced at the end of the PSP Guide.

Note that in many instances, Chapters 4 to 8 present options for practically implementing the steps, allowing PSP facilitators to customise the process based on what works best in their different contexts. Further, commonly used stakeholder titles in Kenya are used in several places; and where necessary, these titles will be explained. Facilitators from other countries can replace the titles with the equivalent in their countries.

CHAPTER 4

STEP 1
Initiate and design the PSP process

4.1 Purpose

To design a locally relevant and appropriate PSP process that will deliver effective climate information services to all actors.

4.2 Expected outcomes

- PSP is introduced and adopted in an area as a valuable approach for building stakeholders' adaptive capacity and climate resilience.
- A locally relevant PSP process is designed, based on analysis of the local context and stakeholders.
- Partnerships are formed to implement the PSP process, aimed at delivering effective climate information services.
- A concrete plan for implementing the PSP process in an agreed local area is developed and regularly adjusted to suit the changing local context.

4.3 Duration

As Step 1 is largely focused on designing PSP in an area that is completely new to the approach, this step may take several months, depending on the length of time needed for analysis, discussion, buy-in and forming partnerships for implementing PSP in different contexts.

This step also applies to areas where PSP has already been adopted and is conducted on a regular basis. In this case, the step may take up to one week depending on the number of meetings scheduled and agreed actions to be taken after the meetings.

4.4 Design and initiate the PSP process for the first time

4.4.1 Key Concepts

Initiating partners (see definition in Chapter 3) start by designing what the PSP process would look like in a local area, before introducing it to other stakeholders in the area. Designing the PSP process is done either as an internal discussion – if only one organisation/institution is the initiating partner – or together with other organisations/institutions which already appreciate the value of PSP. In the case of the initiator being a 'PSP champion', this individual would need to first introduce PSP to the organisation they work for or are affiliated to so as to build interest in adopting the approach. Organisational/institutional adoption of PSP may be demonstrated by writing PSP into annual work plans or proposals for upcoming projects, developing concept notes with links to ongoing work, etc. Once an organisation/institution has adopted PSP, they become the initiating partner.

Organisational/institutional support is important in enabling the necessary collaborations and partnerships to happen, since PSP seeks to support provision of regular climate information services that are embedded within local planning processes. It should be noted, therefore, that PSP is not a project or programme implemented by one organisation/institution; rather, PSP has to be a locally driven and collaborative process.

The key considerations when you are designing a PSP process that is relevant to an area are:

- local context analysis
- stakeholder analysis
- developing a convincing case for PSP

- introducing PSP in a local area – presenting a convincing case for PSP
- forming partnerships
- planning for the entire PSP process.

Emphasis is placed on defining 'local area or level' because the climate and related risks and impacts, resources to manage the climate risks and impacts, key livelihoods and sectors, ways in which things operate, among other factors, are context specific. As earlier presented in 'why scenario planning' (see Chapter 3), interactions between these create an uncertain environment but one which needs to be better acknowledged and understood so as to inform the design of PSP to suit local contexts and achieve the desired outcomes.

While context and stakeholder analysis may not be new to the readers of this guide, the analyses are presented here as they relate to designing the PSP process. Some of the information sought out by the two analyses may already exist, especially in areas where climate change vulnerability and capacity analyses have been done, such as through the use of the Climate Vulnerability and Capacity Analysis (CVCA) methodology (Dazé, A., Ambrose, K., and Ehrhart, C., (2009)). In such instances, it is best for initiating partners to draw out existing information from literature reviews and then talk to key informants to fill in any information gaps. Since PSP is a community-based adaptation approach, developed by ALP, the PSP design step follows a method similar to the community adaptation action planning (CAAP) process. The CAAP process detailed in the practitioner brief on 'Adaptation planning with communities' provides useful information for use in designing the PSP process (Dazé, Percy, & Ward, 2015).

4.4.2 How to design the PSP process

The steps below are practical suggestions of the different aspects involved in the initial design of the PSP process especially for those introducing it in a new area for the first time. It is also very relevant for those seeking to do a review of the quality of the PSP process during an evaluation in areas where it has been happening.

I. LOCAL CONTEXT ANALYSIS

Define the local area, understand the local climate, and identify the climate-sensitive sectors, livelihoods and activities in the local area.

Defining the local area: Decide the level at which will the PSP process be implemented. Consider, among other criteria:

- administrative boundaries – e.g. national, province, district, county, sub-county, region, etc (note that the names of administrative boundaries differ from country to country)
- landscape – e.g. a whole watershed or parts of it
- livelihood systems – e.g. a contiguous pastoral zone, an area specialising in growing a specific crop such as tea or sugar
- agro-climatic or agro-ecological zones – e.g. a whole humid area or a semi-arid area.

Quite often, defining a local area may require you to combine some of these criteria, for example, where the agro-climate of an area has a strong influence on livelihood systems in that area. Choose the criteria that will work best, based on your own experiences. Note that:

- Organisational/institutional interests may influence the choice of local area – e.g. organisations/institutions whose work is focused on pastoral livelihoods or in areas with high agricultural potential would use these to define the local area.
- The defined local area will have implications on the extent to which a seasonal climate forecast will need to be downscaled (see definition of downscaling in Chapter 2).
- The local area will also determine the level at which planning for PSP will be done and at what level PSP will be implemented – e.g. plans can be at county/district level but implementation of the actual process may be at sub-county/sub-district level to cater for population sizes and differences in agro-ecological zones and livelihood types, etc.

Understanding climate of the local area: Get information on climate variability for the local area in terms of:

- seasonal rainfall and temperature averages based on historical climate data and possibly local climate information
- seasonal patterns and trends of the start and end of seasonal rains, dry spells within the rainy season, etc.
- the types, intensities and frequencies of climate hazards that have occurred in the area, showing seasonality of these hazards and possible trends.

It is useful for this information to be displayed on a map so as to show possible climatic differences that occur in smaller areas or agro-climatic zoning within the larger local area. Portals such as ENACTS and weAdapt will be useful for accessing and displaying analysis of climate data in the form of maps.

Information on climate in the local area may be available in various documents, such as national climate change documents; in many instances, however, the information would need to be developed by national meteorological services. This presents a chance for initiating partners to bring in national meteorological services at this early stage (if they are not already engaged in designing the PSP process), as they are critical stakeholders in implementing the PSP process. Have a discussion with national meteorological services on the available climate information as well as the current and planned state of climate information services provision, successes and challenges to providing this service in the local area.

Identifying climate-sensitive sectors, livelihoods and activities in the local area: Find out which major sectors, livelihoods and activities in the area are sensitive to the local climate (see definition of sensitivity in Chapter 2). What is the level of homogeneity or heterogeneity within the area, in terms of different livelihood types and activities, major agricultural value chains, broad climate-related development challenges, issues and needs, etc? This information will be helpful in identifying stakeholders to involve in the PSP process.

If the information is available, find out:

- What are the climate risks, vulnerabilities and potential opportunities faced by these sectors, livelihoods and activities in the area?
- How are the existing climate information services in the area working to address the climate risks and opportunities? What are the strengths and challenges with this?
- What is the current status of ongoing projects and programmes, available resources (e.g. natural and physical capital), broader public and private services, policy and planning processes that can support climate information services so as to manage climate risks?

II. STAKEHOLDER ANALYSIS

The follow-up question after context analysis is: who are the stakeholders (see definition in Chapter 2) in the local area? This is in recognition of the fact that effective adaptation planning requires cross-sectoral and multi-stakeholder interaction in decision making and planning, which means you need to identify and map the key stakeholders that should be involved in PSP. This is a preliminary analysis; as PSP implementation progresses, stakeholders and/or relationships may change and need to be revisited.

To answer this question, brainstorm a long list of stakeholders in the local area. To enable a good understanding of the stakeholders in that list in relation to engagement with the PSP process, identify stakeholders you may have missed in the long list. To help in defining the involvement of different stakeholders, consider responses to the following questions:

- What are the stakeholders involved in? Consider the identified climate sensitive sectors, livelihoods and activities in the local area, and taking into account the different:
  - agricultural value-chain actors – e.g. farmers and livestock keepers, input suppliers, marketers, agro-processors, retailers, etc

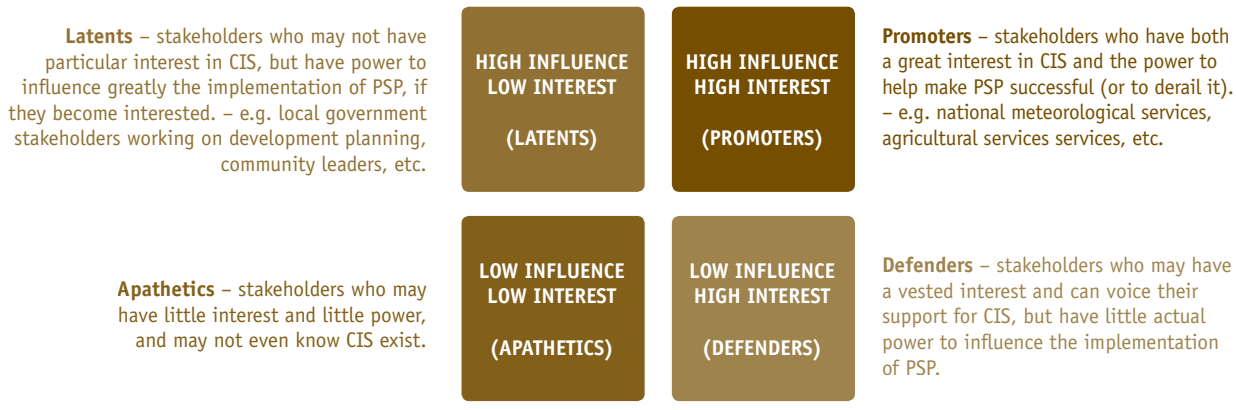
- service providers – e.g. climate information services, agricultural services, financial services, communication, etc
- stakeholders working on thematic issues such as pastoral rights, livelihoods and development, DRR, adaptation, climate-smart agriculture, etc.

- What knowledge, skills and technical expertise do stakeholders in the area have that are relevant to addressing climate risks and opportunities?
  - What is the availability of stakeholders with particular technical expertise, such as government agricultural and livestock officers, meteorological officers, etc? This is in relation to their numbers and spread in the defined local area, which can help in refining the area to be covered by PSP.
  - What local knowledge on climate is there?
- What social networks, organisations and institutions exist in the local area that relate to identified climate-sensitive sectors, livelihoods and activities? Consider:
  - networks and relationships, either vertical (patron/client) or horizontal (between individuals with shared interests) that increase stakeholders' trust and ability to work together and expand their access to climate information services
  - membership of more formalised groups, which often entails adherence to mutually agreed or commonly accepted rules, norms and sanctions – e.g. cooperatives, farmer groups, consumer or retailer groups, village savings and loans groups, etc.
- Are there stakeholders who are interested in or already engaging with climate information services?
  - Who are they and why are they interested in engaging with climate information services (in relation to their work, priorities, needs and aspirations)?
  - For those already engaging with climate information services, what approaches are being used and what has been the result? Are there gaps and challenges still to be addressed by these approaches?
- What are the challenges for and needs of the different stakeholders in engaging with climate information services?
  - What are the opportunities for different stakeholders to engage with or influence the provision of climate information services, and PSP more specifically? These may be in the form of existing plans and decision-making processes that are targeted at, seek to support, or require linking to, climate information services – e.g. in the adaptation actions presented in the Kenya Climate Change Action Plan's Adaptation Technical Analysis Report (see Works Referenced at the end of the publication).

Based on information generated from these questions, map the stakeholders in the analysis matrix (see Figure 15; adapted from World Bank, 2001) with consideration of the following four major attributes:

- level of interest that stakeholders have in climate information services
- stakeholders' position on climate information services
- stakeholders' networks, links and associations relevant to the provision of climate information services
- level of influence (power) that stakeholders hold in the local area.

Figure 15. *Mapping stakeholders to determine their involvement in and influence on implementation of the PSP process*



Mapping from the matrix will help to understand what kind of influence each stakeholder might have on the implementation of the PSP process and what kind of relationships to build and nurture in terms of:

- **Actors** – They may fall into any one of the four boxes in the matrix. Emphasis is on ensuring multi-stakeholder interaction and dialogue through the participation of different groups of actors who have unique and specific climate information needs.
- **Potential partners** – These are stakeholders who fall into the 'latents' and 'promoters' categories. Focus is on stakeholder collaboration and partnerships for PSP to meet the specific needs for climate information and services in the local area, as well as on support for integrating or mainstreaming climate information services into regular decision making and planning processes in the area.

This information serves as the baseline status of the different stakeholders, and will help you decide how to manage stakeholders as you implement PSP – for example, how to marshal the help of those that support the PSP process (i.e. 'promoters'), how to involve those who could be helpful (i.e. 'latents'), and how to convert those who may start out feeling negative or who are not aware of the existence and value of climate information services (i.e. 'defenders' and 'apathetics').

This is also the time to start considering future sustainability and institutionalisation of PSP. For example, which local and national organisations are most likely to adopt the approach as part of their mainstream planning or climate services systems? Is there a local climate change working group, task force or committee, or a similar body that could take on climate change adaptation issues, such as a DRR system or development planning committee? The more mainstream actors are involved and discussions take place on establishing multi stakeholder coordination the more likely to achieve early adoption and sustainability.

III. DEVELOPING A CONVINCING CASE FOR PSP

Put together information from your context and stakeholder analyses to develop a convincing case for implementing PSP in the local area. This will help you, the initiating partner, have a good understanding of the need for and value of PSP in the area and use it to motivate buy-in and support for PSP from other stakeholders. The convincing case should address:

- **The problem:** climate in the local area, risks and potential opportunities it poses to sectors, livelihoods, activities and stakeholders within the area
- **Current state of play:** successes and challenges, as well as opportunities and barriers, for climate information services in addressing climate risks and opportunities in the area and contributing to adaptation, climate resilient agriculture and development
- **The solution:** the value of locally relevant and responsive climate information services in decision making and planning to manage climate risks and opportunities in the area. More specifically, present PSP as an approach that has the potential for enabling the design and delivery of the required climate information services, which will contribute to building local adaptive capacity and climate resilience. This is best demonstrated using case studies on the benefits of PSP that have been realised in other areas where the approach has been used. Such case studies can be developed with support from other stakeholders inside or outside the local area, who already have experience implementing the approach and can share lessons learned and evidence on PSP results and benefits.

As part of the solution, explore the relationship between PSP and existing local approaches that use climate information and local planning processes (such as those on development, disaster risk management, etc). Emphasise the added value that PSP can bring to these approaches and planning processes, rather than presenting PSP as a replacement for them (see 'PSP is about building adaptive capacity' in Chapter 2,).

From your stakeholder analysis, draw out information on who in the local area could be involved in PSP and why – thinking about actors and potential partners.

IV. DEVELOP A PROVISIONAL BUDGET

The question of cost will come up when introducing PSP and during discussions with potential partners. Table 5 sets out items in the entire PSP process that need to be costed, which will be useful for developing your budget. The items do not have monetary amounts attached to them, as costs will vary, considering:

- variations in costs in different countries and specific locations within those countries
- size of the local area, accessibility of the area, and population sizes within the decided area
- where meetings in the different PSP steps are conducted, who is involved and what their contribution is, among other things.
- resources available (for example, the number of participants, type of venue and days of the PSP are flexible)

Table 5. Indicative items to be costed, cutting across all steps of the PSP process

MAJOR PSP ACTIVITIES WITH COST IMPLICATIONS	KEY ITEMS TO BE COSTED ACROSS ALL ACTIVITIES
Pre-PSP planning meetings – Step 1 (Designing the PSP process) and Step 2 (Preparing for PSP workshop): • Design, review and planning meetings by partners • Focus group discussions with various actors • Capacity building, training or awareness-raising sessions (where applicable)	• Meeting/workshop venue • This might be a meeting room offered (free of charge) by a PSP partner to be used during planning meetings, a government social hall or a hotel where a PSP workshop is held.
PSP Multi-stakeholder Forum – Step 3 (PSP workshop)	• Workshop or meeting materials – e.g. flipcharts, tape, pens, markers, notebooks, idea cards, projector, public address system, etc. • Communication costs • Sending out invitations, contacting all the stakeholders involved, advisory communication channels – e.g. radio stations (could be partners who offer free airtime as their contribution), printed brochures, etc. • Meals and accommodation (where applicable), transport costs
Post-PSP Forum – Step 4 (Communicating advisories from a PSP workshop) and Step 5 (Feedback, monitoring and evaluation): • Preparing communication materials and communication channels • Monitoring and validation visits	• Daily Subsistence Allowance (DSA) or Per Diems (where applicable) • This cost comes up due to engagement of government officials and compensation for time invested by different actors. It is a cost to be taken into account when PSP is first introduced into a new area. As the value of PSP is realised in the area and the approach is integrated into government and local planning processes as a way of working, this cost should be reduced if not eliminated.

V. INTRODUCING PSP IN A LOCAL AREA – PRESENTING THE CASE FOR PSP

Initiating partners set up introductory PSP discussions with identified local stakeholders to present the convincing case for PSP in the local area. This can be done in either one-on-one or group meetings (see a case study 4), especially targeting stakeholders whose direct support and involvement is required (i.e. those categorised as 'latents' and 'promoters' during local stakeholder analysis). These discussions are expected to result in:

- widespread stakeholder interest in locally relevant and responsive climate information services
- local stakeholders' motivation, buy-in and support for implementing PSP in the area.

VI. FORMING PARTNERSHIPS

At this point, potential partners have been identified and introduced to the PSP process. However, further group meetings or one-on-one discussions and actions by initiating partners may be needed to further convince potential partners and firm up partnerships. Such discussions or action might provide:

- increased awareness and buy-in through analysis and discussion on the added value of PSP to work goals, objectives, roles and responsibilities of specific potential partners. This would enable integration of PSP into planned and ongoing work and processes – e.g. county or district government development plans, agriculture and other sector-specific plans, local or community adaptation action plans, etc
- more detailed introduction to, or training on, the PSP process to ensure partners have a good understanding of what the process entails and to build their capacity to facilitate PSP (see case study 5)
- specific training for specific partners – e.g. for Meteorological Services on communicating to non-scientific audiences (see case study 5)
- presentation, further discussion, refining and agreement on local context and stakeholder analysis.

Case Study 4

INTRODUCING PSP TO THE NATIONAL TECHNICAL COMMITTEE ON CLIMATE CHANGE IN MALAWI

Officials from member organisations of the Civil Society Network on Climate Change (CISONECC) are championing PSP in Malawi. These officials – drawn from organisations involved in development support, climate change policy, DRR and resilience, natural resource management and food security – became PSP champions after attending a training of trainers (TOT) course organised in Kenya by CARE International's ALP from 23 to 26 March 2015.

Following the action plan developed during the TOT, the champions introduced PSP to the Malawian National Technical Committee on Climate Change (NTCCC) at a meeting on 22 May 2015, in order to get political buy-in before rolling out PSP at district level. This was also driven by the champions' recognition that the NTCCC, composed of policymakers from all relevant sectors including government agencies and departments, could ensure that PSP was embraced in national policy as a tool for adaptation planning and as a sustainable platform for building community resilience to climate change impacts.

At the meeting, a presentation was made on PSP focusing on defining the approach and describing the PSP process. The presentation gave examples of where the PSP approach had been used in Malawi, such as in communicating actionable advice together with weather forecasts for a local area, as implemented by the Enhancing Community Resilience Programme. Success stories from PSP implementation in other African countries (e.g. Kenya and Ghana) were also presented.

Members of the NTCCC appreciated PSP, which was recognised in the draft meteorological policy presented at the same meeting, as an adaptation planning tool that could influence policy towards better supporting community resilience. After the presentation of PSP, some challenges were raised by participants, including:

- **whether the Department of Climate Change and Meteorological Services had the capacity to generate localised and accurate data**
- **identification of expertise in the country that could interpret the data for various sectors**
- **risk assessment: the certainty to which options – developed from the interpretation of climate forecasts – presented to communities are correct (this may be associated with the limited capacity in generating accurate data)**
- **information ownership: an example was given where a similar approach was proposed. However, responsible ministries did not want to be associated with information that came out of that approach, as they did not want to be responsible for the consequences, especially when communities considered the reality to be different from the forecast.**

The issues raised and the experiences of similar approaches provide an opportunity for continued discussion with NTCCC on how to deal with challenges in provision of climate information services, such as strengthening the capacity of Meteorological Services. It also presents information on local stakeholders to target for awareness raising and capacity building so as to create a good understanding of PSP as a valuable approach for the design and delivery of localised climate information services.

Once potential partners are convinced and ready to support the implementation of PSP in the local area, organise a meeting to bring together all the willing partners to discuss and develop a partnership agreement (see an example in Annex 2). The meeting is a chance to collectively work out partners' roles and responsibilities in the PSP process (see an example in Table 6) and include them in the partnership agreement. Once partners' roles and responsibilities are agreed, it will be clear on who is a facilitating and funding partner (see the definition of partners in Chapter 2). It is especially critical to decide on who will take the lead in coordinating links between different partners, and planning and preparing for all the steps in the PSP process.

Present the developed tentative budget for the PSP process and discuss the type and amount of resources that partners are willing and have available to cover the costs of the PSP process. Assess the available resources against the tentative budget so as to adjust the budget (taking into account the area to be covered and the stakeholders) and, in case of a shortfall, make a plan for sourcing for additional resources.

Table 6. An example of partner roles and responsibilities in the PSP processes, from Trans Nzoia County, Kenya

NAME OF PARTNER	ROLES AND RESPONSIBILITIES	PARTNER CATEGORY
Ministry of Agriculture, Livestock, Fisheries and Cooperative Development	Capacity building Co-funding Advisory development Monitoring and evaluation	Facilitating and funding partner
Ministry of Water, Environment and Natural Resources – Kenya Meteorological Services	Capacity building Co-funding Printing of advisories Provision of weather and climate forecasts and rain gauges	Facilitating and funding partner
Traditional forecasters	Presentation of the OND forecast	Facilitating partner
Agricultural Sector Development Support Programme (ASDSP)	Co-funding Monitoring and evaluation	Facilitating and funding partner
National Administration County Government Administration	Coordination of 'Barazas' (local communication forums)	Facilitating partner
Imani Radio & TV	Broadcasting of advisories in the media	Facilitating partner

Case Study 5
ENGAGING PARTNERS IN THE PSP PROCESS

Capacity building for effective partner engagement

In August 2013, the ALP partnered with a communications specialist to build the capacity of 47 County Directors of Meteorological Services (CDMS) from the Kenya Meteorological Services on climate communication.

The training sought to enable CDMS to:

- **engage in two-way communication with actors to enable them to develop more effective and coordinated planning, continuously informed by climate information**

- effectively prepare and present climate information to different actors, bearing in mind some of them would not have a scientific background
- understand the roles of meteorological officers before, during and after communicating climate information
- contribute to planning for climate communication forums, such as PSP workshops, in their counties in collaboration with other partners.

From the training, the CDMS gained an appreciation of the value of facilitating interaction and collaborative generation of climate information with key stakeholders, and the importance of targeted communication and feedback in developing climate information services that meet the needs of local actors.

Drawing learning from ALP and partners, Kenya's Agricultural Sector Development Support Programme (ASDSP) – in the Kenyan Ministry of Agriculture, Livestock and Fisheries – adopted PSP as an approach for strengthening the environmental resilience and social inclusion of agricultural value chains. This was due to its recognition of the value of PSP in creating a multi-sectoral and multidisciplinary forum that enhances equitable access to, and use of, natural resource management and climate adaptation advisory services for planning at sub-county and county levels. As facilitation of the PSP process was new to ASDSP, capacity building of the National Resource Management (NRM) officers was requested. The training was conducted in March 2014 by ALP, in collaboration with CDMS; it aimed at enabling the NRM officers to:

- understand the importance of PSP process in supporting climate change adaptation and contingency planning processes
- facilitate the PSP process at county and/or sub-county level with a clear understanding of the relevant actors
- understand the role and importance of Meteorological Services in climate change adaptation, as well as how to work with them to develop locally relevant climate information for adaptation decision making and planning.

Forming a working partnership

Following the training of both CDMS and NRM officers, KMD partnered with ASDSP to conduct the PSP process in all 47 counties in Kenya on a seasonal basis starting with the 2014 March to May season. The partnership takes advantage of both Meteorological Services and ASDSP being operational at county level, meaning there would be greater capacity for information on climate and agriculture to reach all who need it, including vulnerable groups. The partnership is able to invite stakeholders from both private and public sectors – including agriculture-related companies such as seed suppliers, farmer groups, NGO representatives, the media, and members of the county government, agricultural research institutions and programmes – to participate in the various steps of the PSP process.

Engaging multiple stakeholders in the PSP process has led to discussions on forming local teams, drawing membership from different sectors, to take the lead in implementing a locally relevant process and ensure its sustainability. For example, in Kakamega County, the Kakamega Climate Change Working Group was formed to oversee the PSP process and stimulate private-public partnerships for adaptation action. Members of the working group are providing technical and operational support for the process, and as a key sustainability measure, they are also lobbying the county government to include PSP in county development budgets for continued financial support.

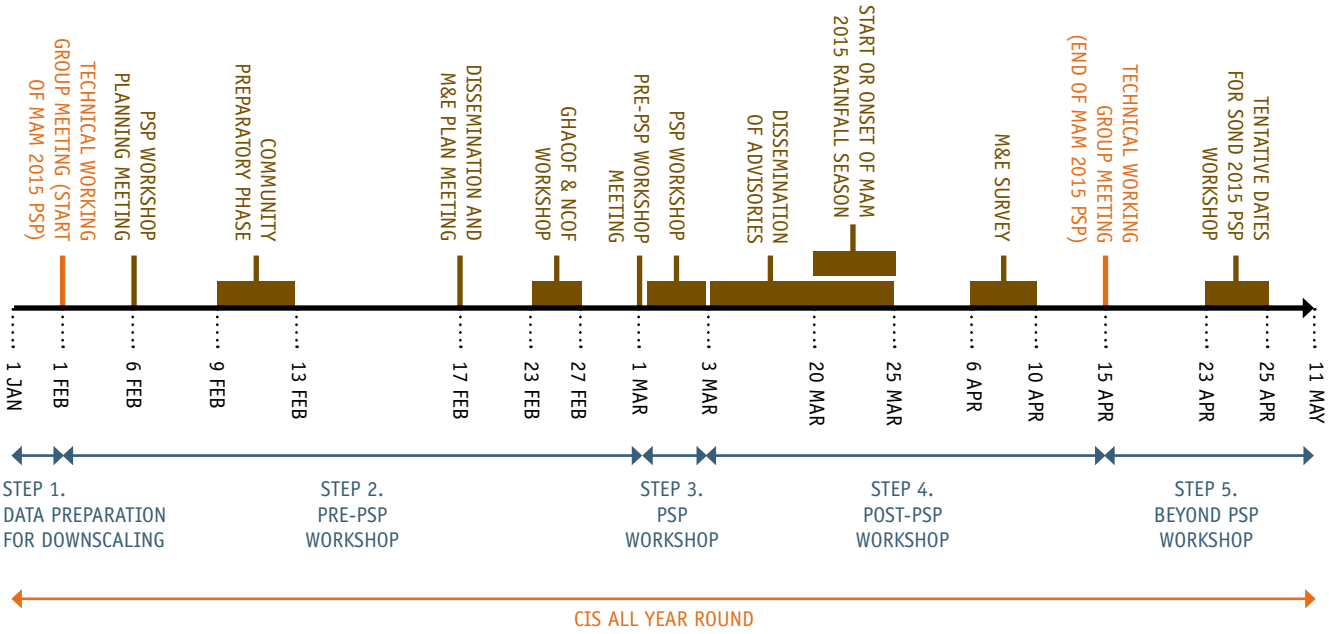
VII. PLANNING FOR THE ENTIRE PSP PROCESS

It is now time to take action on local implementation of the PSP process. Planning is best done in a meeting with all the partners; it can be an agenda item in the meeting where partnerships were formed or in a separate meeting.
Develop a workplan for the entire PSP process (see an example in Annex 4), considering the PSP principles (see Chapter 3) and questions such as:

- What needs to happen? – This will help you identify the activities for carrying out all the steps in the PSP process.
- When will the different activities in the different steps happen? – This is about setting appropriate timelines for all the steps in the process (see the PSP road map in Figure 16).
- Who will be involved in carrying out the different activities? Take the agreed partner roles and responsibilities into consideration.
- Where will the different activities happen? Consider meeting venues but also selection of different actors for discussions before (Step 2) and after (Step 4 and 5) the PSP workshop.
- What are the financial implications? Revisit the budget and revise it based on the different activities in each step and the stakeholders involved.

The workplan can be visually presented as a PSP road map or timeline (see Figure 16). Revise the plan later based on discussions and information emerging from the different steps.

Figure 16. *Road map for PSP in Kenya (developed by Calistus Wachana, County Director for Meteorological Services in Trans Nzoia County, 2015)*



Factor in the right timing of all PSP steps, especially considering PSP Principle 2. Because seasonal forecasts have strong emphasis on rainfall occurrence, the PSP process should be conducted as many times in a year as there are rainy seasons in that particular area. As demonstrated in Figure 16, the road map for PSP plans for two rainy seasons in Kenya.

Develop a communication plan, with consideration of PSP principle 7. Required timing and channels for communication of climate information can initially be based on partners' knowledge of the local area and actors, but this information needs to be refined after discussions with actors in Step 2 and during the PSP workshop (Step 3). Details on defining a communication plan are presented in Step 4, Chapter 7.

Develop plans for feedback and learning (Step 5). This is essential to inform revisions of how the process is conducted right from the design step, so that PSP continues to support the design and delivery of locally relevant climate information services.

CHAPTER 5

STEP 2
Prepare and plan for PSP workshop

5.1 Purpose

Step 2 of the PSP process focuses on identifying climate information needs for the coming season, preparing stakeholders for participation in a PSP workshop, and getting feedback for practical planning of the workshop.
Emphasis is placed on continuous two-way communication and feedback between producers (e.g. meteorologists/climate scientists), intermediaries (e.g. NGOs, agricultural extension) and actors to improve the PSP process and outcomes.

5.2 Expected outcomes

- There is dialogue and two-way communication between all actors and stakeholders involved in providing and using climate information services.
- Packaging and presentation of climate information is informed by actors' needs and demands in the local area.
- A plan is made for a locally relevant, user-focused, participatory PSP workshop.
- A well-structured plan for conducting a user-responsive PSP workshop is developed, informed by feedback on outcomes of the previous season.

5.3 Duration

Step 2 might take one to two weeks, depending on the number of discussion meetings with actors and the length of time taken by partners to organise information and develop a plan for PSP workshop.

5.4 Engaging local actors in the PSP process

5.4.1 Key Concepts

For climate information generated from a PSP workshop to be relevant and usable, actors (see definition in Chapter 2) must be engaged from the start of PSP implementation. This requires having discussions with different actors within the agreed area in order to gain a good understanding of perspectives on the local seasonal climate, climate risks and impacts, and to clarify actors' climate information needs.

The discussion with actors is not an extractive research exercise but rather part of a participatory process that forms the beginning of dialogue and two-way communication between stakeholders working to provide more effective climate information services and the people who need to use climate information in their decision making and planning. Discussions must therefore be designed as a dialogue process that generates and shares information and new insights on climate information services in the area. This presents an opportunity for:

- actors to share their experiences of accessing, understanding and using climate information and services (and specifically, PSP), give feedback for improvement of these services, and express their climate information needs
- local forecasters to be better recognised as providing useful climate information for their local contexts. In many African countries, these local forecasters, and the knowledge and information they possess, are not well appreciated outside their communities or even households. In addition, there is a widening intergenerational gap between the custodians of local climate knowledge and the young, which is affecting the sustainability of generating local knowledge for use by future generations (Mahoo et al., 2015). Actor engagement, therefore, presents an opportunity to document local climate observations, prediction systems and knowledge – documentation that could support integration of local climate knowledge with conventional scientific knowledge and information
- facilitating partners – including meteorological services who need to participate in these discussions – to gain a better understanding of the status of climate information services in the area (beyond information obtained during stakeholder analysis is Step 1) and check the progress in implementing PSP (see more details in Step 5)

- stakeholders to inform both the development of climate information that meets the changing and diverse local needs and also adjustments to the way in which that information is packaged, presented and communicated, taking into account increasing access to advanced information communication technologies
- stakeholders to have a dialogue on the value of climate information and making climate information services more relevant to local decision making and planning for management of climate risks and opportunities.

Engagement with actors needs to occur not only when PSP is implemented in an area for the first time but also subsequently, as there will be continuing changes in:

- capacity to generate and communicate climate information
- capacity to provide climate information services
- capacity to access, understand and use climate information
- climate risks and opportunities, and stakeholders' vulnerabilities and broader capacities as climate continues to vary and change
- climate information needs and demands.

Women's groups in Garissa increase their income through selling products like honey. Nicola Ward/ALP, 2013.

5.4.2 How to engage actors in the PSP process

I. FACILITATING PARTNERS

Agree on (see definition in chapter 2):

- the groups of actors who will be approached to provide input that is critical in conducting a locally relevant and participatory workshop. This may include actors who were present when introducing PSP into the local area, as well as actors to whom PSP would be a completely new approach. Refer to information generated from context and stakeholder analyses to consider engagement with different groups based on gender, different levels of vulnerability to climate impacts, agro-ecological/agro-climatic zones and different livelihood types. This will clarify the unique and important climate information needs of different actors
- questions for discussion with selected groups of actors; some key questions are presented in Table 7. Note that some of the information sought by these discussion questions will have come up in other local processes, such as CVCA (in the Works Referenced at the end of the publication) and DRR planning discussions. Build on this information, if available, with a focus on PSP

- approaching leaders of, or key influential people in, the selected groups of actors to set a time and venue for bringing together actors with common characteristics (e.g. agro-ecological/agro-climatic zones, livelihood types, etc) for discussions. Refer to the PSP work plan or road map developed in Step 1 to check on timing for different activities and steps.

II. HAVE DISCUSSIONS WITH GROUPS OF ACTORS IN A MEETING OR FOCUS GROUP

To draw out information from the perspective of different actors, rather than that of an individual, at the meeting:

- introduce the PSP facilitation team and other partners
- provide actors with an overview of the PSP process and the reason for discussion with this particular group of actors. Take the analysis on local context and stakeholders into consideration
- explain the expectations for actor participation and the anticipated outcomes of the meeting (refer to expected outcomes of Step 2)
- discuss the agreed questions with actors. Use participatory tools for discussion and to visualise and record information generated. For example, develop seasonal calendars or historical timelines as part of the discussion on local climate and impacts, and Venn diagrams for discussion on climate information access and communication (see a description of these tools in the CVCA Handbook listed in the Works Referenced at the end of the publication). Note that the exercise is not just about filling in these participatory tools but rather, having a discussion on trends and changes.

III. FIND OUT IF THERE ARE LOCAL FORECASTERS IN THE AREA

If there are no local forecasters, or they would not be welcomed or are not able to attend a PSP workshop for any reason, find out if actors make their own observations of weather and climate and use their knowledge and experience of what these observations mean to anticipate what the future climate may look like. Often, these observations are related to actors' activities, for example, a farmer observing changes in plant life and animal behaviour on their farm to indicate the start of rains so they can begin planting.

IV. FIND OUT WHAT CLIMATE INFORMATION SERVICES ARE IN THE AREA

Discuss how to link these approaches to PSP – e.g. linking community-managed or volunteer observer rainfall records with PSP (see case study 6).

V. ASK ACTORS TO SELECT REPRESENTATIVES TO ATTEND THE PSP WORKSHOP.

- The selected representatives should be willing and ready to actively participate in the PSP workshop, bringing in their knowledge and voicing the concerns and needs of the actor group they represent. It is up to the PSP facilitation team to ensure that those selected are representative of the actor group in terms of gender, age, ethnicity, livelihood and socio-economic status.
- Allow actors to ask questions. Explain the next set of actions after the discussions.

Piku reading a rain gauge in Farfar community, Northern Ghana. Credit: Erin Hall, 2012.

Table 7. Key questions for discussion with different groups of actors before the PSP workshop

FOCUS OF DISCUSSION	KEY QUESTIONS WHEN CONDUCTING THE PSP PROCESS FOR THE FIRST TIME	KEY QUESTIONS WHEN CONDUCTING THE PSP PROCESS ON A REGULAR BASIS
Local seasonal climate and impacts	• What are the climatic conditions experienced in the area in different seasons? Is there a trend or shift in seasonal climate patterns in the area? • What major climate events have occurred in the past? What has been the frequency and intensity of these climate events? • How are livelihoods, food and nutrition security, and actions within an agricultural value chain affected by different climatic occurrences? • What are the key climate risks and opportunities faced by different actors?	• How does the seasonal climate forecast that was communicated compare to what actually happened in the season? If there are community-managed or volunteer observer rainfall records in the area, it will be useful to examine and discuss these records while making this comparison. - **Impacts** of access to and use of climate information from PSP workshop: - What are the expected and unexpected impacts on food security, livelihoods and resources? - What has changed in the way actions are taken and services provided as a result of PSP? - How has climate information from PSP informed decisions and activities/processes undertaken by the different stakeholders? - How are vulnerable stakeholders responding differently to uncertainty and changing risk? • What are the **benefits** of using the climate information, taking into account: - Gender empowerment and equality and social inclusion - Are there missed benefits or opportunities due to PSP and why? - What are the additional anticipated benefits from the use of climate information? • What is the current status of livelihoods, food security, resources, services, vulnerabilities and capacities of different groups of actors? • What are the current key climate risks and opportunities faced by different actors?

Climate information access and communication	• Are the different actor groups accessing any climate information? If yes: • From whom? Find out if the sources include local forecasters. • What is the content of the information they are getting? • Who is accessing the information? How many people are accessing the information? • Which communication channels are used? Are there preferred channels that are most effective for the local context? • Is the information communicated in good time? • If climate information is not accessible from any sources, what are the reasons for this? • In actors' opinion, how accurate and reliable are locally generated forecasts?	• Was information from PSP workshop communicated to the different user groups? • What percentage/number of stakeholders in each actor group accessed the information? - Are there any differences in access within and between user groups (e.g. are more men receiving the information than young people or women)? - What are the reasons for the differences in access? • What was the content of the information communicated and received? There are instances where what is communicated and what actors actually take in (receive) are very different, highlighting issues of understanding the content and improving communication of the information. • How was the information communicated, in terms of: - What channels were used – e.g. radio? - Who communicated the information – e.g. sub-county agricultural officer? - Where was it communicated – e.g. public gatherings, door to door, religious gatherings, etc? - Was the communication timely?
Relevance of climate information to local decision making and planning	• Is the climate information accessed well understood and being used? If yes, how is it used and what are the results and benefits? If not, why not? • What are the climate information needs of different local actors? • What can be improved to make climate information and services more meaningful in the area?	• **Understanding** of climate information communicated: - What was the level of understanding of climate information by different groups of actors? - What factors led to differences in levels of understanding? - How was uncertainty in climate information communicated and understood? • Was the information **relevant and useful** for decision making and planning? Why or why not? - What were the challenges in using the information? - Were there gaps in the information? - What kinds of decision-making processes, decisions, plans and activities were informed by the climate information from PSP workshop? • What climate information will the different actor groups require in the coming season? • What can be improved to make climate information and services more meaningful in the area?

5.5 Coordinating information and participation in a PSP workshop

5.5.1 Key Concepts:

At this point, a significant amount of information has been shared and generated. Now it is necessary to make sense of the information and use it to ensure that the subsequent steps in the PSP process are well structured and planned. It is also important to review the previous step to ensure achievement of the PSP purpose and objectives.

Considering discussions from actor engagement will help to revise the local context and stakeholder analyses that were carried out during PSP design (Step 1), e.g. identifying climate-sensitive livelihoods and activities in the area that may have been missed or additional stakeholders who could be critical to effectiveness of the PSP process. This revised analysis will also inform:

- plans made by partners for multi-stakeholder PSP forums (Step 3). This involves preparing information that will be used in discussions during the PSP workshop as well as preparing representatives from different groups of actors and local forecasters to effectively participate in discussions and contribute to information coming out of the workshop
- preparations by Meteorological Services to package and present climate information for the coming season so that it is responsive to actors' needs and demands in the local area
- plans for communicating seasonal climate information generated from PSP workshops (Step 4)
- plans for feedback, monitoring and evaluation (Step 5)
- capacity-building needs on climate information services, such as for intermediaries to better understand and communicate seasonal climate information, including uncertainty, or for actors to better understand and use the climate information communicated.

Timing of all the activities and steps in the PSP process is critical (refer to Figure 15 – the PSP road map), and therefore the analysis and subsequent preparations should be done by the facilitating partners soon after discussions with all the selected groups of actors.

5.5.2 How to coordinate a PSP workshop

Actions to coordinate information and participation in a PSP workshop are taken by facilitating partners, including meteorological services. Actions to be taken are aimed at: analysing discussions from actor engagement; preparing representatives from different actor group; preparations that need to be made by meteorological services; and preparing local forecasters. Details of these actions are presented below.

I. ANALYSIS OF DISCUSSIONS FROM ACTOR ENGAGEMENT

Decide what sorts of analysis will be done on the information gathered from actor engagement, guided by key discussion questions in Table 7 and information needed for Steps 3 to 5. Examples of analysis are presented in Table 8. Special analysis may be required by meteorological services to inform their preparations for the PSP workshop. Agree which facilitators will conduct the different analyses and share the results with all partners.

Table 8. Example of information analysis from discussions with actors

PSP PROCESS STEP WHERE ANALYSIS IS USED	KEY DISCUSSION QUESTION DURING ACTOR ENGAGEMENT	SOME EXAMPLES OF ANALYSIS OF INFORMATION FROM ACTOR ENGAGEMENT
Step 3: PSP workshop	• Local seasonal climate and impacts	• Comparison between weather/climate observed in the season and the seasonal forecast • Key climate-related risks emerging from different actors, for example, categorising them by sector, long-term versus short-term risks, among other useful analyses • Current status of livelihoods, food security, resources, services, vulnerabilities and capacities – categorised by actor groups, sub-locations within the area, etc • Analysis of information from this question will be especially important for PSP workshop Session I, which ensures that discussions are grounded in local realities (see Chapter 5). This informs discussions throughout the workshop
	• Relevance of climate information to local decision making and planning	• Different uses of seasonal climate information and resultant benefits in the area • Types of climate information needed by different actors • This analysis is critical to making information going into and coming out of PSP workshops responsive to local climate information needs
Step 4: Communication	• Climate information access and communication	• Levels of seasonal climate information access through different channels between different actor groups, genders, etc • Types of channels that effectively communicate seasonal climate information in the local area, considering factors such as timeliness, what is communicated and who gets the information • The analysis will inform the development or use of the most effective communication channels in the local area
Step 5: Learning and feedback	• Local seasonal climate and impacts • Relevance of climate information to local decision making and planning • Climate information access and communication	• Identification of what needs to be monitored in the PSP process and indicators to be used in monitoring • This informs learning on and improvement of the PSP process so that it supports development and delivery of user-responsive climate information services (see Chapter 7)

During the analyses, it is useful to triangulate and deepen the information presented by actors using existing information from other discussions, monitoring and assessment activities and from other relevant platforms. This helps to validate the information, improve its reliability, add information that was not brought out during discussions with actors, and draw out information on interactions between different geographical areas and stakeholders. Examples of sources of this additional information are, among others:

- food security assessments such as those produced in Kenya by the National Drought Management Authority (NDMA) for the short and long rains, or by national ministries of agriculture
- the World Food Programme seasonal monitor, which examines rainfall and vegetation patterns in order to assess the development of the growing season and how such conditions might affect cropping and livestock in different regions of the world
- agro-meteorological bulletins produced by national meteorological services such as from KMD and by regional meteorological institutions such as AGRHYMET
- climate monitoring bulletins such as those produced by ICPAC (for the Greater Horn of Africa) and ACMAD (for different regions in Africa).

II. PREPARATION OF REPRESENTATIVES FROM DIFFERENT ACTOR GROUPS

Representatives from the different actor groups to participate in the PSP workshop will have been selected during actor engagement. Prepare the selected representatives by:

- sharing results from analysis of discussions from actor engagement and decide together what information is of greatest concern in the area, which will be presented during PSP workshop. While making this decision, pay special attention to what needs to come out of PSP workshop Session I, as that is the point where participants collectively reflect on the previous season based on perspectives from different actor groups
- agreeing which representatives will make a presentation and provide guidance, based on the agreed information from analysis and expected outcomes of the PSP workshop, as in the previous bullet point. Also agree on timeframes for having this presentation ready, noting the date for the PSP workshop (see 'Facilitators' planning for a PSP workshop' below).

III. PREPARATION BY METEOROLOGICAL SERVICES

Use the analysis from actor engagement to prepare and package seasonal forecasts and other climate information so that it is relevant to local climate information needs (see suggested content in Chapter 5, Step 3: Session II on 'presenting a meteorological forecast'). Key factors to consider during this preparation:

- Assess the previous seasonal forecast by comparing actors' observations and experiences of actual weather in the season, combined with recorded historical weather/climate data with the forecast. Presentation of forecast skilfulness will go a long way in building trust.
- What are the climate information needs expressed by different actors, and therefore what information should be presented? Note that there may be instances when some actors do not know or are unclear on what climate information they need, possibly because they are yet to realise the value of the information, they do not understand the climate information they can access, or they do not know what information is available, among other reasons. Analysis of actor-expressed climate risks and how actors respond to climate risks and impacts, together with analysis of local decision-making processes, can clarify the types of climate information needed in the area.
- What climate information is presently available from meteorological services? This will require re-interrogating existing climate information based on actors' needs, while paying attention to: time scales (seasonal forecasts with links to daily, monthly and beyond seasonal climate information); geographical scales (based on the local area defined during design – Step 1); and probabilities in the seasonal forecast and its relation to the degree of certainty/uncertainty in the information.
- What climate information gaps were identified by different actors and what recommendations were made on what can be done to make climate information and services more meaningful. Action needs to be taken to make the missing information available, taking into account current scientific knowledge and understanding, and the capacity and timeframes required to generate more information. It is then important to communicate to actors existing limitations in providing different types of climate information.
- Package the climate information in a format and language that is easily understood by local actors so that it effectively informs discussions in the PSP workshop (see Box 5 for tips on effective communication). Where needed, get support from other facilitating partners and/or specialised trainers – for example, on presentation and communication skills that resonate with the local area.

IV. PREPARING LOCAL FORECASTERS

During actor engagement, local forecasters will have been identified; where there were no local forecasters, actors who make local observations of weather and climate (referred to from here as 'local observers') will have been identified. Preparatory actions are as follows:

- Approach local forecasters or observers and ask if they are willing to participate in a PSP workshop. They may need information about PSP and may need to be convinced of the value of disseminating more widely their climate knowledge.
- Find out what climate information the local forecasters or observers have and how they generate that information.
- Provide guidance on the content of their forecast presentation during the PSP workshop (see Chapter 6, Step 3: Session II on 'presenting a local seasonal forecast'). Note that the tips on effective communication presented in Box 4 also apply to local forecasters or observers and therefore need to be taken into consideration.
- Explain the expected participation of the local forecasters or observers before and after the presentation, especially when generating a downscaled seasonal forecast for the area.

Box 4
EFFECTIVE PRESENTATION OF SEASONAL CLIMATE FORECASTS: WHAT WORKS

Communication serves multiple functions – such as informing or providing information, prompting specific actions, persuading or reinforcing beliefs, and building relationships with others through a common language. For Meteorological Services to effectively communicate seasonal climate forecasts, the following principles are important:

- **Know your audience – Consider who the audience is (being sensitive to culture and beliefs, age, literacy, existing knowledge, etc), what kinds of climate information this audience requires and what they would like to use it for. This information can be drawn from actor engagement and preparation, and used to tailor communication of seasonal climate forecasts so that they are relevant to the target audience.**
- **Respect and understand how others communicate – Building on existing communication formats and channels will enable seasonal climate forecasts from Meteorological Services to be better understood. For example, use local terms and concepts that refer to weather and climate and present them visually. This is especially useful as it helps in finding common ground when communicating difficult or complex information such as probability and uncertainty in seasonal forecasts.**
- **Evaluate how you present – Immediate feedback comes from questions or issues the audience raises after presentation of a seasonal climate forecast. Therefore, Meteorological Services must be open to questions and ready to explain and clarify the information presented. Feedback from other PSP facilitators during review and planning meetings (see Step 1, planning for PSP on a regular basis) and discussions with actors (such as in Table 7) are necessary in order to know how well seasonal climate forecasts were communicated, and therefore how the forecasts were understood. Highlighting what went well and what was challenging to understand will help Meteorological Services to improve communication.**

Remember: The audience needs to believe WHO is presenting the seasonal climate forecast and WHAT is being presented, based on HOW, WHEN and WHY it is presented. These principles also apply to communicating information coming out of PSP workshops (Step 4).

The information presented in this box is taken from communications training of county directors from the Kenya Meteorological Services, as presented in case study 8.

Herding camels in Garissa, northern Kenya. Tamara Plush/CARE International, 2011.

5.6 Planning for a PSP workshop

5.6.1 Key Concepts.

Facilitator planning at this point involves revising the workplan developed in Step 1, informed by discussions during actor engagement and the follow-up actions. This planning is best done in a facilitators meeting well in advance of the season, taking account of when the national seasonal forecast will be released by Meteorological Services (see Figure 15 on PSP Road map). That will ensure that climate information generated from a PSP workshop is communicated in good time to inform decision making and planning in the local area. A facilitators meeting also ensures that all the partners:

- have the same understanding of what will happen in a PSP workshop and the facilitation required
- reach agreement on logistics, including stakeholders invited to the PSP workshop.

5.6.2 How to plan a PSP workshop

Based on agreed partner roles and responsibilities, the coordinating partner calls for a meeting to be attended by all PSP facilitating partners. It may be necessary to also invite funding partners, as logistical planning includes cost considerations. Invite representatives from the actor groups who have been asked to make a presentation at the workshop so that they can contribute to planning. The meeting can be hosted by one of the partners, with consideration of resource contribution to the cost of PSP in the area.

Focus the meeting on developing an agenda for the PSP workshop including discussing facilitation of sessions in the workshop (see session details in Chapter 5) and agreeing on logistics.

I. DEVELOP A DETAILED AGENDA AND AGREE ON FACILITATION

1. First develop a facilitators' agenda, guided by the sessions in a PSP workshop (see Chapter 6 for details of the workshop sessions). Discuss and include thein names of who will facilitate the different sessions, facilitation methods to be used, and the timing. Make sure adequate time is allocated for each session, thinking of the presentations and discussions to follow, as well as facilitation methods to be used. A sample agenda is presented in Table 9.
2. After a facilitators' agenda has been agreed, develop a simplified agenda (i.e. with session titles, times and facilitators) for sharing with participants at the workshop.
3. Agree on who will coordinate the workshop to ensure the agenda is followed so that outcomes are achieved, but with room to make adjustments to the agenda as needed.

Table 9. Sample agenda for a PSP workshop.

Note that time allocations in the table are indicative; actual time taken may vary in different contexts, depending on number of participants at the PSP workshop and facilitation methods used

TIME ALLOCATION	SESSION TITLE AND DESCRIPTION	FACILITATORS NOTES	SUGGESTED FACILITATION METHODS	PERSON(S) RESPONSIBLE
30min	**Participant registration and opening remarks** • Welcome and introductions • Participant expectations	• Use interactive facilitation methods (e.g. 'Introduce your partner') for participant expectations, setting the tone for free and open sharing so that participants begin to feel comfortable to talk to each other	• 'Introduce your partner'	PSP Facilitator
45min	**Setting the scene** • What is PSP? Workshop purpose and objectives • An overview of broad climate risks and impacts in the area, and the value of climate information services in managing the climate risks and impacts	• In the case of work by ALP and partners, this has included an overview of community-based adaptation, with emphasis on the need for climate-informed decision making and planning • Whether conducting PSP for the first time or on a regular basis, this session serves as a quick refresher on PSP so as to get everyone on the same page • It is also a place to present some of the analysis from actor responses to the question about 'Local seasonal climate and impacts'	• PowerPoint presentation • Q&A	PSP Facilitator, possibly the initiating partner
15 to 30min	**Official opening of the workshop**	• It is a chance for the high-level decision/policy makers to emphasise their interest and commitment to the PSP process, noting the value of the process in the area. This person will have been identified during stakeholder analysis and given detailed information about PSP in Step 1	• Speech	Often done by a high-level decision/policy maker in the area

1hr to 1hr 30min	**Review of previous season and analysis of current status** Reflecting on the previous season, current status, ongoing activities in preparation for the coming season and local climate information needs to inform planning for the next season	• Presentations by selected actor group representatives as agreed in Step 2 and some analysis of actor discussions by PSP facilitators	• Presentations • Plenary discussion	PSP Facilitator
45min	**Locally generated forecast for the season** • Local perspectives on what climate in the coming season may look like	• Presentations by local forecasters or observers as agreed in Step 2	• Presentation • Plenary discussion with Q&A	Local forecasters or observers
1hr to 1hr 30min	**Meteorological forecast** Scientific seasonal climate forecast	• Presentations by Meteorological Services as prepared in Step 2 • Length of time this session takes is often dependent on whether stakeholders in the area are having the first interaction with Meteorological Services (where often the Q&A part takes a significant amount of time, especially while explaining probabilities) or whether it is part of more regular interaction	• Presentation • Plenary discussion with Q&A	Meteorological Services
30 to 45min	**Generating a downscaled seasonal forecast for the local area** Integration of local and scientific forecasts to generate a downscaled forecast for the area		• Plenary discussion	PSP Facilitator
30 to 45min	**Scenario development: Hazards, risks, opportunities and impacts** • Getting a common understanding of key concepts • An introduction to scenario development for interpreting the downscaled seasonal forecast	• This session is meant to introduce group work and ensure a clear and common understanding so that the downscaled seasonal forecast is interpreted correctly	• Plenary discussion and exercise	PSP Facilitator, seek input from Meteorological Services and other technical expertise

2hr to 2hr 30min	**Scenario development: Hazards, risks, opportunities and impacts... cont'd** Consideration of forecast probability of above-normal, normal and below-normal rainfall to develop scenarios of hazards, risks, opportunities and impacts in the area	• A key part of interpreting seasonal forecast for the local context. Ensure open discussions and dialogue among all participants	• Group discussions • Presentations from group discussions	PSP Facilitator
1hr to 1hr 30min	**Scenario planning** Developing action plans from the three scenarios – of hazards, risks, opportunities and impacts – to manage risk, take advantage of opportunities and increase resilience to climate in the coming season	• This includes integration of plans developed by different groups. Ensure open discussions and dialogue among all participants	• Group discussions • Presentations from group discussions	PSP Facilitator
1hr 30min to 2hr	**Development of advisories** Using plans to develop clear messages on options that actors can take to manage risk, take advantage of opportunities and increase resilience to climate in the coming season	• A key expected outcome of the PSP workshop and therefore needs to be given the necessary attention	• Group discussions • Presentations from group discussions	PSP Facilitator
30min to 1hr	**Developing a communication plan** Plans to ensuring communication of advisories reaches all who need them and in good time to inform their decision making and planning	• Revisiting the plan developed in Step 1 for discussion and revision	• Plenary discussion	PSP Facilitator
END OF PSP WORKSHOP				

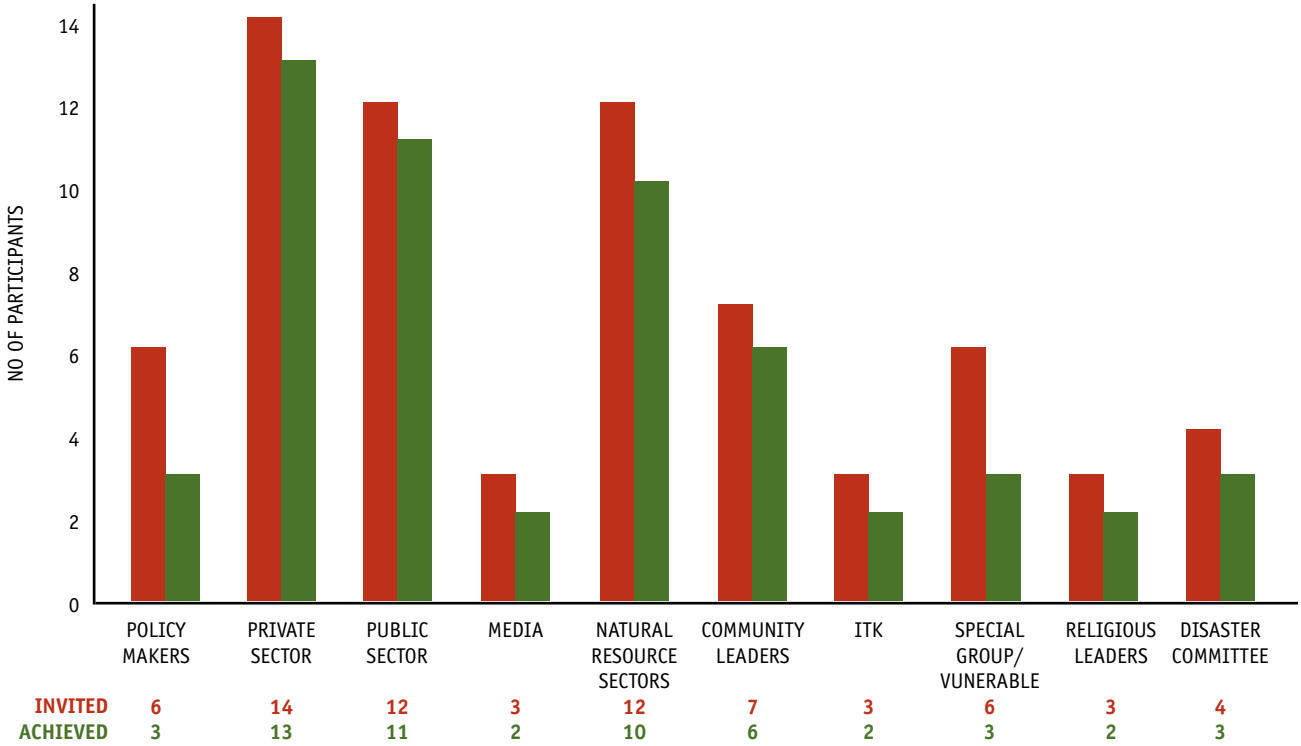
II. LOGISTICS

Discuss and agree logistics related to questions and factors for consideration when planning a PSP workshop, as presented in Table 10 below. Take thorough notes of the discussions, as they will be useful for learning on and planning for PSP in subsequent seasons.

Table 10. Logistical questions and factors to consider when planning for a PSP workshop

LOGISTICAL PLANNING QUESTION	FACTORS TO CONSIDER IN ANSWERING THE PLANNING QUESTION
On which dates will the PSP workshop be held?	• PSP workshops should be held as soon as a seasonal forecast is released by the National Meteorological Services. When choosing workshop dates, it is important to consider the time between release of the forecast and start of the rains in different parts of the country, so that information coming out of the PSP workshop is communicated in good time to inform actors' decision making and planning. • It is useful to refer to information from actor engagement on timing of seasonal activities in the area (e.g. where a seasonal calendar is available) and on the types of decisions made on a seasonal basis, to help in setting proper timing for a PSP workshop.
How many days will the workshop take?	• Take into account the time needed for stakeholders to understand climate information and meaningfully interpret it (see PSP workshop agenda in Table 9), especially when conducting PSP for the first time in an area. • Consider the availability of different stakeholders to actively participate in the workshop – e.g. is it possible for women farmers to be away from their responsibilities for two days or more?
Which stakeholders will be invited and how many?	• For key seasonal climate issues of concern raised during user engagement to be addressed at a PSP workshop, it is important to ensure there is multi-stakeholder representation (see an example in Figure 12 in Chapter 3). Refer to the selected representatives from different actor groups. • Note that the number of stakeholders invited has a cost implication.
Where will the PSP workshop be held?	• Venue for the PSP workshop has implications for costs, number of stakeholders invited, travel time and distance to the venue among other factors. It is good to think of using venues such as county halls or government institutions which can accommodate a larger group of stakeholders and reduce the workshop costs.
How much money is available for the PSP workshop? If there is a shortfall, where can additional funds or resource contributions be found?	• Refer to Table 5 on items to cost in the PSP process and the budget developed in Step 1 (under 'Forming partnerships' in the case of conducting PSP for the first time or under 'PSP review and reflection meetings' in the case of conducting PSP on a regular basis). • Agree on who will make the necessary payments and when this will be done.
Who will send out invitations to the workshop?	• To attract the multi-stakeholder participation required, the partner sending out workshop invitations should have the mandate to convene the different stakeholders (with regards to recognised leadership and authority, especially in getting the attendance of high-level decision/policy makers in the area – see the agenda in Table 9). This partner will have been identified during stakeholder analysis in Step 1 and will be well informed of PSP process in the area.
What workshop materials are needed?	• In interactive discussions during the PSP workshop, information is often recorded on flipcharts and idea cards, using marker pens. This information is later transferred to a computer. Other materials needed are writing pads and pens, a projector and adhesive to stick things on the wall. Additional materials will depend on facilitators' creativity to use what works best in their particular contexts.

Figure 17. *Attendance by different actors at a PSP workshop for March-April-May (MAM) 2014 rainfall season in Homabay County, Kenya (Source: ASDSP monitoring records)*



Harvesting maize in Garissa, northern Kenya. CARE International/2012

CHAPTER 6

STEP 3
Facilitate the multi-stakeholder PSP forum

6.1 Purpose

A multi-stakeholder forum for access and understanding of local and meteorological seasonal climate forecasts, and interpreting the forecasts to co-produce locally relevant and actionable information for use in making climate resilient decisions and plans.

6.2 Expected outcomes

- There is a record of climate-related hazards, risks, opportunities, impacts and plans for the local area.
- There as a localised seasonal forecast and advisories based on that forecast.
- Adaptive decision making and management is informed by climate information and iterative learning from season to season taking into account the dynamics of the local context – for example, evolving needs, risks, capacities, knowledge, opportunities, resources and services in the area.
- New and enhanced stakeholder links and relationships have been formed to support the delivery of user-based climate information services for decision making and action at seasonal timescales.
- Co-production of locally relevant and actionable climate information is an integral part of climate resilient and risk management planning processes in the local area.

6.3 Duration

In line with Principle 2 (see Chapter 3), a PSP workshop should be held soon after a seasonal forecast has been released by the National Meteorological Services. The workshop takes one to two days, depending on whether it is the first or subsequent workshop (see the sample workshop agenda in Table 9, Chapter 4).

6.4 Facilitating a PSP workshop

6.4.1 Key Concepts

PSP Principles 2 to 6 relate to the PSP workshop, making the multi-stakeholder forum created a critical part of the entire process. The multi-stakeholder forum takes place in the PSP workshops that bring together all the different stakeholders (see Figure 12 in Chapter 3 on who is typically involved) to share information and knowledge on the coming seasonal climate forecast and its local implications. The workshop creates space for sharing climate information from both local and scientific knowledge, discussing and appreciating the value of the two sources and finding ways to collectively interpret the information into a form that is locally relevant and useful. In that sense, PSP workshops are a forum for social learning (see Box 5) to address adaptation and resilience to climate variability and change, while taking into account interactions with all other changes going on in a local area.

Social learning is a necessary component of environmental and climate governance when dealing with difficult problems and complex systems, such as the climate and its interaction with social processes in times of rapid change. As an analytical tool, social learning can be used for exploring the adaptation process because it highlights shifts in understanding in a situation where no single person has a comprehensive picture of risks and barriers, and where there is a need for imaginative and innovative solutions. Such is the situation presented by variability in climate from one season to another, added to the dynamics in local vulnerabilities, capacities, resources and services; hence the practical application of social learning in a PSP workshop.

There are multiple benefits to social learning that happens in a PSP workshop; some of the major benefits are (adapted from (Harvey, Ensor, Carlile, Garside, Patterson, & Naess, 2012)and (Epp & Garside, 2016)) as follows:

- **Building trust between all stakeholders involved**, especially between local actors and meteorological services. This is through open sharing of information and knowledge, which enables correction of misinformation or negative early

perceptions, especially on uncertain information, and also through improving understanding of climate information from different sources. The result is recognition of, respect for and building on local, scientific and technical knowledge to co-produce knowledge and define adapted and climate resilient plans and actions for a season.

- **Catalysing co-production of knowledge and solutions**, bringing together multiple stakeholders who: have different values and perspectives, technical capacities and knowledge; are engaged in different livelihoods and sectors; and are of different ages and gender, among other diversity factors. Together they can voice their concerns and share their diverse knowledge and experiences. This helps to find common ground in defining the complexity of adapting to seasonal climate variability and long-term climate change. Through integration and co-production of new knowledge, potential solutions and actions that respect a plurality of interests and needs can be identified, and plans made so that actions are mutually supportive and coordinated.
- **Creating an environment that stimulates innovation:** This allows multiple stakeholders – engaged in different livelihoods, sectors, technical capacities, knowledge forms, etc, and of different ages and gender – to voice their concerns, share their diverse knowledge and experiences, and actively contribute to developing innovative local solutions to manage broad uncertainties of the future. It encourages stakeholders to work together to implement and test solutions through iterative cycles of learning, action and reflection.
- **Managing complex and dynamic systems:** Iterative and experiential learning starts with common understanding of local realities during review of the past season and current status (see PSP Workshop Session I). It prompts stakeholders to reflect on their own learning to gain insights into relationships and interactions in complex and dynamic systems, and find a way to work within them while applying interpreted seasonal climate information to plan for the coming season.
- **Linking timelines**, by taking into account the immediacy of dealing with local priorities, needs and responses to current climate variability – through generating scenarios for the upcoming season, while at the same time building longer-term understanding and local adaptive capacity to anticipate, plan and respond to uncertainty in long-term climate change.
- **Finding new possibilities for working together and defining new networks and relationships:** Open and continuous dialogue around a seasonal forecast and potential plans and actions enables recognition of stakeholder roles and capacities, and defines new relationships. This then supports better collaboration and partnerships to deliver user-based climate information services.

Box 5
WHAT IS SOCIAL LEARNING?

The Climate Change and Social Learning working group – composed of CCAFS, the Institute for Development Studies and the International Institute for Environment and Development (IIED), among other organisations – defines social learning as approaches that "help facilitate knowledge sharing, joint learning and co-creation experiences between particular stakeholders around a shared purpose, taking learning and behaviour change beyond the individual to networks and systems. Through a facilitated iterative process of working together, in interactive dialogue, exchange, learning, action and reflection and ongoing partnership, new shared ways of knowing emerge that lead to changes in practice."

"Social learning builds on an understanding that knowledge implies learning and the ability to use information, such as seasonal climate forecasts. An individual's knowledge is constructed on the basis of (limited) experiences: one person's knowledge of a given issue, such as future climate and its potential impacts, will not necessarily be the same as another's. Our individual understanding of the world is therefore partial" Harvey et al (2012) "Social learning approaches aim to overcome this limitation by facilitating stakeholders to continuously frame and reframe the issues at stake, co-produce knowledge and develop enhanced relational capabilities to deal with common and localized challenges, which individuals often cannot resolve on their own." (Nilsson & Swartling, 2009).

6.4.2 How to plan the PSP workshop sessions

A PSP workshop has six broad sessions (see Figure 18). When planning for a PSP workshop, some of the sessions could be broken down into smaller sessions to be handled by different facilitators (see the sample agenda in Chapter 5). Like the larger PSP process, the sessions feed into each other and therefore it is essential to give each one of them sufficient time and attention. For social learning to happen in a PSP workshop, it is important that facilitation of the sessions is with a 'light-touch', allowing the overall guided process to create sufficient space for participant reflection, a sense of ownership and individual as well as shared learning.

Figure 18 below presents an overview of the sessions in a PSP workshop; details of each session are presented in the sections that follow.

Figure 18. *An overview of sessions in a PSP workshop*

6.5 Session I: Review of the previous season and analysis of current status

6.5.1 Key concepts

Session I embraces the complexity of relationships and interactions due to local dynamics in many aspects beyond climate, which is part of broader uncertainty. This is through engaging participants at the PSP workshop in sharing information and experiences, and reflecting together on the previous season and how it relates to the current status in the area of concern, with a focus on:

- weather/climate experienced in the previous season and how it compares with the previous season's forecast
- climate-related impacts in the previous season
- current status of livelihoods, food security, sectors, resources, services and capacities
- ongoing projects and programmes, plans and activities
- common appreciation of local climate information needs and demands.

Information generated from this reflection serves as a baseline for discussions during the PSP workshop. The information is critical in ensuring that plans and actions developed for the coming season are grounded in local realities and build on where stakeholders are coming from and the present conditions. For example, consider a past season in which rainfall amounts were sufficient for growth of the most common crops in an area and that, using relevant information communicated from a previous PSP workshop, actors in the area harvested enough to meet their food needs as well as surplus for sale and storage. This means that if there is a forecast for high probability of low rainfall in the coming season, discussions on food security in the area are likely to generate impacts that are not as severe as if the area was coming out of a drought.

Baseline information will be different from one season to another and in different local contexts due to interactions, change and dynamics in:

- stakeholders' interests, aspirations, concerns and needs
- capacities, such as in using climate information
- services in different sectors and provided by government, different organisations and institutions, including the private sector
- local knowledge
- climate risks, vulnerabilities and impacts, among other factors.

The seasonal forecast and associated uncertainty will also be different from season to season. All these factors put together necessitate iterative learning from one season to the next, through collective reflection on stakeholders' experiences and using it to interpret seasonal forecasts and plan for the coming season. Iterative and collective learning, as happens in Session I, then mean that the specific information coming out of a PSP workshop will be different from season to season, making PSP a continually valuable approach for managing uncertainty and risk as influenced by the climate.

6.5.2 How to review the previous season and analyse current status

I. Selected representatives from different actor groups present the prepared key information coming out of discussions in Step 2 (see 'Preparation of representatives from different actor groups').

II. In plenary, the PSP facilitator asks:

a) participants from government sector ministries and departments, different institutions and organisations, etc (who were not reached during actor engagement) to share key information such as on their activities in the previous season and results of those activities; seasonal climate impacts in the area; current status of resources, services and capacities in different climate sensitive sectors, etc. This information should be additional to what actor group representatives presented, with a broader outlook of the geographical area and possible interactions with neighbouring areas.

b) where available, make use of information from monitoring systems by government or different organisations – for example, food security assessments from the Kenya National Drought Management Authority (NDMA) and equivalent in other countries, Famine Early Warning Network (FEWSNET) and World Food Programme (WFP) seasonal monitor, etc.

c) a selected facilitating partner to present a summary of analysis on the information collected during user engagement, highlighting actors' perspectives on the current status of livelihoods, food security, resources, vulnerabilities and capacities. This will provide a broad overview of information from different actors, especially highlighting similarities and differences and cross-actor interactions

d) participants at the workshop, who are not meteorologists, to describe the weather experienced in the previous season based on their own observations – for example, describing if the amount of rainfall was evenly or unevenly distributed across the months in the season, when the rains actually started in different areas, and when rains in the season ended, etc. Compare these experiences and the previous seasonal climate forecast, bringing in analysis from user engagement (Step 2). This serves as an assessment of the accuracy of the forecast. The extent to which what was experienced agrees with the seasonal climate forecast helps to build better understanding of, and trust and confidence in, seasonal climate forecasts, especially that from meteorological services

e) participants to share information on what different actors are currently doing in preparation for the coming season. For example, are farmers already buying certain types of seeds for planting? Are retailers stocking certain types of animal feed and drugs? Are government ministries and departments planning for, or already undertaking activities targeted at specific actors?

This is in recognition of the fact that even before PSP, actors will have some plans and are taking certain actions. These plans and actions will be examined later to discover the extent to which they were informed by climate information for the coming season and to make adjustments or change strategies as needed (see Session IV)

f) participants, reflecting on the previous season and current status (of livelihoods, food security, resources, services, vulnerabilities, capacities and ongoing activities), to identify the local climate information needs. Remind participants of additional climate information needs that came out of discussions during actor engagement (Step 2).

Facilitators compile the information shared into a baseline for the coming season that will be used as reference to inform discussions throughout the PSP workshop.

6.6 Session II: Presenting and co-generating a downscaled seasonal climate forecast

6.6.1 Key concepts

PSP workshops create space for interaction between Meteorological Services and different stakeholders, presenting stakeholders with a chance to interrogate the information presented in a seasonal forecast and for Meteorological Services to explain the information and technical terms used as well as the forecasting process and the limitations therein. As local forecasters/observers also take part in a PSP workshop, it is an opportunity to understand local indicators used and what they mean for a coming season. Presentation on local indicators forms a good basis for stakeholders, especially scientists, to appreciate the information presented by local forecasters. Interaction with both Meteorological Services and local

forecasters/observers enables stakeholders to have a clear and common understanding of seasonal forecasts, especially on probability and its relation to uncertainty in future climate. Good understanding is an important first step in co-production of a localised or downscaled seasonal forecast, and is essential for correct interpretation of the information. With good understanding, stakeholders have a chance to examine both local and meteorological seasonal forecasts in terms of the information available from each, and based on local needs, highlight strengths and existing information gaps in each of the two forecasts (see an example in Annex 5). This helps both sources of information to be valued and respected. Discussion on combining the two forecasts then allows for:

- complementarity where information gaps exist and reinforcing the message being conveyed when the two forecasts agree with each other
- fostering trust between science and local knowledge
- building local capacity to interpret scientific and local climate information.

The result is a localised seasonal forecast with enhanced relevance and acceptance. This, in addition to various actors having contributed to localising the seasonal forecast, enables actors to use the information with confidence.

Case Study 6

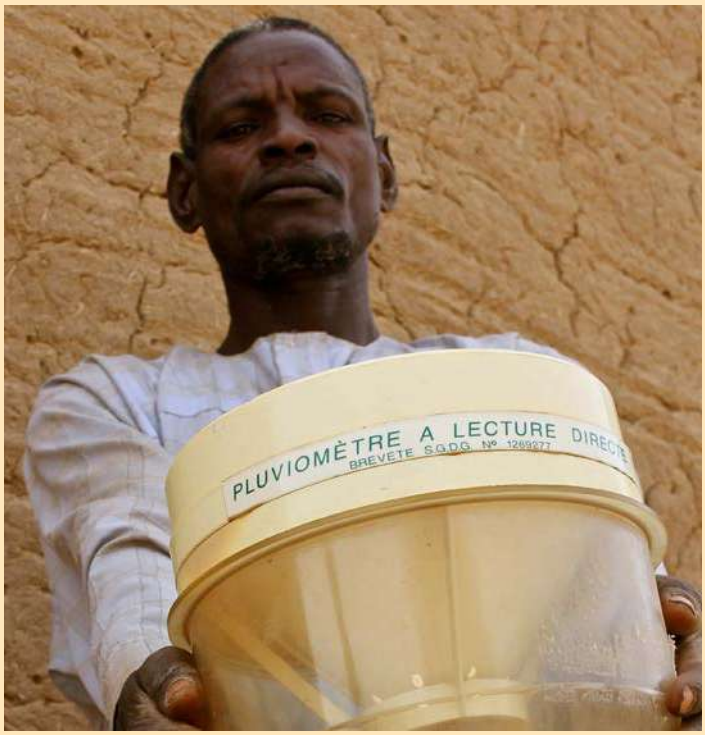
COMMUNITY RAINFALL RECORDS INFORM SEASONAL PARTICIPATORY SCENARIO PLANNING

Better farming and livestock management decisions are enabled through recorded rainfall data combined with interpreted seasonal forecasts.

In 2011, ALP partnered with the Niger Meteorological Services to install rain gauges, which are monitored by volunteers, in 30 communities in Dakoro district. This is generating location-specific rainfall data linked to a community vulnerability monitoring and early warning system. Information from the rain gauges enriches local knowledge about the climate and informs activities within a season – such as weeding time, when to apply pesticides, and the best time for pastoralists to search for pasture (see full article in Joto Afrika Issue 12, 2013).

Since early 2013, the district of Dakoro in Niger has been conducting PSP workshops, in advance of the rainy season, to discuss both meteorological and local forecasts and generate advisories so that actors in the agro-pastoral and pastoral zones of the district can prepare for the coming season. Information from the community-managed rain gauges feeds directly into PSP workshops, providing an opportunity to reflect on what happened in the previous year's rainfall season, and discuss appropriate strategies for the rainy season ahead. "What we know about the rains determines our adaptation planning," says Arzika Mirko, the early warning volunteer in charge of the rain gauge in Maigochi village, Dakoro district.

Adapted from Integrating disaster risk reduction and adaptation to climate change, Otzelberger, 2014



Issa Sakola holding Maigochi's rain gauge. Credit: Agnes Otzelberger/ALP 2015

6.6.2 How to present and co-generate a downscaled seasonal forecast for the local area

I. PRESENT A LOCAL SEASONAL FORECAST

a) Ask local forecasters or observers from the area, who were identified during actor engagement and prepared to participate in the PSP workshop (Step 2), to present their local forecast for the coming season. Focus of the presentation is:
   - What indicators have been observed and what is the behaviour of those indicators?
   - What do the indicators suggest will happen in the coming season? Information here to include, if available, forecast for:
     - the start and end of rains in the season
     - distribution/amount of rainfall within the season
     - other information depending on local climate information needs
   - Where have these indicators been observed, and therefore, what area/location is the local forecast covering?

b) After the presentation, have a plenary discussion for participants to understand the forecast(s) presented. Often, this will raise questions on what the forecast really means. For example, participants sought to understand what 'good rains' meant in the March to May (MAM) 2013 seasonal forecast for Garissa County, Kenya. It came out that actors in the county say rains are good when it persists for many days to support the growth of pasture and crops and fill water pans and dams. Good rainfall also meant it would not cause droughts and floods.

II. PRESENT A METEOROLOGICAL SEASONAL FORECAST

Meteorological Services present the scientific seasonal forecast, based on analysis of discussions with various actors (Step 2) that helps to decide what information and level of detail should be included to ensure it responds to local needs. Also consider what makes an effective presentation (see Box 5 in Chapter 5), noting that the way in which forecasts are prepared and presented may improve over time. Typically, the presentation should include the following key information (see an example in case study 8):

a) a review of the previous season's performance based on historical data, which can be in the form of maps and graphs with explanations. An assessment of the forecast produced in the last season compared to what was observed will help to understand and build trust in the forecast, and will also enable better understanding of the forecast for the coming season

b) the forecast for the coming season; this may be a national forecast or one already downscaled to county/district level. During this presentation, it is important that Meteorological Services:
   - **explain what 'normal', 'above normal' and 'below normal' rainfall for the local area mean**, so that the information presented is easily understood. Make use of tools such as ENACTS to elaborate on normal or average rainfall for different parts of the local area. This also helps actors to know the rainfall range for the three tercile categories (see Key Concepts in Chapter 2)
   - **present and explain probabilities in the seasonal forecast** and their relation to uncertainty. Clear explanation of the probabilistic seasonal forecast needs to be an integral part of the presentation, recognising the limitations in climate forecasting due to what is currently known in science. This minimises distrust when reality is different from a forecast that is presented as one likely future. It is, however, critical to communicate probabilities and uncertainty in a way that does not erode stakeholders' trust in the seasonal forecast
   - **provide information on the likely onset (start) and cessation (end) of rainfall in the season.** Define what is meant by onset and cessation of the rainfall season in the area. If available, use tools such as ENACTS maproom to help actors visualise historical onset and cessation days so as to understand what the terms mean – see an example from Meteo Rwanda Climate and Agriculture maproom at http://maproom.meteorwanda.gov.rw/maproom/Agriculture/index.html
   - **present information on possible distribution of rainfall in the season and occurrence of dry spells.** The analogue year – i.e. a year in the past that had similar climatic conditions to the forecasted season – is often useful in elaborating possible rainfall distribution as well as rainfall onset and cessation

- **include the forecast for surrounding areas.** This is in consideration of relationships and interactions that may affect the area of concern; for example, river flooding in the local area due to heavy rainfall in upstream areas, potential for food markets in other places that may receive low amounts of rainfall, etc.
- **give clear explanations of technical terms** and make links between the different sets of information so as to give a coherent message on the forecast for the coming season and ensure good understanding
- **let stakeholders know**, if they are interested, how Meteorological Services arrived at the forecast presented. Keep the information to clear explanations of the most important drivers of local weather and climate, without getting into the details of the forecasting process, unless stakeholders ask specific questions that require further elaboration. Often, the El Niño phenomenon tends to come up because it is one of the key drivers of seasonal climate in Africa. This requires clear explanations on what the phenomenon is and how it is linked to seasonal climate

c) based on local climate information needs, additional information such as on possible occurrence of extreme weather events during the season – e.g. strong winds, hailstorms and lightning, temperature forecast if available, etc.

d) information on availability of updates to the seasonal forecast (see Box 5 under planning for communication).

Due to the level of technical, and often new, information in the meteorological forecast, allocate sufficient time for this part of the session (see the sample agenda in Step 2). Allow enough time for participants to ask questions for clarification and explanation on the seasonal forecast, as well as seek additional information that Meteorological Services may have but was not presented. It is important that the facilitator for this session steers discussions to focus on the seasonal forecast presented and not on past grievances about information from Meteorological Services, as may sometimes occur.

Case Study 7

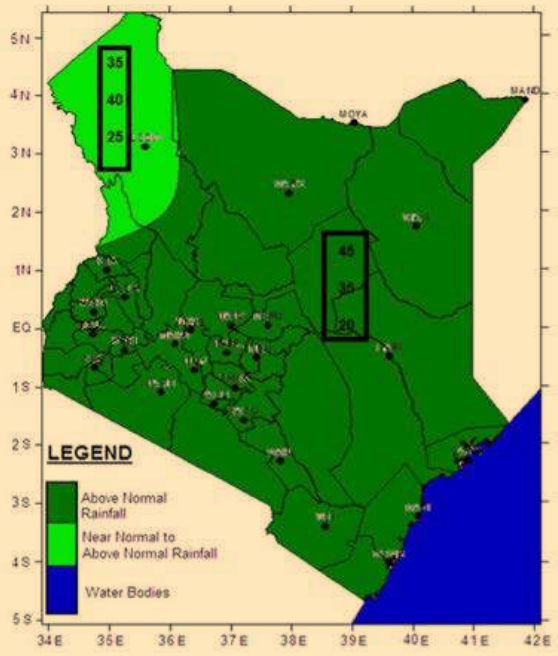
A TYPICAL SEASONAL FORECAST PRESENTATION FROM THE KENYA METEOROLOGICAL DEPARTMENT (KMD)

The Forecast presents a review of the performance of the previous season to provide the context for the coming season, and a range of probabilistic rainfall information for the coming season. The following series of maps for Kenya shows the way in which the information is presented using national maps divided into relevant and labelled zones. The same presentation is used for sub national maps showing downscaled versions.

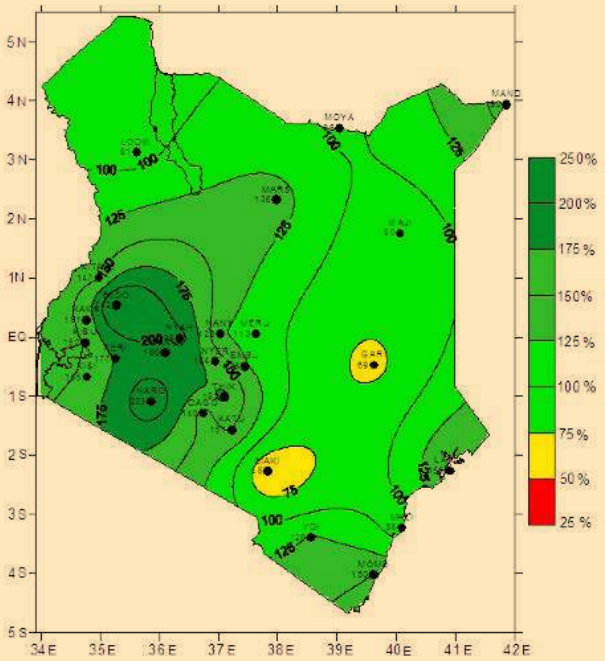
1. Review of October to December (OND) 2015 rainfall season

Figure 19. *A meteorological review of OND 2015 seasonal rainfall performance.*

19a OND 2015 forecast



19b Recorded rainfall in OND 2015

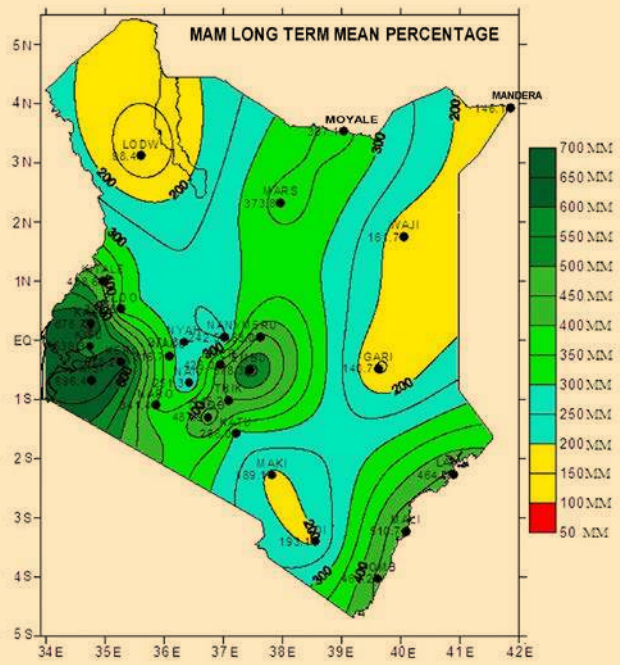


In Figure 19b, areas that received rainfall amounts of more than 125% of the long-term mean (LTM) got enhanced or 'above normal' rainfall; those that received rainfall amounts of between 75% and 125% of LTM indicate 'normal' rainfall, while those that got rainfall amounts below 75% of LTM had depressed or 'below normal' rainfall. Only two stations (areas coloured yellow) recorded below normal, while the rest of the country received normal or above normal rainfall amounts. The two stations are a good illustration of the need for presenting all forecast probabilities. This is because even though in Figure 19a the two stations were in the areas that had the highest probability (45%) of getting above normal rainfall, there was still a 20% probability of the rainfall being below normal, which is what actually occurred.

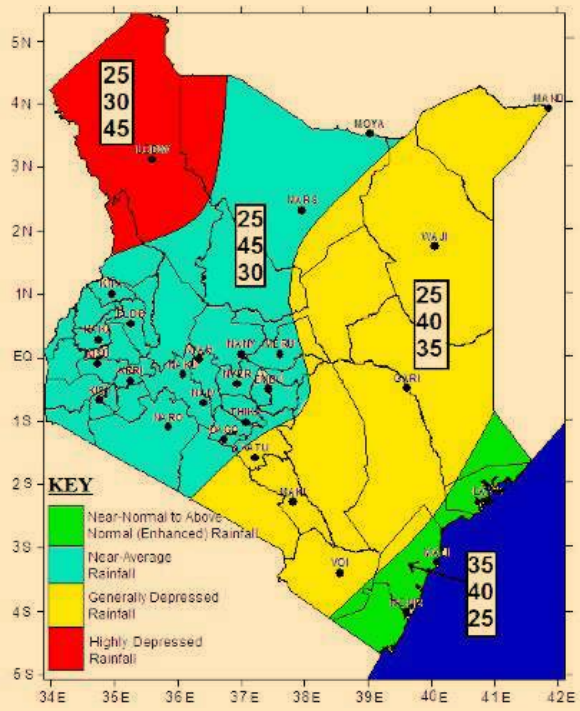
2. Rainfall outlook for March to May (MAM) 2016 season

Figure 20: *a) Average MAM seasonal rainfall in the country; b) rainfall forecast for MAM 2016 with probabilities*

20a Average MAM rainfall



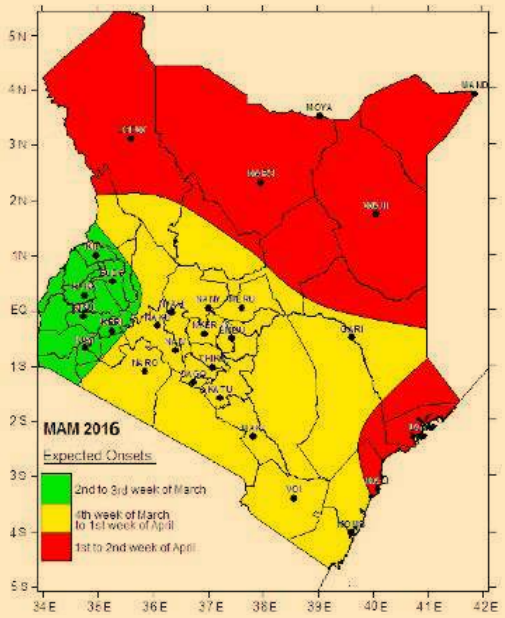
20b MAM 2016 rainfall forecast



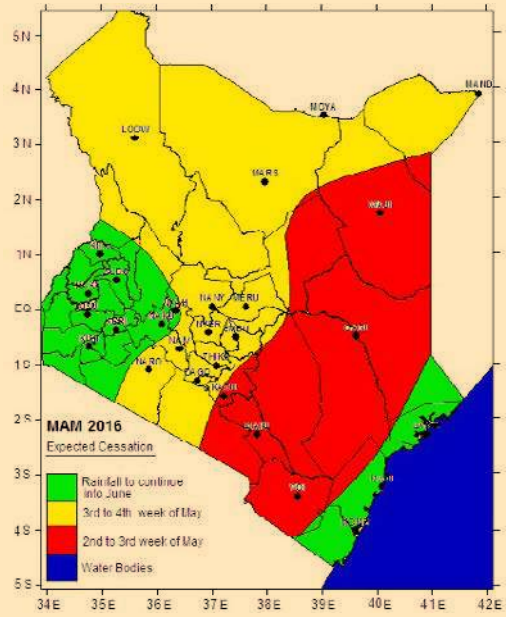
Average rainfall for the MAM season is important to know the actual millimetres of rainfall for each part of the country in a normal rainfall scenario. As can be seen, there is a wide range of normal rainfall in Kenya, dependent on many factors climate and otherwise, eg. altitude, landscape types, latitudes and more which reflect the agro-climatic-ecological zone. The forecast map shows probabilities for normal, above normal and below normal, which are relative to the particular location's average rainfall amount.

Figure 21: *Expected MAM 2016 seasonal rainfall onset and cessation dates.*

21a Forecast rainfall onset dates



21b Forecast rainfall cessation dates

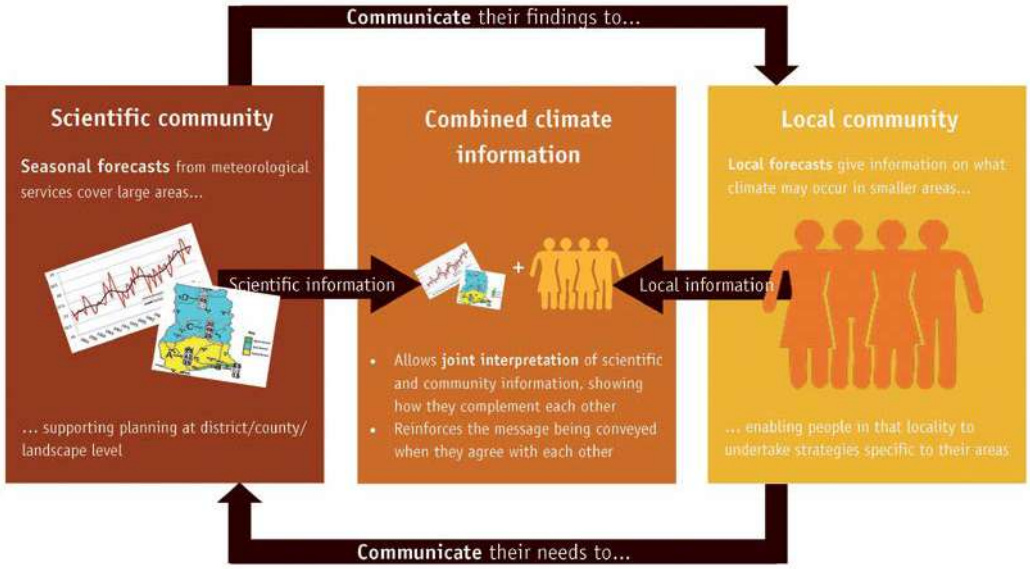


Onset and cessation dates are vital information for seasonal decision making – eg. crop types and varieties require certain amounts of rainfall distributed over a specific number of days and months. In Ghana, forecasts of possible dry spells and their timing are also included to enable better informed decisions on eg when and what to plant, whether irrigation may be required mid-season etc

III. Co-produce a consensus seasonal climate forecast for the local area

Facilitate a plenary discussion so that participants reach common agreement, understanding and integration of the two seasonal climate forecasts presented (see Figure 22 on the benefits of this). Focus discussions on integrating the two forecasts, looking at where there is agreement or disagreement between the two forecasts and where information from one forecast compliments what is missing in the other. The result of integration is a localised seasonal climate forecast for the area. See an example of discussions to integrate the two forecasts in Annex 7 and a localised forecast in case study 7. Write the downscaled forecast on a flipchart, cards, etc depending on what works best for participants and display it throughout the workshop for reference in discussions that follow.

Figure 22. *Benefits of combining local and meteorological seasonal climate forecasts*



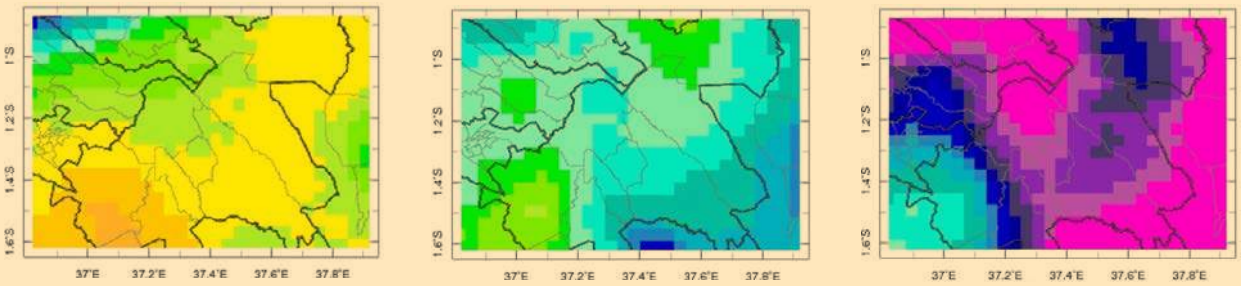
Case Study 8

CO-PRODUCING A LOCALISED SEASONAL FORECAST FOR MACHAKOS COUNTY

Machakos County experiences a short rainy season from October to December. On average, rainfall during this season ranges from 50mm in October to 200mm in November, with differences in rainfall amount in various parts of the county (see Figure 23). The average monthly temperature is between 18°C and 25°C, with October being the hottest month in the season.

Figure 23: *Average rainfall (1983 to 2014) in Machakos County for a) October, b) November, and c) December. Source: KMD maproom http://kmddl.meteo.go.ke:8081/maproom/*

a) b) c)



At the Machakos County PSP workshop that was organised ahead of the OND 2013 seasonal rains, participants wanted to know what the season would look like so that they could plan their livelihood and sectoral activities accordingly. In order to get as much information as possible on climate for the coming season, and for the information to be well understood at county to lower levels, both local and Kenya Meteorological Department (KMD) forecasts were presented.

Local forecast

Participants from communities in Machakos County monitor local indicators so as to forecast climate for the coming season. Before the OND 2013 season, indicators observed were: the Nandi Flame tree had flowered, frogs were heard croaking, the hills and nearby Ol Donyo Sabuk mountain had been covered by frost, and loud noises were heard from the Ivutavutilya bird. Based on these indicators, community members expected rains for the season to start from 15 October, but with a delay into the beginning of November due to the persistent coldness. The rains would end in late December. The season was also expected to be short with low but reliable rainfall amounts.

Meteorological forecast

The meteorological forecast was presented by the Machakos County Director of Meteorological Services (CDMS). With a 45% probability, the OND 2013 'short rains' season was most likely to have normal (or average) rainfall amounts ranging between 300 and 500mm. There was also a 30% chance of below normal rainfall and 25% chance of above normal rainfall. The rainfall distribution at different times in the season and over different areas was expected to be generally poor, similar to the OND 2001 season. Rains in the season were expected to start between the 3rd and 4th week of October and were likely to end during the 2nd to 3rd week of December.

An agreed localised forecast for the county

There was agreement between the two forecasts in terms of when rains in the season would start with highest probability of 'normal' rains occurring. Though the community forecaster could not easily determine when the season would end – due to religious and cultural beliefs – its consideration alongside the meteorological forecast created a collective agreement that the season would end between the second week of December and the end of December.

6.7 Session III: Developing scenarios of hazards, risks, opportunities and impacts

6.7.1 Key concepts

Effective adaptation requires the knowledge and capacity to anticipate future climate and potential resultant impacts. But considering inherent uncertainty in the climate and its interaction with broader context uncertainties related to future socio-economic development, culture, goals, aspirations, vulnerabilities, risks and capacities, among other factors, anticipation means taking into account several possible futures. Development of scenarios addresses knowledge gaps around the interaction of development choices with the climate, in order to design better adaptation options that are more robust to a range of possible futures (UNEP, 2014). Options generated from scenarios enable the requisite flexibility to react to variability and change as they occur and to continuously review implementation of plans in light of dynamics in the context (see case study 9).

Keeping in mind the uncertainty expressed in seasonal forecasts as probabilities in the three terciles, scenarios developed during a PSP forum are a way of interpreting the forecast and uncertainty (see Box 6) to relate to the decision-making context. Scenarios then enable anticipation of multiple future climate hazards and risks, as well as potential impacts and opportunities. Additionally, these scenarios offer practical applications for building adaptive capacity and resilience to seasonal climate variability and extremes (see box 7) thus facilitating:

- adaptation to an uncertain future through identification of no-regrets adaptation options and informing adaptive management actions (UNEP, 2014) as the climate and the broader context evolve within the season
- development and strengthening of multi-hazard early warning systems (UNISDR, 2015)
- better integration of climate risk management in livelihood, sectoral and development planning.

Note that some hazards, risks, opportunities and impacts may recur after three or more PSP workshops. To avoid repetition in subsequent workshops, it is useful to take good notes, right from the first PSP workshop and compile them into some form of reference records (e.g. a directory). Well-documented and detailed records create important historical information for the area, which will be useful for:

- continuous monitoring and analysis of changing climate risks and impacts in the area
- recalling analogue years and using them as a powerful tool for understanding and interpreting seasonal forecasts
- analysis of plans and advisories generated over time to define standard operating procedures and build confidence in determining what action is 'worth' taking based on a seasonal forecast (Stephens, Coughlan de Perez, Kruczkiewicz, Boyd, & Suarez, 2016).

The records can then be reviewed and updated in the following PSP workshops, based on current status and the local seasonal forecast. This ensures that advisories generated before each season are in response to the forecast and enable forecast-based action. Use of the records can also reduce the time needed for discussion in PSP workshops.

Box 6
INTERPRETING ABOVE NORMAL, NORMAL AND BELOW NORMAL RAINFALL AS PRESENTED IN A SEASONAL FORECAST

What does 'normal' rainfall mean?

Several times, actors have questioned whether it is necessary to build a scenario for probability of normal rainfall. This is due to an assumption that normal probability means everything is 'normal' – that is, there are no hazards, negative impacts or opportunities to think about. This places more emphasis on seeking explanation and understanding from Meteorological Services on what 'normal' rainfall in the area means.

'Normal' rainfall in a seasonal forecast is used to refer to a range of values around the long-term average rainfall in a particular area and in a given season (see definition of tercile in Chapter 2). For example, normal rainfall in Garissa County, Kenya ranges from 102 to 183mm during the OND rainfall season. The rainfall range is determined by looking at historical data over a 30-year period so as to factor in the natural variability in climate from year to year. For example, here the range for normal rainfall for Garissa County was determined using data from 1961 to 1990, which is globally set by the World Meteorological Organisation (WMO) as the historical base period. However, owing to changes in the climate, using this historical base period to define normal rainfall does not capture significant shifts in rainfall amount. For operational purposes such as for seasonal forecasting, this base period is now updated every ten years. For example, in 2017 the base period for defining normal rainfall is 1981 to 2010 (WMO, 2015). Normal rainfall in any given area is therefore different over time, influenced by both variability and change in the climate.

The interplay between rainfall amount in the normal range, hazards, risks and vulnerabilities (based on current capacities, activities and physical location) as well as ability to capitalise on opportunities can result in normal rainfall having both negative and positive impacts. For example, consider an area where farming is done along a river and terrain in the area is mostly flat. Even when rainfall is normal the river may overflow, causing floods in farm lands. In the end, there is general agreement that when the highest probability is for normal rainfall and impacts are not likely to be negative or adverse, there is an opportunity to undertake resilience building towards increasing the capacity to manage climate extremes – for example, capacity building on and implementation of improved agricultural practices such as environmental management through reseeding degraded lands, developing contingency plans, improving links between farmers and agricultural research institutions, etc.

Does 'above normal' rainfall always result in flooding?

When developing scenarios for above normal rainfall, the interpretation almost always ends up focusing on floods as the major climate hazard. This may not always be true.

First, it is important to start with the understanding that above normal rainfall in any area is a range of rainfall amounts – for example, between 217 and 529mm for the OND season in Garissa County. Second, a flood is defined as either the overflowing of the normal confines of a stream or other body of water, or the accumulation of water over areas not normally submerged. Floods include river (fluvial) floods, flash floods, urban floods, pluvial floods, sewer floods, coastal floods, and glacial lake outburst floods (IPCC Glossary). Considering the two definitions, several factors have to be considered before arriving at flooding as a hazard due to above normal rainfall:

- Above normal rainfall amount such as 217mm is the total received in a season. If this amount all happens within, for example, three days, then there would be heavy rainfall events that could possibly result in flooding, such as flash floods. But if the amount is almost evenly spread out over, say, a three-week period, then the rainfall events would be light with potentially no occurrence of a flood. It is therefore important to consider information on how above normal rainfall could be spread out or distributed within the season. Meteorological Services may provide information on rainfall distribution, for example expecting distribution to be poor.
- The ecosystem, terrain and location matters. For example, in areas downstream of a river, water may overflow and cause flooding due to heavy rainfall in upstream areas. Or flooding may occur in an area even when there are light rains because of the type of soil that allows water to accumulate. In an area that has soil which absorbs water or allows for good flow and is far from a river, flooding may not necessarily occur when there is above normal rainfall.
- Socio-economic development is a factor in the occurrence of climate hazards. Such is the case of land use due to agriculture or urbanisation that changes the ecosystem and terrain. For example, cutting down trees to increase land for irrigated agriculture along a river may weaken the river banks so that even slightly above normal rainfall could cause flooding. An increase in tarmacked areas due to urbanisation means that rainwater is not absorbed into the ground and if combined with poor drainage systems, small rainfall amounts can quickly result in accumulation of water.

Consideration of these factors demonstrates that proper interpretation of above normal rainfall in relation to the potential for flooding requires a combination of technical knowledge as well as knowledge of the local context. This makes the multi-stakeholder interaction and knowledge exchange at PSP workshops very valuable in arriving at the correct interpretation of a seasonal forecast.

Does 'below normal' rainfall always result in a drought?

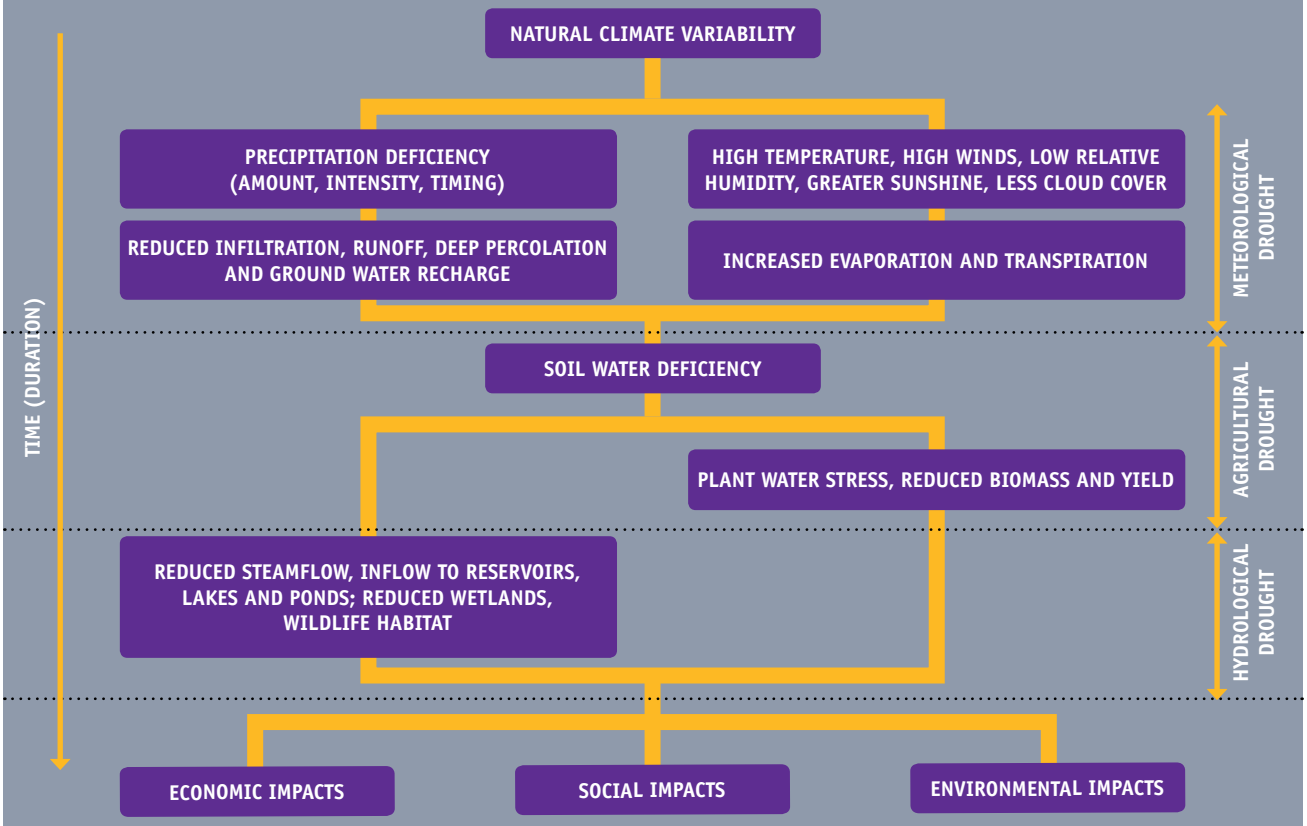
Similarly, below normal rainfall in a seasonal forecast is often interpreted to mean a drought is coming. Again, let us go back to definitions.

A drought is generally defined as a period of abnormally dry weather long enough to cause a serious water imbalance (IPCC Glossary). It is, however, a relative term depending on technical expertise, livelihood activities or sector interests, among other considerations. In that regard, there are three common definitions of drought (IPCC Glossary):

- **Meteorological Drought – This is usually defined based on the degree of dryness (in comparison to normal rainfall) and the duration of the dry period. For example, considering that the range of below normal rainfall for the OND season in Garissa County is between 22 and 93mm, a meteorological drought would be when total rainfall for the season is in the lower end of the range – e.g. between 22mm and 45mm.**
- **Hydrological drought – This usually occurs following periods of extended rainfall deficits that impact water supply (i.e. streamflow, reservoir and lake levels, groundwater), potentially resulting in significant societal impacts. Because regions are interconnected by hydrologic systems, the impact of hydrological drought may extend well beyond the borders of the rainfall-deficient area.**
- **Agricultural drought – This links various characteristics of meteorological and hydrological drought to agricultural impacts, focusing on rainfall shortages, soil water deficits, reduced groundwater or reservoir levels needed for irrigation, and so forth.**

Drought is therefore a relative term and any discussion in terms of rainfall deficit must refer to the particular rainfall-related activity that is under discussion (IPCC Glossary). Discussion on drought also shows the interconnectedness of impacts due to rainfall deficits (see Figure 24), requiring collaborative efforts.

Figure 24. *Flowchart illustrating the progression of drought, and the relationship between meteorological, agricultural, and hydrological droughts. Economic, social and environmental impacts are shown at the bottom of the chart, independent of the timescale, indicating that such impacts can occur at any stage during a drought. (Source: National Drought Mitigation Center, University of Nebraska-Lincoln, http://drought.unl.edu/DroughtBasics/TypesofDrought.aspx)*



Conclusions

While the definitions make interpretation of a seasonal forecast appear as a technical exercise, they actually point to the importance of a co-production of relevant information through:

- Understanding the forecast from discussions with Meteorological Services, before getting into interpretation
- Understanding the local context and its dynamics, such as is enabled by PSP workshop Session I
- Combining different sets of information and knowledge to make sense of the forecast.

6.7.2 How are scenarios of hazards, risks, opportunities and impacts developed?

Box 7
SCENARIOS FOR BUILDING ADAPTIVE CAPACITY AND RESILIENCE

Generation of scenarios from seasonal forecasts and the ensuing planning has several practical applications for building adaptive capacity and resilience to seasonal climate variability and extremes (see Figure 25; adapted from (Lindgren & Bandhold, 2003):

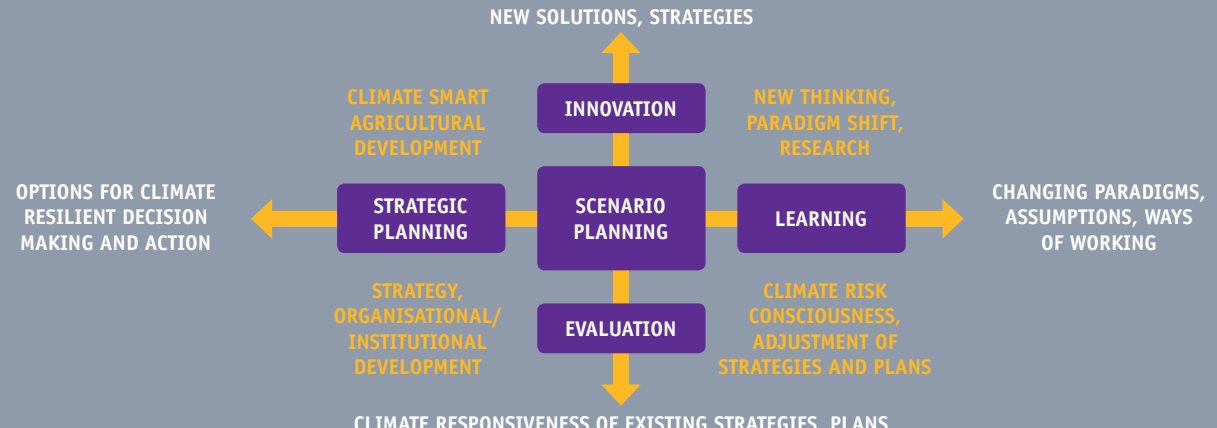
a) Scenarios are used for strategic planning. They help actors to think about the best or most appropriate combination of actions to take in the coming season as well as possible actions by others, and how these actions are interconnected and influence each other. This is essentially about managing uncertainties in the seasonal climate as well as in human interactions. Strategic planning using scenarios generated in a PSP workshop especially benefits from combining the knowledge and experience of the various stakeholders involved. This has an explicit aim of developing practical advice on forward-looking decisions that different actors can make to manage uncertainties in climate risks, opportunities and impacts in a season.

b) Scenarios may function both as inspiration for generating new solutions or strategies to deal with the seasonal climate challenge and also as filters through which new ideas and projects can be passed. In both cases, scenarios function within an innovation process targeted at building climate resilience.

c) Scenarios can be used for evaluation purposes, for instance in reviewing the effectiveness of existing strategies in different climate sensitive sectors, contingency and preparedness plans in response to potential seasonal climate risks, opportunities and impacts in a local area. This kind of evaluation can be used to identify the adaptation deficit, that is, the gap between the current state of capacities, strategies, plans, services, ongoing projects/programmes and a state that minimises adverse impacts of climate in a season (IPCC WGII Glossary, 2014). The evaluation may be necessary as different actors are likely to be taking certain action or to have developed plans in preparation for the coming season, as will have come out of PSP workshop Session I.

d) Scenarios may also be used for learning or to drive change, for example, demanding the equitable provision of climate information services. They can be a powerful method for challenging existing paradigms, assumptions and ways of working (for example, on the value of local knowledge and combining knowledge sources to co-generate information) and for creating shared perspectives on the future, especially for those who are involved in discussions on scenario generation and planning.

Figure 25. *Practical applications of scenario planning using seasonal climate forecasts*



I. INTRODUCTION TO SCENARIO DEVELOPMENT

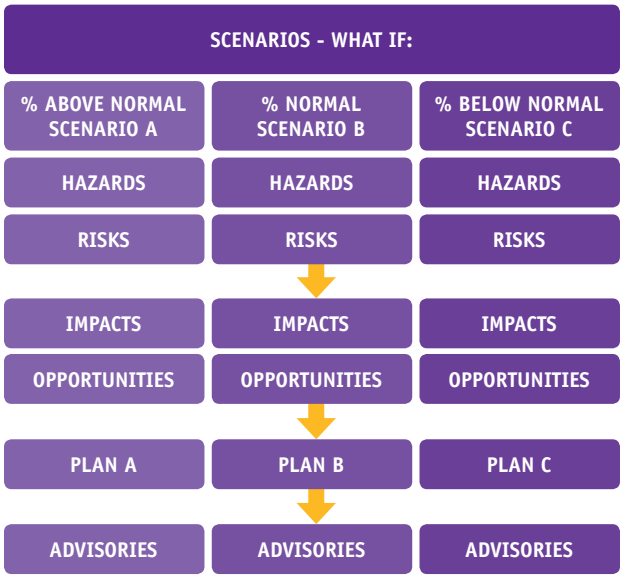
This is a plenary exercise to introduce discussions to interpret the localised seasonal forecast and get a common understanding of key concepts:

a) Revisit explanation of above normal, normal and below normal rainfall to confirm there is a clear and common understanding and correct interpretation of the seasonal forecast (see Box 6).

b) Define and discuss key concepts that will be used: climate hazards, risks, opportunities and impacts (see key concepts in Chapter 2).

c) Give an example to demonstrate scenario development (see Figure 26).

Figure 26. *The process for developing scenarios from a seasonal forecast*



II. FORMING GROUPS

Scenario development is best done by dividing participants at the workshop into groups. The groups can be based on:

- **Technical expertise** – e.g. separate groups for actors working in different sectors such as water and irrigation, agriculture, livestock, financial and insurance services, etc.
- **Livelihood types** – e.g. a group each for crop farmers, pastoralists, trade or business industry, crafts, etc.
- **Geographical area** – e.g. riverine communities, actors from the same administrative area such as a ward, etc.
- **Agro-climatic zones** – e.g. separate groups for actors from very rainy (humid) areas, sub-humid areas, dry or semi-arid areas, etc.
- **Common interests** – e.g. actors growing the same type of main crop, such as tea, those engaged in the same agricultural value chain, etc.
- **Shared issues of concern** – e.g. projects, programmes and activities on DRR, agricultural development, planning and budgeting, research, etc.

The groups reflect the way in which the PSP process was contextualised and therefore who was invited to attend the PSP workshop. When forming the groups and facilitating discussions, it is important to check that there is balance in contribution and voice of communities as well as technical departments. This is critical to co-production of high-quality, technically sound and locally relevant scenarios and advisories, with a strong influence from local knowledge and expertise (Gbetibouo, Obuya, Mills, Snyman, Huyser, & Hill, 2017).

III. GROUP DISCUSSIONS

a) Give participants reference materials:

- baseline information (from Step 3: Session I) for consideration of actors' current plans, activities, resources, vulnerabilities and capacities
- records of hazards, risks, opportunities and impacts in the area generated from past PSP workshops (where there were regular PSP workshops)
- the seasonal forecast with all the relevant information, including probabilities of the three terciles occurring in the coming season.

b) Ask participants in all the groups to consider the question: If the coming season experienced above normal, normal or below normal rainfall, what would be the (see Figure 26):

- major climate hazards in the local area?
- Apply local and technical knowledge and experience to bring out the types of climate hazards that may be experienced in the coming season. Assess the possible geographical extent, timing and severity of hazards in the local area. Because of the seasonal timescale, scenario development during PSP forums often focus on short-lived and recurrent climate hazards (See Chapter 6).
- potential risks due to the identified hazards? Remind participants to refer to the information generated in session 1 on current status.
- potential opportunities due to the climate? Come up with the possible impacts of the risks and opportunities on different stakeholder groups in the local area. Local knowledge is especially useful in bringing out local impacts, with differences based on capacities, livelihood types and activities, gender, access to technical and financial services, among other factors. Ask participants to also take into account the forecast for and possible impacts in neighbouring areas that may affect their area of concern.

The order in which the three scenarios are developed is determined by the probability weighting. For example, considering the MAM 2016 seasonal forecast for Kenya (Figure 21), scenario development for an area in the yellow zone starts with local implications of normal rainfall, since it has the highest probability (40%) of occurrence (or is the most likely scenario). Scenarios for below normal (35%) and above normal (25%) rainfall then follow, not simply what is most likely.

Factor in other information that was shared on the coming season. For example, the start and end of the rains have implications on the length of the season, and therefore the types of risks, opportunities and impacts that can potentially occur in each scenario.

This group work often generates a lot of discussion with the application of local and technical knowledge, experience and the records provided. The session, therefore, requires sufficient time (see the sample agenda in Chapter 5), especially for the initial PSP workshops.

IV. PRESENTATION OF GROUP DISCUSSIONS

a) Each hazard, risk, opportunity and impact is written on an idea card (i.e. one card per item) and the cards stuck on a wall to generate a scenario matrix (see Figure 26 above).
b) It is best that reporting back from the groups is done after the discussions in Session IV.

Case Study 9

DEVELOPING SCENARIOS FOR 'NORMAL' SEASONAL RAINFALL

Trans-Nzoia County in Kenya is one of the main breadbaskets of Kenya. It experiences an annual average temperature of 18°C and an annual average rainfall of 1,264mm. The county gets two, sometimes three, rainfall seasons in a year. With the county experiencing shifts in seasonal weather patterns and a rise in temperatures, there was a need for flexible planning and forward-looking decision making for resilient agricultural production and development in the county. This was to be achieved through PSP, facilitated by Agricultural Sector Development Support Programme (ASDSP) in partnership with the Trans-Nzoia CDMS and other key actors.

At the county's PSP workshop, the agreed seasonal forecast indicated that probability for the MAM 2014 rainfall was 45% normal (i.e. 320–529mm), 35% above normal (i.e. more than 529mm) and 20% below normal (i.e. less than 320mm). The rains were expected to start between the second and third week of March and continue into June. Similar to the MAM 2012 rainfall season, a dry-spell of three to four weeks was to be expected after the start of rains, with the highest amount of rainfall occurring in April.

Participants at the workshop then discussed what the seasonal forecast meant for their county, by developing scenarios based on rainfall probabilities for that season. Three groups were formed to discuss forecast implications for each of the three sub-counties. Different agricultural value chains and technical experts from different government departments/parastatals/programmes were represented in each group.

Hazards, risks, opportunities and impacts of normal rainfall

Considering the 45% probability of normal rainfall in the MAM 2014 season, participants at the PSP workshop identified flash floods, thunder and lighting, strong winds, hailstorms and human-wildlife conflict as some of the possible hazards faced by the county. Risks associated with flash floods were soil erosion, crops loss, outbreak of livestock diseases and reduced water quality. Thunderstorm, lightning and strong winds would result in the loss of livestock, property and human lives. The participants identified reduced crop/livestock productivity, increased cost of transport, reduced food security and loss of livelihood as potential impacts of the identified hazards and risks. Amidst the hazards and risks, the participants realised that they could take advantage of opportunities such as water harvesting and storage, underground water recharge and an increase in prices for certain food commodities.

It was clear from the discussions that normal seasonal rainfall had both positive and negative implications for Trans-Nzoia County. Though normal rainfall had the highest probability of occurrence, developing scenarios of hazards, risks, opportunities and impacts for the other rainfall probabilities (i.e. for above and below normal rainfall) enabled participants at the workshop to see the need for having a main course of action, based on the scenario with highest probability, but also the importance of making contingency plans.

6.8 Session IV: Planning for action

6.8.1 Key concepts

In this session of the PSP workshop, planning involves coming up with possible actions to address hazards, risks, opportunities and impacts in the three scenarios of above normal, normal and below normal rainfall. The most likely scenario (based on highest probability of occurrence) generates the main action plan or the first response to deal with the climate for the season. While the other two scenarios (second highest and lowest probabilities) generate contingency plans. It should be noted that adequate attention should be given to the contingency plans so as to deal with the

uncertainty of not knowing exactly what will happen in the season. They encourage flexibility to switch from one action to another depending on how the season evolves. Contingency plans also enable consideration of low probability hazards and risks that could have high and adverse impacts if they do occur.

It is likely that many of the plans relate to long-term development needs, for example improvement of physical infrastructure such as roads. However, because the purpose of PSP is to inform decision making and planning at a seasonal timescale, there is a need to ensure that plans developed focus on actions that can, and will be done by the different stakeholders within a season. Long-term actions may still arise in discussions, but these should be noted and addressed in appropriate forums and processes on long-term planning.

An initial list of climate-informed plans for action is developed in the first PSP workshop. In subsequent PSP workshops, there may be repetition in the proposed actions which can be put together into a 'directory' that focuses on possible short-term/seasonal actions for the local area. The directory can then be a reference document from which actions for the current season – based on the forecast and scenarios – can be drawn and adjusted to suit the present time. It can be a decision-making tool, for example, presented as a flowchart of routes to take depending on the current forecast, emerging opportunities and development, and changes in capacities, resources, strategies, needs and demands.

6.8.2 How are plans developed?

I. FORMING GROUPS

Maintain the same groups that were formed during scenario development as this will build on discussions from that session.

II. GROUP DISCUSSIONS

Ask participants in the groups to:

a) refer to current status of livelihoods, capacities and development, ongoing plans and actions in preparation for the coming season that were shared in Step 2: Session I, focusing on those most relevant to their specific location

b) consider impacts and opportunities identified in the three scenarios to develop new plans or adjust ongoing plans and actions. Examples of adjusting plans and actions may include:

- scaling up or down planned actions– e.g. veterinary services moving from setting up a few animal vaccination stations to having a county-wide vaccination campaign to deal with the increased risk of disease outbreak due to probability of high amounts of rainfall in the season
- bringing in additional actions, e.g. supplementing rain-fed crop growing with irrigation to manage drought as a hazard due to probability of below normal rainfall
- strengthening actions by farmers and livestock keepers, e.g. taking advantage of normal rainfall availing more time (as they are not occupied with responding to extreme events) to engage in capacity building and stronger links to markets
- changing the timing of actions, e.g. input suppliers to stock certain pesticides early in the season rather than later
- switching to new strategies, e.g. with highest probability of below normal rainfall in the coming season, a change from growing maize in an arid or semi-arid area to growing cowpeas and millet
- combining and diversifying strategies to spread the risk of total loss, e.g. growing different types of crops or crop varieties in one season or keeping a combination of different livestock types and breeds that can survive more than one scenario
- taking advantage of opportunities that had not been thought about before, e.g. farmers growing irrigated fodder to sell to neighbouring pastoralists/livestock keepers who may face shortages in animal feed owing to below normal rainfall
- integrating disaster risk management into livelihood activities, e.g. putting in place systems for monitoring flood

occurrence and developing triggers and actions to take when a flood occurs, such as informing key stakeholders of impending floods who then alert other actors to move irrigation equipment to higher ground.

III. PRESENTATIONS FROM GROUP DISCUSSIONS

After each group has agreed on a set of plans for managing climate in the coming season, have a plenary discussion to share the three scenarios from Session III and associated plans from Session IV. During the discussion, allow for further input and clarifications, and find synergy and differences between plans from different groups. Group plans can then be modified and integrated to be mutually supportive and more responsive to the needs at hand (See case study 10). For example, in the case of an opportunity arising due to above normal rainfall:

- the government may have plans to set up water conservation structures – plans that can be aligned to support farmers' plans and needs for access to water
- both the Department of Water and Department of Livestock may have plans to set up water pans in an arid area. Involving actors from different sectors in discussions in the PSP workshops enables coordinated cross-sectoral planning, which avoids duplication of efforts or conflicting responses to the same problem by different sectors.

Case Study 10

INTEGRATED PLANS FOR ACTION IN TRANS-NZOIA COUNTY

Following scenario development, there was agreement among participants at the Trans-Nzoia County PSP workshop that to enable effective risk management and take advantage of opportunities identified, collaborative plans of action between different stakeholders was needed. Examples of integrated plans are presented in Table 11.

Table 11. Integrated plans of action to manage risks and opportunities due to flash floods in Trans-Nzoia County

HAZARD	POSSIBLE ACTIONS	GOVERNMENT PLANS	COMMUNITY PLANS	INTEGRATED PLANS
Flash floods (due to normal rainfall)	• Intensify soil and water conservation activities • Early warning • Intensify healthcare surveillance • Treat water • Vaccination campaigns • Diversify farming enterprises • Proper road maintenance	• Lay out soil conservation structures • Set up agro-met. stations • Treat water bodies, conduct vaccination campaigns • Plan and design roads, paths; procure and supervise road construction/ maintenance • Promote diversification of farming enterprises	• Construct soil and water conservation structures • Take out insurance policies • Organise to participate in vaccination campaigns • Support road/path maintenance and construction • Diversify farming enterprises	• Soil and water conservation • Informed risk management • Sanitation and immunisation programme • Collaborative road design and maintenance • Embrace diversification of farming enterprises

6.9 Session V: Developing advisories

6.9.1 Key concepts

Advisories are locally relevant and actionable information bulletins on options that different actors can take up to manage risks and uncertainty posed by seasonal climate. Rather than 'instructions' to be followed, advisories present options for actors to consider and make their own decisions and plans for the coming season.

Seasonal forecasts presented by National Meteorological Services often include advisories, targeting broad sectors in the country – for example, agriculture, livestock development and food security sectors, environment, water and natural resources sectors, and disaster management sectors, among others. The information may also be relevant to national-level actors. However, advisories are often too broad and focus only on expected impacts for what is most probable in the coming season. For example, an advisory such as 'Problems related to waterborne diseases are likely to occur due the expected heavy rains. Consequently, close monitoring of the situation and contingency measures are necessary in order to adequately cope with the situation.' This can be made actionable when it defines the possible contingency measures and actions to be taken by the different actors concerned.

Advisories generated in a PSP workshop localise information on possible actions based on a probabilistic seasonal forecast. Further, they integrate actions from the three scenarios to develop clear messages on options that different actors can consider in response to a forecast.

6.9.2 How are advisories developed?

I. FORMING GROUPS

The groups for advisory development can be formed by:

- retaining the groups formed during scenario development and planning
- participants from specific sectors sitting together with participants from different livelihood groups joining the appropriate sector – e.g. sub-county livestock officers and livestock feed suppliers forming a group with pastoralists/ livestock keepers
- participants with technical expertise in a specific sector forming their own group, while farmers, livestock keepers and other livelihood groups form their own groups
- participants working in a specific value chain
- other ideas participants may have.

II. GROUP DISCUSSIONS

a) Because advisories target different actors, ask participants to think about who needs the information, drawing from what came out of Session I of the workshop as well as user needs identified in Step 2 of the PSP process. Focusing on the target actors will help to phrase the information in actionable form.

b) Prioritise the set of plans for action in each scenario, considering vulnerabilities and capacities in the local area (from workshop Session I and Step 2).

c) Put together the prioritised plans of actions from all scenarios. This forms the advisories which present options for decision making in advance of the coming season.

d) Organise the advisories based on the major hazards, risks or opportunities they address, or the target actor and sector meant to take action (see examples in case study 11). Ensure that the actors who need to take specific actions are included in the advisories.

Case Study 11

ORGANISING ADVISORIES DEVELOPED IN A PSP WORKSHOP

Organising advisories by risk and opportunities to be addressed

A sample of advisories for Elgeyo Marakwet County, Kenya, in response to the forecast for OND season in 2015 (see Box 6).

Diseases:

- **Residents are advised to empty all their septic tanks and pit latrines early to avoid mix up of septic/latrine contents with drinking borehole water.**
- **The health sector (Clinical, Public & Veterinary Health) is advised to take advantage of these advisories to stock the right drugs for waterborne diseases that tend to be prevalent during seasons of heavy rainfall.**
- **Residents living in escarpment and lowland areas are advised to sleep under nets to avoid malaria infection. At the same time, public health should arrange to provide enough mosquito nets to the public before rains start.**
- **It is an opportune time for concerned government departments to carry out immunisation and vaccinations against diseases that may strike during this season – e.g. Rift Valley Fever in livestock.**

Environmental opportunities:

Since most parts of the county will receive good rainfall, residents, organisations, institutions and government can engage in tree planting in order to boost the county's forest cover.
Farmers can plant early maturing food crops and/or pastures.

Organising advisories based on target actor

A sample of advisories for Nyamira, Kenya, in response to MAM 2014 seasonal forecast.

- **Seasonal forecast for MAM 2014, considering probability of normal to above normal rainfall**
- **Onset expected – 3rd week of March**
- **Cessation – continue into June**
- **Distribution – fairly good in space and time meaning relatively less rain in March and May with the heaviest rainfall in April**
- **Banana value chain**

HAZARDS/OPPORTUNITIES	ACTOR	POSSIBLE ACTIONS
Disease outbreaks like Rift Valley Fever, Black Quarter East Coast Fever, tick-borne disease, pneumonia in calves are expected	**Farmers**	Farmers advised to: • Vaccinate their livestock and have enough acaricides for spraying • Make silage and hay to conserve excess fodder and pasture
Prolonged rains may lead to increased quantity and improved quality of pasture	**Agro-dealer**	Ensure adequate and timely stocks of: • Drugs and vaccines to enable farmers to deal with potential disease outbreaks • High rainfall pastures and legumes for planting

Organising advisories based on target sector

A sample of advisories for Tana River County, Kenya, in response to MAM 2014 seasonal forecast.

- **Weather forecast (MAM 2014) Below normal**
- **Onset expected – 3rd week of April**
- **Cessation – continue into May**
- **Distribution – Poor in space and time meaning relatively more rain in April and less in May**

SECTORS	POSSIBLE ACTIONS
Livestock	• Communities are advised to coordinate movement of livestock from the delta to wet season grazing areas in the hinterland to enhance pasture and browse regeneration in the delta and conserve it for use during the dry season • Value-chain actors are encouraged to take advantage of business opportunities – e.g. sale of animal feeds, animal drugs and destocking of livestock. The Ministry of Agriculture, Livestock and Fisheries is advised to enable equal opportunity by regulating engagement of middlemen through giving direct support to officially recognised groups and cooperatives
Crop	• Farmers are advised to ensure proper post-harvest management and storage of bumper harvests • Farmers can consider growing rice under flood recession, and seek support from the Ministry of Agriculture, Livestock and Fisheries • Farmers are advised to prepare land and plant crops early at the onset of rains. Agro-dealers should consider early stocking of the inputs required

III. PRESENTATION OF GROUP DISCUSSIONS

In plenary, ask the groups to present the advisories to the wider group of participants at the workshop. Give the plenary discussion enough time for clarifications and additions to ensure the information is well presented and useful.

6.10 Closing the workshop

At the end of planning and when all the proceedings have been documented, the workshop should be concluded by reviewing the action points in plenary and ensuring each actor knows their next steps and timelines in communicating the advisories and making them actionable. These would include the chiefs setting dates for the barazas, the media planning on communicating the advisories through the radio, television and Climate Information Centres (CICs) (see case study 12). In addition, there should be an agreement on any supplementary actions needed to enable proper utilization of the advisories and who should take what action. For first time PSP workshops, there should be a document with a list of potential hazards and risks for the area produced which will be built upon to guide subsequent PSP workshops. M&E actions should also be concluded and activated with the agreed dates of the next meeting for the PSP core working group.

CHAPTER 7

STEP 4
Communicate with impact

7.1 Purpose

Timely and equitable communication of advisories generated in a PSP workshop using effective channels that reach a wide and targeted audience. The information on the advisories is understandable and actionable to enable users to make anticipatory climate informed decision making and planning.

7.2 Expected Outcomes

- Advisories are communicated in a timely and effective manner to all actors who need the information.
- A range of locally agreed communication channels are deployed to meet target audiences, with a focus on inclusion of all users including women and those most marginalised.
- Actors increase their capacity to understand and use seasonal climate information to make flexible and anticipatory decision making and planning.
- Actors take climate informed decisions and actions to manage climate risks and opportunities.

7.3 Duration

Being time bound, climate information and accompanying advisories should be communicated within a week of the PSP workshop to give enough lead time to users before the season starts.

7.4 Key concepts for communication

A PSP workshop is attended by representatives from different stakeholder groups but the seasonal forecast and resulting advisories should reach everyone who needs them. While Meteorological Services and local forecasters are the source of the seasonal forecast, both facilitators and participants at the workshop are sources of information for the advisories developed. Therefore, everyone at a PSP workshop has a role to play in communicating the seasonal forecast and advisories. During preparation and planning in Step 2, facilitators will have developed a communication plan. Recognising knowledge of the context and the roles that facilitators and participants at the workshop can play in communication, this session involves revising the plan to ensure that communication happens, with the right information reaching a wider audience and in good time.

Advisories must be communicated rather than disseminated (see Effective Communication in Box 5). Communication is two-way, allowing actors listening to the information to question and/or seek clarification of what is presented, either on the spot or, in the case of written communication such as posters, to follow up with relevant/designated stakeholders, government offices, organizations and institutions. While dissemination is used to mean wide spread transmission of information, it also implies that transmission is one-way i.e. there is a lack of interaction between the actors who the information is reaching and stakeholders who are sending it out. It is important to emphasise that for climate information to be locally relevant and useful, it needs to be understood by different actors in different contexts, hence the need for communication.

7.4.1 Communication

Information must reach all users in a form that is appropriate for them to operationalize into adaptive practices. For communication to be effective, it must be disseminated to the user and understood by them so as to facilitate decision making. This means that the information must be appropriate for the selected dissemination channel and said dissemination must be appropriate to decisionmaking within the local context.

Recognising knowledge of the context and the roles that facilitators and representatives from different stakeholder groups at the PSP workshop can play in communication, this session involves revising the plan to ensure that communication happens, with the right information reaching a wider audience and in good time.

Communicate with impact means enabling information to be understood and accepted and to result in appropriate action. Subsequently it is important to consider the diversity and effectiveness of formats, channels, and timing based on target actor.

7.4.2 Audience

In making a communication plan it is vital to identify the audience of the information. Climate information is key in all aspects and as such it attracts a wide variety of audiences from local government sectors to small holder farmers and business persons. The diversity of the audience gives rise to differences in information required, channels of communication – timeliness of, access to and trust in the channel, and language of communication to ensure equal access by all users in a form that is appropriate for them to operationalize.

7.4.3 Effectiveness

The language, style and channel through which communication is done are key to making climate information useable. Due to actors' different social roles in communities, inequalities in social status and different levels of literacy, numeracy, and fluency in a given language, the ability to obtain or make use of climate information can vary significantly. Packaging of climate information tailored to specific users' capacities and needs is therefore critical to ensure effective communication. The format and visual packaging of translated climate information contributes to understanding the information, especially by those who are not literate. This serves to extend climate information reach to a wider audience, supporting informed decision-making and planning for all stakeholders.

7.4.4 Seasonal forecast updates

While forecasts presented at the beginning of a season are useful in strategic planning for issues like which crops to plant, the usefulness of climate information presented at least 3 months in advance is enhanced by the use of forecast updates thereafter. Updates are short-range forecasts covering 1 to 10 days or a month, as well as an analysis of historical data for a week, 10 days, or a month in the past, which is collected by National Meteorological and Hydrological Services (NMHS) volunteers and volunteer observers (such as schools, farmer groups, agricultural research institutions etc. who have weather recording equipment like rain gauges and thermometers). These updates inform operational decisions like time for weeding, applying fertilizer, when to trigger DRR actions such as moving irrigation equipment from near riverbanks. Mid-season updates also enable users to adjust their decisions and choices depending on how the season is progressing.

- Short-range forecasts: A weather update covering 3 hours to about 3 days.
- Medium-range forecasts: A weather update covering 3 days to about 10 days
- Medium-range forecasts: A weather update covering one to about two weeks
- Monthly outlook: A weather update covering a month.[1]. Kenya

Sample links to NHMS websites for the discussed forecast updates

1. Kenya http://www.meteo.go.ke
2. Zambia http://www.zmd.gov.zm
3. Ghana http://www.meteo.gov.gh/website

7.5 How to communicate seasonal climate advisories

I. PLANNING, DEVELOPING AND IMPLEMENTING A COMMUNICATION PLAN

Facilitators present the communication plan developed in Step 2 in plenary. It should include details of what informed the development of the plan – e.g. discussions with various actors in Step 2. Ask participants to add to the plan based on their knowledge of the local area – e.g. on widely used communication channels as well as those that are preferred by specific actors, taking into consideration:

a) Agree on the audience of the advisories

This refers to the users of the advisories developed and how the information be communicated. Outline the different user groups that will need the advisories. Identify who is able to reach all livelihood groups, genders, and vulnerable stakeholders and how they will ensure that all the groups identified get the information.

b) Decide the content of information to be communicated

This refers to the information that will accompany the advisories during the communication to the different audiences to enable them to make informed decisions. The facilitator of this session should also be able to suggest ways of communicating uncertainty in the information to the plenary. In addition to the advisories the seasonal forecast and its probabilities, on-set and cessation dates, and the geographical area of forecast coverage are critical pieces of information (see figures 27a and 27b)

To note: Advisories for all scenarios, rather than from only one scenario should be communicated. Communication of advisories from only one scenario affects the reliability of the information when reality is different.

At this point, facilitators should remind participants of forecast updates from KMD. There can also be discussion with KMD on how and when they can communicate the updates to inform operational decision making and planning. Consider:

- What is the knowledge of climate change at local, national, regional and international levels?
- What are the perceptions invoked by climate change at local, national, regional and international levels?
- What is the integrity, legitimacy, source and content of knowledge of climate change?
- What is the role and capacity of stakeholders at various levels, including local, national, regional and international community levels to comprehend and manage climate change?

c) Select communication channels and responsibilities for reaching different audiences (see table 12)

In plenary, the participants should discuss on how to ensure maximum reach to all audiences. Additionally, the facilitators should ensure that the channels identified are effective and the communicators understand how to communicate the information. The discussion should be guided by the following questions

- Which channels of communication are already existing and established in the area?
- Which stakeholder has access to which channels, what are the preferred channels, and which are the most effective in reaching a diverse group of users (based on the information from Step 1)? Who among them will communicate the information and where (e.g. face-to-face forums like 'barazas', churches, mosques, farmer field days, targeted meetings etc.), and at what geographical reach – county, sub-county and lower level?
- In what form will the information be communicated and how can the communicator use a combination of audio, visual (including text and pictures) and face-to-face communication and for which target of audiences?
- In the case of written communication, what type will it be (e.g. a brochure, a presentation, a summary document), who will package the content and where will it be made accessible (e.g. display at strategic sites such as chief's office, county halls etc.)?
- How best to utilise technology such as mobile phones or email as communication channels and who will be the focal person for this?
- How best to involve radio (and maybe television) journalists so that communication is done by stakeholders who were present at the workshop, rather than it just being a script that is read out?
- What are other communications channels that can be used to reach a wider audience? During this discussion, consider the preferred communication channels that were brought up by different actors during user engagement (Step 1).
- What are the costs involved in using the identified communication channels? This is not only the cost incurred by the communicator, but also that faced by the audience such as taking time (away from other activities) to listen to the information.
- Which channels can climate information be clearly communicated through so that it is well understood by different actors and results in a higher proportion of actors using the information?

Case Study 12

DEVELOPING A PLAN FOR COMMUNICATING ADVISORIES IN HOMA BAY COUNTY

Located in South Western Kenya, Homa Bay County is heavily dependent on fish, sorghum and poultry for subsistence food and income. However, with the rainfall patterns in the county becoming adversely unpredictable and increased frequency of droughts and floods, rain-fed agricultural production has become constrained. In an effort to help communities in Homa Bay prepare and position themselves well for the coming season, 60 participants in a PSP workshop held at Homa Bay ATC from 8th to 9th of April 2014, developed a plan to communicate advisories developed ahead of the March to May 2014 seasonal rains.

Content of advisories

The participants were in agreement that information on the start and end of the rains, seasonal climatic probabilities, rainfall distribution, rainfall intensity and advisories were to be communicated to the communities well in advance of the season. Earlier, a consensus forecast developed by the workshop participants indicated that there was an 80% probability that the seasonal rains were likely to be normal to above normal with a 20% possibility of below normal rainfall. The season was likely to begin from the third week of March and end in June, with the heaviest rainfall likely to occur in April.

Planning for communication of advisories

Covering an area of 4,267Km2 and a population of 1, 038,859 persons, participants at the PSP workshop agreed that there was a need for innovative channels of communication so as that advisories developed reach as many stakeholders and actors as possible, particularly the most vulnerable. A communications plan (see Table 12) was developed, with consideration of stakeholders involved and key communication channels.

Table 12. Advisory communication plan developed during PSP workshop for Homa Bay County

STAKEHOLDER	AGREED CHANNEL FOR COMMUNICATION	RESOURCES	TARGET	SUB-COUNTIES
C-MAD	Public baraza, Field visits Neighbours	Staffs Vehicles	Producers - 200 Input suppliers - 10 Marketers - 50	In Homa Bay and Ndhiwa subcounties
Plan International	Brochure dissemination, Baraza	Stationery Staff to help in dissemination	Youth - 200 Older persons above 65 years - 50 Traders - 50	Homa Bay, Rachuonyo North and South
Kenya Met Services	Radio programme	Staff but depend on resource from ASDSP	Natural resource users - 400 Producers - 5000	The whole county
ASDSP	Coordinate, convene and link dissemination, field follow up	Staff, vehicles, fuel, allowance	Link at least 15 small holders	In Homa Bay and Ndhiwa subcounties
Kenya seed	Brochure dissemination, field demos	Stationery, staff to help in dissemination	Agro-vets - 40 Producers - 100	Homa Bay, Rachuonyo North and South, Suba, Mbita
Radio Victoria		Staff but depend on resource from ASDSP	Natural resource users - 400 Producers - 5000	The whole county
Hand in hand		Staff	Producers - 400 Processors - 40	Homa Bay, Ndhiwa

The facilitator should emphasise the importance of critically analysing who is most appropriate to address the target audience during plenary. For example, if speaking to local communities, using local leaders who are trusted and well respected should be considered. The core group of messengers should provide a large pool of potential messengers from which to choose.

The core group should put into consideration who needs to be involved for communication to be effective? This entails reviewing the stakeholders communicating the information to find out if they have influence on users' trust and confidence in the information because this affects their use of the same. It means involving the right stakeholders or more specifically, involving intermediaries (see definition in Chapter 1,) who can properly communicate climate information for a PSP workshop or those who can facilitate effective communication. In addition, key people – in different government ministries and departments, organizations and institutions, should be identified and informed to be considered as contact people in case users need additional or more specific information beyond what is communicated.

d) Packaging and timelines for relaying the information

This discussion covers how the advisories and the accompanying information will be packaged. In plenary, the facilitator should guide a discussion to help the participants identify the most important information needed to ensure the advisories are effective. This starts with a presentation of an outline that was agreed upon when developing a communication plan (Step 1), followed by a discussion in which the facilitator guides the participants to improve the available outline through considering in plenary:

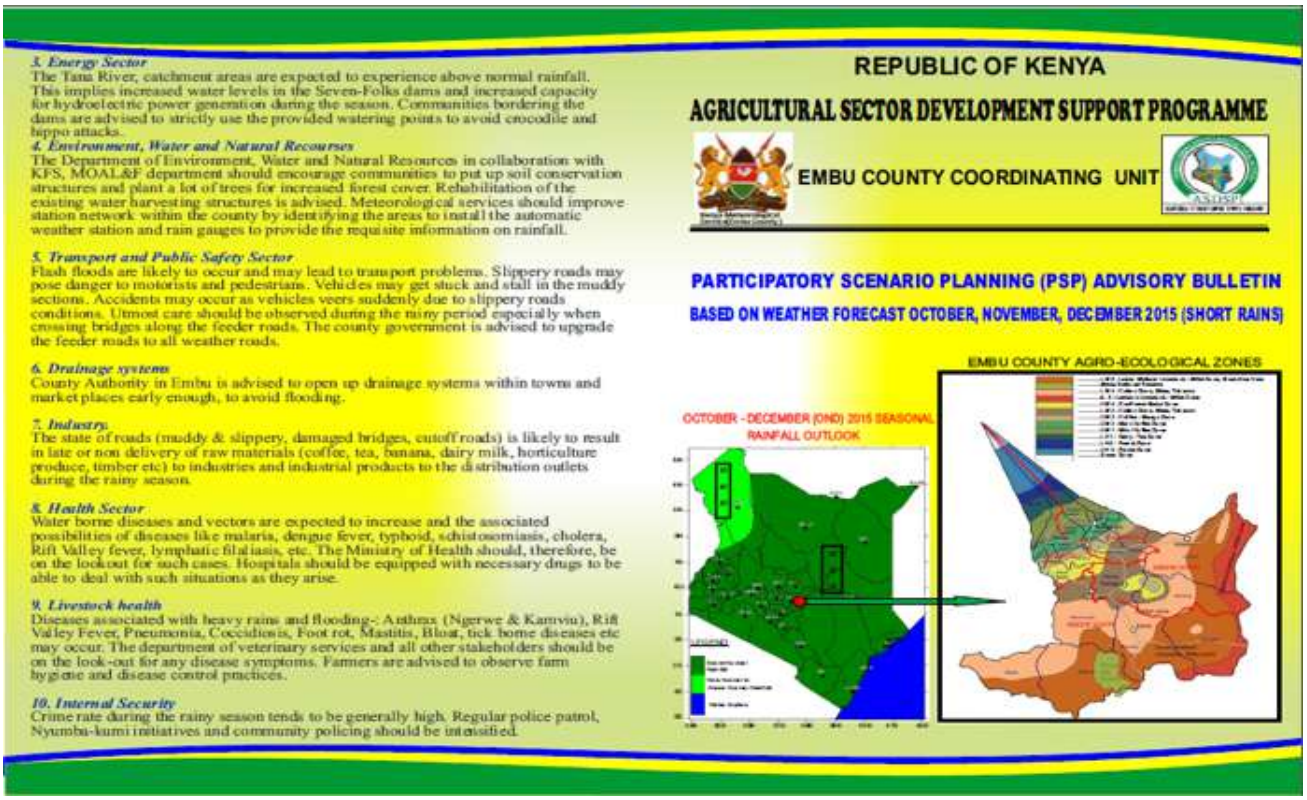
- Who the different audiences are and what their particular needs are – for example for different sectors, and for the literacy levels for the different audiences which may lead to consideration of use of infographics etc.
- Which is the best language to use that is well understood by the target groups. This may highlight the need to translate the information to different local languages and making use of local terms and phrases.

Also to be discussed, is when the climate information is to be communicated, as the timing of communicating the information is critical to making the right decisions and plans. The plenary should consider:

- What is the appropriate lead time needed by users before the start of the season for the information to be useful in their decision making and planning?
- At what time of day is it best to reach different users? This is related to the communication channel used e.g. radio broadcasts in the evening, rather than in the morning when actors are at work, so that many of them can listen in.

Kalian Gumah Sampoa/CARE Ghana, 2016

Figure 27. *Sample communication bulletin for seasonal climate outlook*



3. Energy Sector
The Tana River, catchment areas are expected to experience above normal rainfall. This implies increased water levels in the Seven-Folks dams and increased capacity for hydroelectric power generation during the season. Communities bordering the dams are advised to strictly use the provided watering points to avoid crocodile and hippo attacks.

4. Environment, Water and Natural Recourses
The Department of Environment, Water and Natural Resources in collaboration with KFS, MOAL&F department should encourage communities to put up soil conservation structures and plant a lot of trees for increased forest cover. Rehabilitation of the existing water harvesting structures is advised. Meteorological services should improve station network within the county by identifying the areas to install the automatic weather station and rain gauges to provide the requisite information on rainfall.

5. Transport and Public Safety Sector
Flash floods are likely to occur and may lead to transport problems. Slippery roads may pose danger to motorists and pedestrians. Vehicles may get stuck and stall in the muddy sections. Accidents may occur as vehicles veers suddenly due to slippery roads conditions. Utmost care should be observed during the rainy period especially when crossing bridges along the feeder roads. The county government is advised to upgrade the feeder roads to all weather roads.

6. Drainage systems
County Authority in Embu is advised to open up drainage systems within towns and market places early enough, to avoid flooding.

7. Industry
The state of roads (muddy & slippery, damaged bridges, cutoff roads) is likely to result in late or non delivery of raw materials (coffee, tea, banana, dairy milk, horticulture produce, timber etc) to industries and industrial products to the distribution outlets during the rainy season.

8. Health Sector
Water borne diseases and vectors are expected to increase and the associated possibilities of diseases like malaria, dengue fever, typhoid, schistosomiasis, cholera, Rift Valley Fever, Pneumonia, Coccidiosis, Foot rot, Mastitis, Bloat, tick borne diseases etc may occur. The department of veterinary services and all other stakeholders should be on the look-out for any disease symptoms. Farmers are advised to observe farm hygiene and disease control practices.

9. Livestock health
Diseases associated with heavy rains and flooding:- Anthrax (Ngerwe & Kamviu), Rift Valley Fever, Pneumonia, Coccidiosis, Foot rot, Mastitis, Bloat, tick borne diseases etc may occur. The department of veterinary services and all other stakeholders should be on the look-out for any disease symptoms. Farmers are advised to observe farm hygiene and disease control practices.

10. Internal Security
Crime rate during the rainy season tends to be generally high. Regular police patrol, Nyumba-kumi initiatives and community policing should be intensified.

REPUBLIC OF KENYA

AGRICULTURAL SECTOR DEVELOPMENT SUPPORT PROGRAMME

EMBU COUNTY COORDINATING UNIT

PARTICIPATORY SCENARIO PLANNING (PSP) ADVISORY BULLETIN

BASED ON WEATHER FORECAST OCTOBER, NOVEMBER, DECEMBER 2015 (SHORT RAINS)

EMBU COUNTY AGRO-ECOLOGICAL ZONES

OCTOBER - DECEMBER (OND) 2015 SEASONAL RAINFALL OUTLOOK

EMBU COUNTY WEATHER FORECAST HIGHLIGHTS

Embu County is likely to experience above –normal (enhanced) rainfall in the all areas ; Highlands, upper Middle altitude zones on the slopes of Mt. Kenya; Kyeni, Runyejes, Manyatta, Nembure areas, Mbeere North (Siakago, Kanja, Kianjokoma, Kanununo Ishiara, Kanyuambora) areas.Mbeere South, Makutano, kiritiri, Gachoka. Kamba, Makima, Kiambere.Kindaruma etc areas) during the "Short Rains" season.

The rainfall distribution, both in time and space, during the 2015 "Short Rains" Season is expected to be generally good.

EXPECTED ONSET AND CESSATION DATES

Embu County will experience its onsets in the first to second week of October. The rains is likely to extend into January 2016 in the Upper & middle areas (Manyatta & Runyenjes Sub Counties), while the rains in the lower part (Mbeere North & Mbeere South Sub counties) will cease during the third to fourth week of December.

EXPECTED HAZARDS

Expected hazards include, Flooding & water-logging in low lying areas, landslides, riverbank bursting and upsurge of pests & diseases.

ADVISORIES

1. Agriculture and Food Security Sectors

Farmers in the parts of the County should take advantage of the enhanced rainfall which has a good distribution to maximize crop yield through appropriate land-use management. Farmers need to be aware of prevalence of diseases due to high moisture levels, and are advised to work closely with Agriculture and Livestock officers to minimize losses.

Food security is expected to improve significantly during the season.

In the upper zones farmers are advised to plant the following varieties:-Maize (H614, H625, H626, H628, Pannar 691, H9401, KH600-14E), Beans (Rod Harricot/*Wairimu*). Yams, Bananas, Purple passion fruit, Irish potato and Macadamia..

Fodder crops /trees:- Napier grass (Kakamega 1&2, Bana grass) Rhodes grass, Calliandra, Leucaena, desmodium, Mulberry, Sweet potato vines, Beetroots.

In the middle zones farmers are advised to plant the following varieties:-maize (H500, H516, H515, H514, H513, Duma 43, DK 8031, Pioneer 3253, Simba 61, Western seed 505, KDV 4&6, etc), beans (Mac 16,34,64, mwende, mwitemania), Te banana, Mangoes, Yellow passion, Cassava (Ndolo, Mucericeri), Sweet potato-KSP 004 and vegetables.

Fodder crops/trees: - Napier - Kakamega 1&2, Bana grass, Rhodes, Calliandra, Leucaena, Mulberry, Desmodium, Luceme, Tithonia. Roots / tubers:-Musinya, x-Mukurweini, beet roots. Farmers are advised to conserve excess fodder.

Lower zone crops include:- maize (duma 43, DH01,DH02, DH04, KCB, KDV, DK 8031, PAN 4m19, WSC 403),Sorghum- Gadam, Millet(PM 1, 2,&3), Beans (mwitemania, gachanga, kat B1, Kat X56, Kat X69 &B9, mweni moja), cow peas (M66, K80 & KVU 27-1), green grams (N26, KS 20), pigeon peas(Npp) and dolicos 1002. Roots/Tubers – Cassava (Ndolo, Mucericeri), Sweet potato- KSP 004. Fruits- Mangoes,yellow sweet passion (KP 4, & 11), Citrus, guavas Pawpaws, Cotton and Vegetables.

Fodder crop/trees:- Boma Rhodes, Cenchrus cerialis, Eragrostis superba, bhajira, sudan grass, fodder sorghum, Desmodium, leucaena and mukau). Farmers are advised to conserve excess pasture & fodder.

Livestock farmers are advised to select good breeds that are most adaptable establish and conserve fodder. Restocking in the lower areas is advisable. Road runoffs can be redirected to farms, ponds and drainages. Insitu water harvesting technologies such as semi circular bands, negarims, contour bands etc. are encouraged.

Farmers are advised to harvest water ***Farmers are advised to conserve fodder***

Improvement of food storage e.g. use of metal silos, modern gunny bags & granaries. Fumigation and repair of grain storage facilities in readiness for excess production is advised. Adequate drying of the stored produce to guard against aflatoxin contamination should be observed. Adequate preparation to ensure proper drying of harvested produce is advised during the wet weather. Soiling of produce while drying should be avoided. Farmers are advised to monitor any sign of diseases and pests in crops & livestock and take appropriate action.

Farmers are advised to insure their crops and livestock with available insurance companies e.g. CIC, APA, UAP, AMACO & Financial institutions.

Formation & strengthening of marketing groups/ associations in readiness for collective marketing of the farm produce is also advised. For crops like tea, coffee and maize, split fertilizer application is advised to enhance nutrient uptake. For more information, farmers are requested to seek advice from the Ministry of agriculture, livestock and fisheries for best agronomic practices and animal husbandry for better results.

2. Disaster Management Sector

Problems related to floods, flash floods in the low lying areas and landslides and Mudslides in the hilly areas, are likely to occur. High water levels in rivers, Damage to infrastructures-bridges, roads, buildings, etc. People living near river banks and hilly areas should be on the lookout. Observe proper use of riparian zone and hilly areas. Pedestrians and motorists should be alert when crossing seasonal rivers.

II. COMMUNICATION CHANNELS

A key consideration when developing a communications plan is on the suitable communication channels that will ensure reaching all who need the information. For example, while local radio is an attractive choice of channel, think about the numbers of actors who listen to a particular radio station, who are the actors who listen to the station (e.g. more men than women, youth than old, farmers than livestock keepers?), at what time do most actors listen in? etc. Channels that also reach those who are not literate should be factored in. Combining a number of communication channels may be more effective than using only one channel e.g. radio to reach actors closer to an urban area and 'barazas' and other local gatherings to reach actors in more rural areas.

Social status, networks and available communication resources are all factors affecting communication of climate information. Before choosing or engaging with channels for communicating climate information in different contexts, it is necessary to understand the communication systems that already exist at local level and their respective barriers.

- Face-to-face communication such as barazas in Kenya, conducted in local languages is generally a preferred channel but even this needs adequate consideration. For example, the women may prefer that climate information be communicated at watering points or in the women's meetings while the men may prefer to get the information in religious gatherings and entertainment spots.
- Building on traditional communication channels such as local festivals and religious gatherings enables actors engaged in different livelihoods to gain access to climate information. For example use of the dagu system and chief kebele meetings in Ethiopia which are well established, trusted and fast channels of communication
- Incorporating communication into sectoral events and structures, e.g. farmers' field days and local EWS and DRR committee structures for example in Ethiopia, helps to integrate climate information into planning processes for different sectors.
- Communication meetings targeting groups of stakeholders – such as those in a particular value chain or larger input providers, traders and market agents – and larger institutional actors (such as county agencies) may be more efficient channels to reach all agricultural actors.
- Information communication technologies such as mobile phones and community radio should be fully-utilized for an even wider reach. Mobile phones allow for a real-time exchange of information between meteorological services, PSP facilitators and users, whilst enabling rapid release of alerts as part of early warning systems. Use of community radio allows climate information to be communicated in local languages and facilitates engagement through, for example, programmes that allow actors to call in and contribute to discussions, ask questions and share their needs. However, the effectiveness of radio dissemination may be challenged whereby users may not trust the information e.g. in a community in Kenya, users attributed their reluctance to apply the advisories to their lack of trust in the source of the information as the advisories on the radio are often followed by adverts by agro-input dealers thus linking the advisories to the dealers as a marketing strategy.

Young boy from Garissa, Northern Kenya tending to cows. CARE International/2013

Case Study 13

CLIMATE INFORMATION CENTRES: ENSURING EQUITABLE AND TRUSTWORTHY COMMUNICATION

Climate Information Centres (CICs) have been established in three districts in Northern Ghana through a joint initiative between ALP and Farm Radio International (FRI), in collaboration with local FM radio stations and the Ghana Meteorological Agency (GMET). CICs are aimed at enhancing smallholder farmers' equitable and credible access to climate forecasts, agro-meteorological advisories from PSP workshops, agricultural extension services, and an array of market information to support climate resilient livelihoods.

FRI trained local radio stations on how to develop short, informative and engaging programmes on climate information that are aired in local languages. Communities managing the CICs then record the programmes and replay them at strategic times when they know community members can listen to the information. To reach all audiences, loudspeakers are installed in strategic meeting places such as markets and village centres. CICs therefore provide a common platform that is accessible to all community members regardless of gender, age, literacy level or social status. This enables both inter- and intra-community discussion and communication of climate information in relation to local decision-making needs.

Checking the Climate Information Centre equipment in Tariganga. Nicola Ward/ALP, 2015.

In addition, CICs link broadcasts to mobile phones for call-in programmes to communicate weather and climate information from GMET and information from other service providers such as ESOKO (a private agro-climate services provider), the National Disaster Management Organisation (NDMO), and Ministry of Fisheries and Agriculture (MOFA) among others. This gives opportunity for climate information producers and intermediaries to address concerns of the users, while correcting any false impressions surrounding forecasts and advisories. Rainfall data collected from community managed rain gauges and local weather stations is also displayed on notice boards for communities to examine and discuss, including seasonal rainfall variations, patterns, distributions and intensities.

The process of involving communities and other actors in every step of information creation and communication has fostered user familiarity with, and confidence in, the resulting climate information and advisories. This engagement has helped to make CICs become a trusted climate information source in the districts where they are operated.

Adapted from 'Impact assessment on climate information services for community-based adaptation to climate change: Ghana country report' (Gbetibouo, Obuya, Mills, Snyman, Huyser, & Hill, 2017) and 'Climate Information Centres: Enhancing equitable access to climate information' (CARE International, 2017).

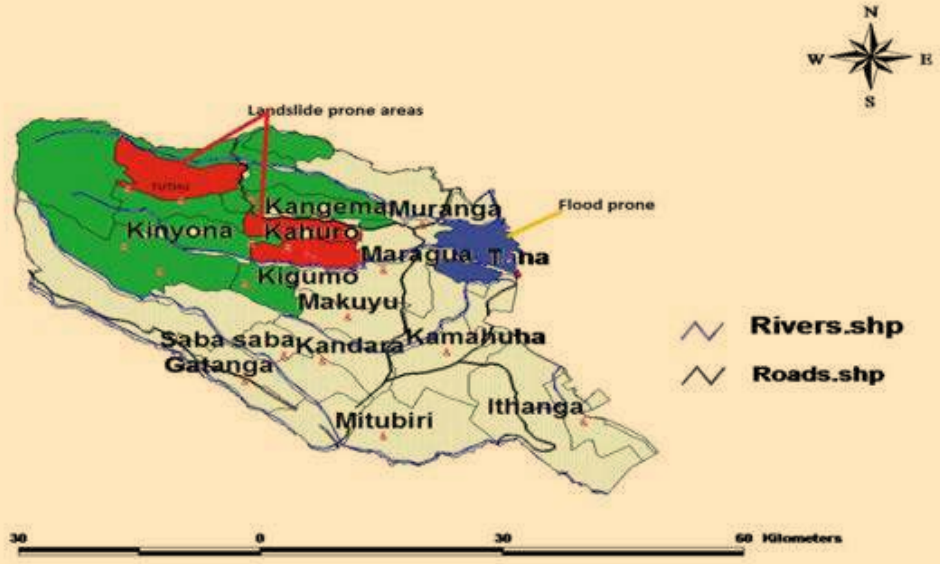
Case Study 14

COMMUNICATION WITH IMPACT - MURANG'A COUNTY

Murang'a County has eight subcounties. Each subcounty has at least four individual PSP trainers-of-trainers (ToT) drawn from agriculture, livestock, veterinary, irrigation or other sectors. These ToTs carry out extension services in the sub-counties. Once the seasonal climate forecasts are released by the KMD, they are shared at the sub-county level to the ToTs. Under the leadership of the subcounty agricultural officer, ToTs host a one day workshop of approx. 10 stakeholders in their respective subcounties. During this workshop, plans and advisories

are developed for the ensuing rainy season. As soon as the advisories are generated, they are sent to the County Coordinator (CC) of the ASDSP. The ASDSP then, together with the County Natural Resource Management Working Group organises two workshops, one for the lower dry parts and one for the upper parts of the county. This process is to ensure a thorough review of the produced sub-county level plans and advisories.

Figure 28. *Areas prone to landslides, mudslides and floods in Murang'a County*



Once the advisories have been finalised and released, they are then sent to the County Commissioners office and the Ministry of Agriculture. The advisories and seasonal forecasts are then shared through the administrative network to all the subsector heads down to the extension officers in the Department of Agriculture and further to sub-county administrators as well as all chiefs. Advisory dissemination to the users is led by the chiefs and extension officers, and is done through field days, barazas, church gatherings and agricultural forums. For the OND 2015 rain season, more than 12,000 farmers received advisories.

Additionally, under the leadership of the Director of Meteorology for Murang'a County, Kangema Rannet FM Station 106.5Mhz organised special programmes on air specifically to disseminate the advisories. During OND 2015, 23,000 farmers were reached through these broadcasted programmes.

The radio station now runs a continuous programme that deals with climate issues, called 'Kinya kia riera na imera', which broadcasts every Tuesday from 7 to 8pm. In addition, the KMD office has also been sending out short weekly weather forecasts via emails and SMS's as well as disaster preparedness reports. There are currently 54 primary recipients who comprise mostly of county and sub-county officers, sector ministries, actors in the value chains and service providers. ASDSP and KMD also worked together with NGOs in the dissemination of advisories through church gatherings and community groups

Adapted from 'Impact assessment on climate information services for community-based adaptation to climate change: Kenya country report' (Gbetibouo, Obuya, Mills, Snyman, Huyser, & Hill, 2017)

CHAPTER 8

STEP 5
Monitoring, feedback and learning

8.1 Purpose

To keep track of the results, impacts and outcomes of the PSP process on livelihood, development decisions, plans and actions and generate learning to inform revisions of the process. To enable Meteorological and other sector services to know who is using which information in which ways and what new information needs are emerging as a result.

8.2 Expected Outcomes

- Continuous feedback into the PSP process in response to new and changing climate information needs and demands at various stages of the process to increase the value of use of climate information and enable innovation in climate services provision and new climate product development by meteorological services responding to new needs.
- Generating evidence on the value of using climate information and the PSP process to promote its integration/ mainstreaming in planning processes, so that there is scaling and collaborative investment in user responsive climate information services.
- Continuous two-way communication and feedback between producers and users of climate information. Making it more tailored for use in particular contexts, while providing feedback loops to inform actors and functions across the chain
- Shared learning - cross-sectorial, cross-institutional and cross-organizational – in order to build climate smart institutions. Learning that is reflective, participatory, iterative, and flexible to respond to the situation's context and demands

8.3 Duration

As a key step in improving the PSP process, monitoring, feedback and learning take place throughout each step of the PSP process – from the initial design step to the communication of advisories. This way feedback and learning is also incorporated as soon as possible.

8.4 Budget

To ensure effective and quality PSP monitoring and evaluation, set aside adequate financial resources right from the start when planning for the PSP process (Step 1: Initiating and designing the PSP process). Consider the required financial resources for PSP M&E within the overall costs of delivering the PSP objectives, and not as additional costs, to reduce the risk of running out of resources for M&E.

Key issues considered in costing PSP monitoring and evaluation include:

- The duration and scope of M&E – this is drawn from the M&E plan (see details in section 4.4.3)
- Monitoring methods and systems - this includes those already existing and functioning
- Requirements for consultations with stakeholders
- Availability and accessibility of primary and secondary information
- The need for evaluation consultants and expert advisory members
- Travel requirements and supplies needed
- Communication costs
- Publication and dissemination of M&E results

Total costs to be incurred during the M&E process is context specific, depending on realities in each area of implementation. It is important that partners consider the resources needed for PSP M&E and agree on a practical arrangement to finance the associated activities. Such arrangements should be documented at the beginning of the PSP process to enable partners to transfer necessary funds in accordance with their institutional procedures.

8.5 Feedback and learning of the PSP process

8.5.1 Key Concepts

Though presented as Step 5, monitoring, learning, evaluation (MEL) and feedback is embedded in the other four steps, and is important to bring this out explicitly throughout the PSP process so as to avoid it being assumed, forgotten or become an afterthought. Feedback from all actors involved in all steps of PSP, and particularly feedback from users of seasonal forecasts serves several important purposes, for example:

- Feedback to inform iterative learning through learning loops, design and delivery of relevant climate services
- Generate evidence of value and benefit of climate services – e.g. impacts on building adaptive capacity, increased yield etc.
- Integrate feedback in existing monitoring systems

Climate change adaptation and climate resilient development requires a faster, more fluid path from research to application, from science to humanitarian and development use, and from data to decisions (GFCS, 2014). Creating feedback loops is an essential component for continued development and provision of innovative climate information services that meet evolving user needs in a changing climate. In this recognition, feedback needs to go beyond assessing the impact of climate and how climate information was used to learning through:

a) users having better knowledge of available climate information as technologies and science progress, how to use climate information in decision making as well as the value, benefits and costs of inaction from using the information;
b) NMHS getting guidance on the areas of greatest need for new and improved climate information products and services to meet diverse and changing needs; and
c) Having a common understanding of what is needed to improve service development, delivery and use and an ongoing system to support continued communication among concerned actors.

Effort is being made to obtain feedback from users through NMHS, agricultural research and extension services, Disaster Risk Reduction (DRR) and adaptation projects/ programmes, but where feedback is sought, the process is not regular or systematic. The User Interface Platform (UIP) under GFCS provides a framework for developing systemic feedback and learning on climate information services. These systems need to be defined, established and institutionalised, which requires knowledge of the actors involved and identification and engagement of appropriate institutions/ organisations with the right skill-sets. The ability to take advantage of appropriate policy windows will be key in expanding the role of the various actors to support feedback and learning on climate information services.

8.5.2 How to Develop an M&E framework

I. DEVELOP AN M&E FRAMEWORK THAT WILL DESCRIBE THE:

- Purpose and principles that will guide M&E of the PSP process
- Outcomes of M&E of the PSP process (related to relevance, efficiency, effectiveness, impact and sustainability)

As part of the framework, develop an M&E system which will link information obtained from the various monitoring activities. While M&E of climate information and processes may be new, some of the M&E outputs and indicators may not be entirely new. The M&E team should therefore explore the use of existing and available M&E systems in government, different organizations as well as records kept by local actors (see examples in useful resources for M&E). A combination of parts of existing systems will enable the development of an efficient and cost-effective way of monitoring and evaluating the PSP process. Adapt the existing systems to suit the context and add in new methods and tools to suit the

M&E indicators, outputs and outcomes. For example, use of the Dagu system in Ethiopia which is an already functioning communication channel and the NDMA in Kenya which conducts monthly monitoring in different counties.

To manage feedback, learning and generate evidence for improvement of the process, the M&E plan is divided into four sections to enable coordination and detailing out of the needed indicators and activities in the different timescales.

- Before PSP workshop
- During PSP workshop
- After PSP workshop
- PSP evaluation and learning

II. BEFORE PSP WORKSHOP: PSP REVIEW AND REFLECTION MEETINGS

This timescale covers step 1 and 2 of the PSP process and is guided by principle 1 and 2 for those doing PSP for the first time (see chapter 3 for principles). After PSP has been adopted in an area, it is implemented on a regular basis, it is important to take time to review and reflect on the PSP process. This is in recognition that PSP is an iterative learning process for all stakeholders, taking into account the differences in climate from one season to another, the changes in stakeholders' capacity to generate, access and use climate information, and the dynamic nature of climate risks, livelihoods and broader development.

PSP review and reflection meetings provide an opportunity for partners to sit together and critically assess PSP implementation on a regular basis. This will clarify:

- collective assessment of the progress in implementing PSP in the local area
- successes and challenges experienced and lessons learned by the different partners
- changes that have been made to the process during implementation, with reasons for the changes
- adjustments needed to make PSP more relevant locally (e.g. revisiting context and stakeholder analysis, bringing more partners on board, revising of partner roles and responsibilities, etc.)
- emerging opportunities for PSP, especially related to the sustainability of implementing the approach in the area (see discussion on sustainability).

Information from the PSP reflection and review meeting informs the quality of the PSP process as implemented in different contexts, to ensure that the integrity of the process is not lost during adoption and replication. The information is then used for improving the PSP process in the following season, recognising that PSP is an iterative learning process that takes into consideration broader changes and dynamics in different contexts, but at the same time ensuring achievement of PSP purpose and objectives.

HOW TO CONDUCT PSP REVIEW AND REFLECTION MEETINGS

a) The lead facilitating partner – agreed during discussion on partner roles and responsibilities – sends invitations to the PSP review and reflection meeting. Participants at the meeting are partners implementing PSP in the local area, but also may include those implementing PSP in neighbouring areas or areas with similar contexts so as to share learning from different experiences to enrich the local process. The meeting should be scheduled well in advance of the next season (see Figure 15 on PSP road map) and may take one to two days.

b) With the support of other partners, the lead facilitating partner develops an agenda for the meeting. Focus the meeting discussions to answer questions such as:

- What were the differences between PSP plans and what actually happened, and why the differences? Consider the local area covered, stakeholders involved and how the PSP process was conducted.

- What worked well when facilitating the different steps of the PSP process, what did not work well and why?
- What unexpected things happened and what was the impact?
- What are different stakeholders doing differently because of PSP?
- What are the results and benefits of PSP, and for whom? Is there convincing evidence to support those results and benefits?
- What are some of the recommendations for improving the PSP process in the local area?
- What are partners learning from discussions on the above questions to inform decisions on what needs to be done differently to ensure PSP is more effective in the coming season?

c) Partners prepare the necessary inputs for the meeting; this includes findings from PSP feedback, monitoring and evaluation reports (Step 5), and actor recommendations from PSP workshops (Step 3) and communications (Step 4).

d) Agree on who will facilitate discussions at the meeting. Use participatory facilitation methods to encourage sharing of experiences by all those in attendance and to have meaningful discussions and outcomes.

e) Based on discussions and outcomes from the meeting, develop a revised plan for implementing the entire PSP process in the coming season, with agreement on:

- the local area covered by PSP and stakeholders involved, taking into account emerging opportunities for sustainability of PSP in the area, such as through 'new' stakeholders interested in supporting PSP, upcoming or ongoing projects in the area, policy and planning processes, etc.
- partner roles and responsibilities.
- activities for all the steps in the PSP process, with clear timelines.
- PSP budget and financing contributions.

III. DURING PSP WORKSHOP

Also conducted by the core group, this timescale covers step 3 and 4 of the PSP process (See chapters 6 and 7) and is guided by principle 3, 4, 5 and 6 for those doing PSP (see chapter 3 for principles). This should include evaluation of:

- Active participation of all participants.
- Inclusiveness of all available knowledge to inform advisory development

The findings from this section that are not in line with the guiding principles should be rectified e.g. if some participants are not contributing to the discussions, the organisers should find a way to have their voices heard.

IV. AFTER PSP WORKSHOP

Guided by the core group this part of M&E covers the whole duration of the season, from advisory communication to end of season during which it is important to include the community (see PMERL (2014)) on community involvement in M&E. The timescale covers step 4 and 5 of the PSP process (See chapters 8) and is guided by principle 7 for those doing PSP (see chapter 3 for principles). This should include monitoring and recording of:

- Number of people reached – men and women
- Communicated advisories are understood
- Challenges experienced in communication and use of information
- Use and impact of communicated advisories for the different targeted users
- Mechanisms for monitored information to feedback to all stakeholders through future PSPs and the meteorological services

8.5.3 PSP evaluation and learning

Evaluation of the PSP process enables stakeholders to get feedback on, and learn from, what they are doing and how they are doing it. This is done through impact studies that focus on relevance, efficiency, effectiveness, impact and sustainability of the process while reviewing seasonal M&E reports to evaluate changes from the first PSP season to the current season. The evaluation should also review PSP capacity and quality delivery to ensure the continued integrity of the process.

I. RELEVANCE

It assesses the extent to which the PSP process is suited to the priorities, needs and demands of the local stakeholders. It is useful to consider the following questions:

- To what extent are the objectives of the PSP process still valid?
- Are the activities and outputs of the PSP process consistent with the overall purpose and the attainment of its objectives?
- Are the activities and outputs of the PSP process consistent with the intended impacts and effects?

This enables revision of the process to meet the changing needs and demands for climate information, taking into account changes in:

- Capacity to access, communicate and use climate information as actors continue to engage with the PSP process;
- Meteorological services capacity to generate and communicate more relevant information, and improvements in climate science;
- Risks, vulnerabilities, capacities and opportunities as the climate continues to vary and change;
- Livelihoods, environments and agricultural development pathways in the context of climate change and wider social and economic changes

II. EFFECTIVENESS

This measures the extent to which the PSP process attains its objectives. In evaluating the effectiveness of the PSP process, it is useful to consider the following questions:

- To what extent were the PSP objectives achieved / are likely to be achieved?
- What were the major factors influencing the achievement or non-achievement of the objectives?

Evaluating effectiveness of the PSP process encourages reflection, learning and improvement of the process so as to reach desired outcomes. For example, evaluation results may point to the need to involve new stakeholders, redefinition of actors' roles and responsibilities, or learning by meteorological services on how to better package and present climate information etc.

III. EFFICIENCY

This measures the outputs – qualitative and quantitative – of the PSP process in relation to the inputs. It is an economic term which seeks to asses if the process uses the least costly resources possible in order to achieve the desired results.

This generally requires comparing alternative approaches that could have been taken in conducting the PSP process to achieve the same outputs, to see whether the most efficient process has been used. Useful questions to consider when evaluating the efficiency of the PSP process include:

- Were activities in the different PSP steps cost-efficient? Thinking of costs in the broader sense including human, financial, time and other resources.
- Were PSP objectives achieved on time?
- Was the PSP process implemented in the most efficient way compared to alternatives?

Results from evaluating efficiency of the PSP process can generate evidence for leveraging more investment in climate information services by local actors (in terms of their time and resources) and through budgets assigned for the process at different government levels. The results could be used to inform planning and policy for replication and up-scaling.

IV. IMPACT

The objective here is to evaluate the positive and negative changes that come about directly or indirectly, intended or unintended due to the PSP process and resultant climate information. This involves getting feedback on the main impacts and effects resulting from the PSP process on the local social, economic, environmental and other development indicators. When evaluating the impact of the PSP process, it is useful to consider the following questions:

- What has happened as a result of the PSP process?
- What real difference has the PSP process made to the beneficiaries, how and why? Note that beneficiaries considered should include different groups, organizations, institutions and levels of governments.
- What changes in knowledge, attitudes and practices have occurred due to the PSP process?
- What are the changes in climate risk, adaptive capacity and organization capacity?
- What are the drivers of observed changes?
- Are there unintended impacts and effects?

Evaluation of impact generates evidence on the value of the PSP process and climate information, which can be used to leverage more support and investment. This can also provide evidence for adoption, replication, mainstreaming and scaling of the process and the use of climate information in agriculture and other climate sensitive sectors.

8.6 Who will do the monitoring

This is designed by the core PSP planning team which should be multi-sectoral and multi-disciplinary and include the community members. The multi-sectoral nature of the team will enable the linkage to existing early warning or DRR systems, vulnerability and food security monitoring, extension systems among other existing structures. The adequate number of persons is dependent on the size of the area covered. Agree on the stakeholders that need to be included on the M&E team right at the beginning of the PSP process. This is revised over time by the core PSP planning team to include new stakeholders or as needed (Step 1: Initiate and design the PSP process) considering the desired outcomes of the process. Participants (drawn from community representatives, project staff, other stakeholders – partners, government etc other stakeholders such as partners and donors who are interested in the process can also be represented. The M&E team should be trained to ensure that useful and needed information is collected, that the methods used enable learning with and from the target beneficiaries, as well as agree on a clear process for sharing the information generated. Methods used may differ from one sub-national area to another and can include questionnaires, focus group discussions, transect walks, key informants interviews or a combination as needed.

I. INDICATORS: WHAT WILL BE MONITORED TO DELIVER THE DECIDED OUTPUTS?

Decide and agree on indicators that will provide a simple yet reliable means of monitoring the agreed outputs and outcomes of PSP M&E. Anticipating the ideal results and impacts of the PSP process can help at arriving at the right indicators. The indicators should provide a means of capturing and verifying information at result to impact level from ward or lower levels through to national levels; for example:

- A result level indicator – which can also be an indicator for ward or lower level – can be the number of actors accessing the seasonal climate forecasts (monitored through e.g. who – male/female, type of agricultural activities they are engaged in etc.) and the number of actors reporting improvement in agricultural decision making as a result of climate information from PSP.
- A related impact level indicator – also serving as a county or higher-level indicator – can be changes in food security attributable to climate information communication (monitored through e.g. nutritional diversity, reduced malnutrition, number of meals per day, number of food scarce months in a year, reduction in agricultural losses due to climatic hazards such as floods and droughts etc.).

Where indicators exist in government, institutional and/or organizational M&E systems (see section 4.4.1), adopt and adapt them to the context and where they do not exist, the monitoring teams should agree on new indicators. Consider setting baselines for the chosen indicators and targets towards reaching the M&E outcomes and PSP objectives.

II. WHAT WILL BE THE M&E ACTIVITIES AND TIMINGS FOR THOSE ACTIVITIES?

Carry out some of the decided M&E activities as part of Steps 1 to 3; for example, discussions during user engagement in Step 1 (see Table 2) bring out some of the results and impacts that arose from the previous PSP workshop and the dissemination of advisories. M&E activities can also be a separate activity at Step 4 – happening before or after Steps 1 to 3 – seeking additional details that may not come out of the other steps. For example, impact assessments targeting generation of evidence on one or more of the key M&E focus areas (i.e. relevance, efficiency, effectiveness, impact and sustainability of the PSP process) and explicitly bringing out learning on the use of climate information and the PSP process.

III. EVALUATION AND REPORTING ON M&E OF THE PSP PROCESS

Agree among the M&E team:

- The process and timings for reporting monitoring results
- Who will evaluate the information collected and how it will be done?
- Structure of the M&E report and the level of detail needed, with a focus on areas such as:
  - An assessment of progress, performance, successes, challenges, impacts and results.
  - Consolidating learning for improving the PSP process as well as evidence for adoption, replication, mainstreaming and scaling.
- Who will write the report?
- What will be the process for review and approval of the report?
- Who is the target audience for the M&E report and how will the report be used?
- For example:
  - The NHMS to use in developing improved climate information products
  - The local government to enable support provision for the communities
  - The PSP core organising team to improve on lacking areas in the PSP process
- When, where and how will dissemination of the final report be done?
- Plan for periodic review of the M&E system and plan to keep improving it.

See sample report for monitoring, evaluation and feedback for Elgeyo Marakwet (Annex 6).

BOX 8
ASDSP M&E TEMPLATE

COUNTY M&E TOOL FOR PARTICIPATORY SCENARIO PLANNING

SEASON..... YEAR .....20...

1. ADVISORIES

a) Date when the PSP Workshop was held

b) Number of people who attended, specify men and women, which departments/ sectors, community groups did they represent and were the traditional forecasters present?

c) What can you report on the co-generation of the forecast?

d) Were there any challenges in understanding the seasonal forecast presented by KMD? Were there any information gaps related to meeting user information needs?

e) Were advisories developed?

f) Were the advisories translated into the local language?

g) Number of Information, Education and Communication (IEC) materials containing advisories printed

h) How was the printing firm procured?

2. DISEMMINATION

a) Media coverage –

Electronic media (radio and television) - (air time given, who paid for the broadcast, time of broadcast)

Print media (give name of paper, date and page of the news article, website or link to the news item if any)

b) Dissemination to sub counties

- Were sub seasonal updates disseminated?
- Who was involved in the dissemination?
- How many Barazas, gatherings were held in each sub county?
- What were the original target numbers?
- Estimated number of people reached through Barazas, religious gatherings and other networks?
- Estimated number of people reached through mass media?

3. IMPACTS

Have the value chain stakeholders started using the advisories?

- What information was the most appreciated?
- How was the information used?
- Reported number of people who have used the PSP advisories and what they have done with it. Include institutions and individuals who are using the PSP advisories and what they are doing with the information.
- What observable changes were noticed as a result of the advisories? Please provide as many examples as possible
- Was there any significant change in agricultural productivity of the county during the season?

Case Study 15

MONITORING, EVALUATION AND FEEDBACK ON ADVISORIES IN HOMA BAY COUNTY

Changes in seasonal rainfall patterns and more unpredictable, severe and frequent extreme events like floods and droughts are already being observed in Kanyada, Rachuonyo South, and Gwasi in Suba areas of Homa Bay County, threatening livelihoods and putting additional pressures on already vulnerable populations. With this is mind, the communication plan developed during the county's MAM 2014 PSP workshop included plans for getting feedback so as to monitor and evaluate (M&E) the extent of communication, use and impact of advisories on livelihoods in the county.

The feedback and M&E exercise was conducted by the ASDSP Homa Bay climate change and natural resource management thematic working group. Terms of reference for the exercise were developed detailing key questions for discussion. Records were taken during communication of advisories; field visits, questionnaire-led interviews with local actors and observation were the methods used in getting the required information. In each of the six sub-counties 10 respondents who had received advisories were purposely sampled to get their feedback and generate information that is relevant to questions under investigation. A further 20 respondents were randomly sampled in each sub-county so as to reduce bias in the complete set of information received.

Table 13. A selection of feedback and M&E questions

FEEDBACK AND M&E QUESTIONS
• What is the number or percentage of local actors who have benefited from advisories?
• Do you think the MAM seasonal forecast was usable? • Were the advisories well understood? • Do you think the advisories provided useful information for taking appropriate action?
• Was the content of advisories that were presented at barazas and in brochures and posters relevant and adequate for decision making and action?
• What other relevant information should be included in advisories for the coming short rains season? • What channels were used and which ones had the maximum reach? • What is the preferred language for communicating advisories in subsequent seasons?

To get a sense of differences between respondents (male and female, different actors in a value chain) and areas within Homa Bay County, ratings were assigned to get information on levels of:

- **Understanding the advisories; from no understanding = 0 to very good understanding = 4.**
- **Usefulness of the advisories communicated in making informed decisions; from not useful = 0 to very useful = 4.**
- **Impact of advisories based on understanding and usefulness for taking appropriate actions; from not useful = 0 to very useful = 4.**

Some of the results of the M&E exercise are presented in Figures 29-32. An example of cross analysis of these results shows that in five out of the six sub-counties, women were the majority of actors who found the early warning advisories useful for taking appropriate actions to manage floods. Further, producers of fish, poultry and sorghum appreciated advisories better than input suppliers, marketers and processers. Recommendations included:

- **Most of the information communicated in the advisories was based on production. Actors recommended that advisories should also consider information needs related to input, processing and trading.**
- **Development of advisories did not take in the point of view of all local actors involved in different livelihoods.**

- **Communication of the seasonal forecast and advisories was not timely.**
- **Some actors suggested that advisories needed to be simplified and if possible translated into Suba language.**

Benefits realized from the use of the MAM 2014 seasonal advisories include different actors being able to better anticipate when and how much rain was likely to fall so that they can plant their crops appropriately. Additionally, actors have brought out a number of factors that determine effective disaster risk response, which were not previously recognized within risk communication. Analysis results and recommendations drawn from the feedback and M&E exercise are useful for improving the design and facilitation of the next PSP process in Homa Bay County.

Figure 29. *Extent of MAM 2014 seasonal advisory reception to actors in Homa Bay County*

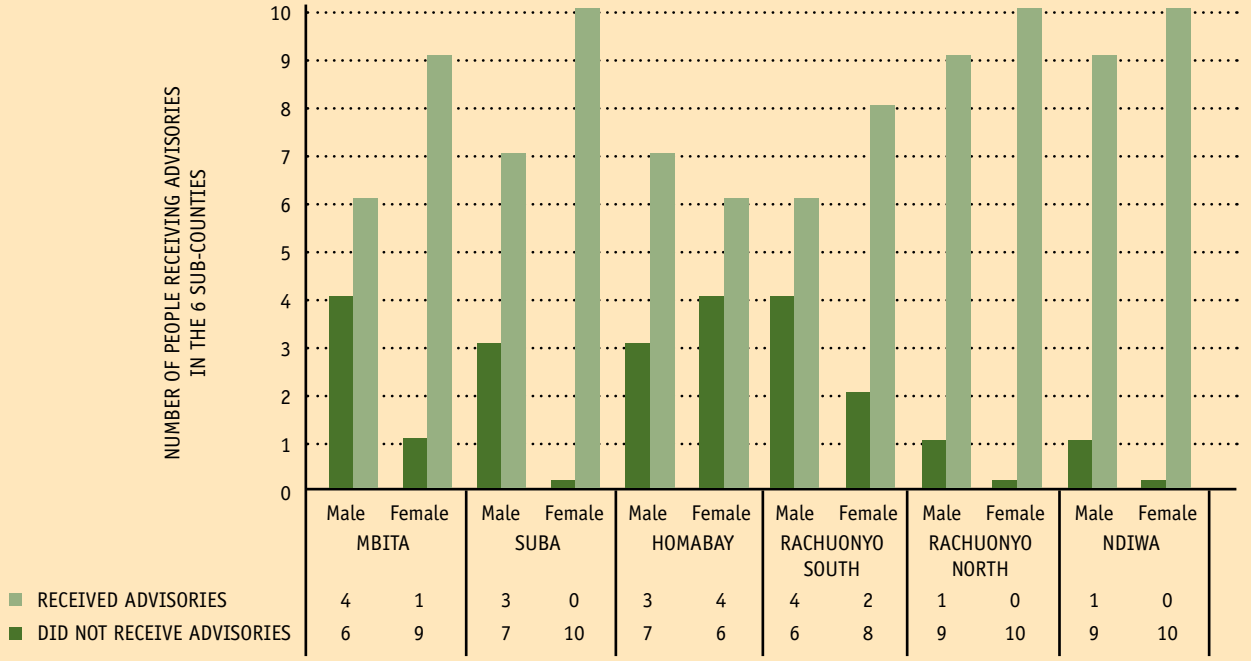


Figure 30: Level of usefulness of early warning system and advisories for taking appropriate risk management actions in Homa Bay County

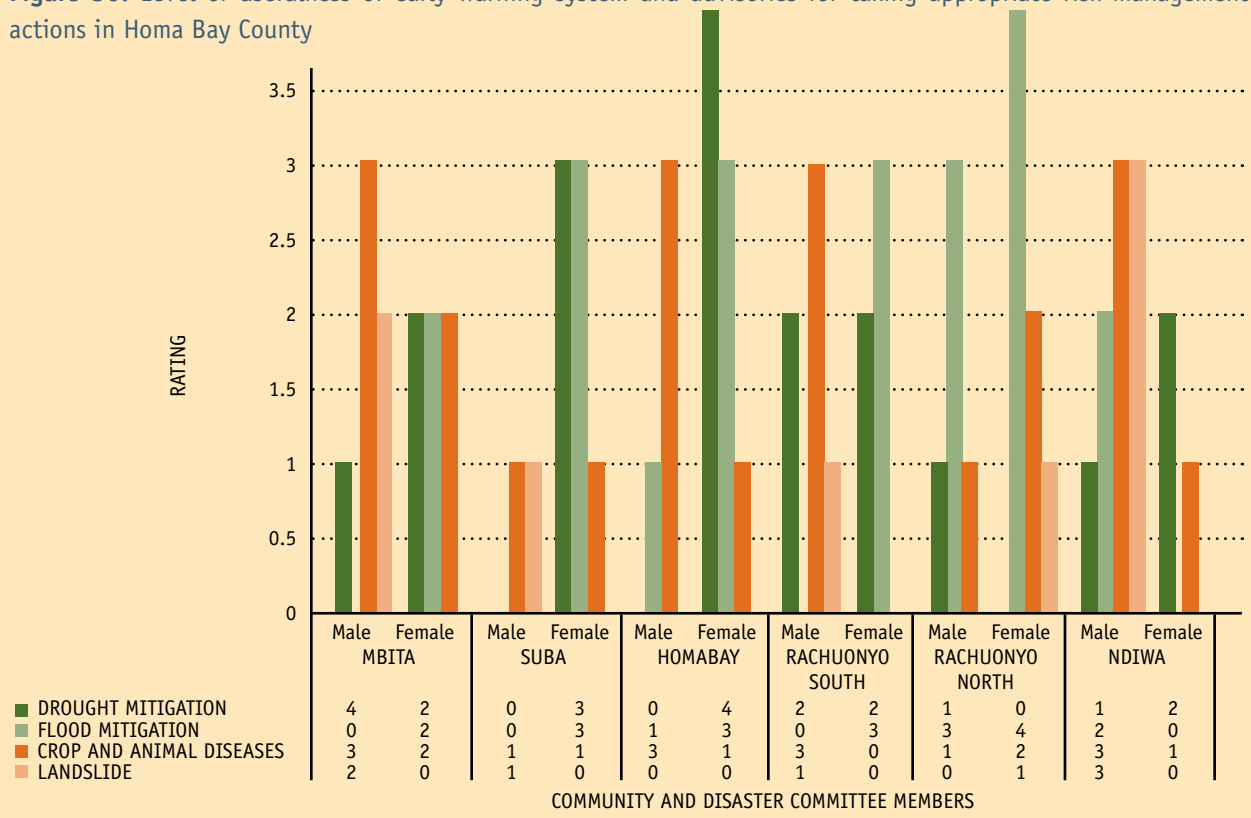


Figure 31. *Level of understanding of MAM 2014 seasonal advisories by poultry value chain actors in Homa Bay County*

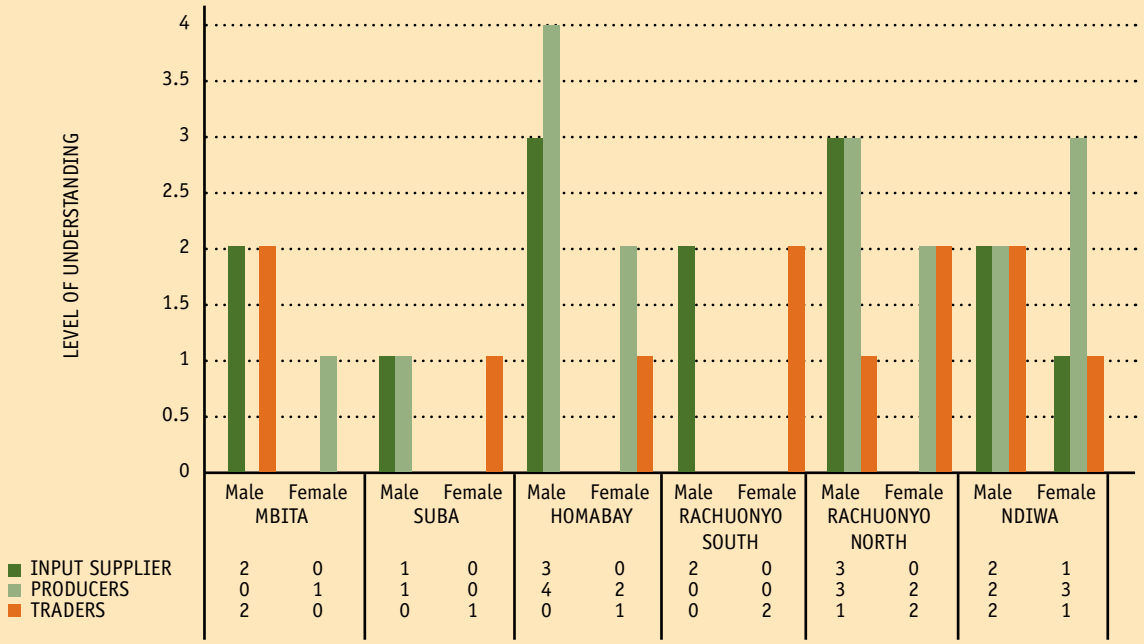
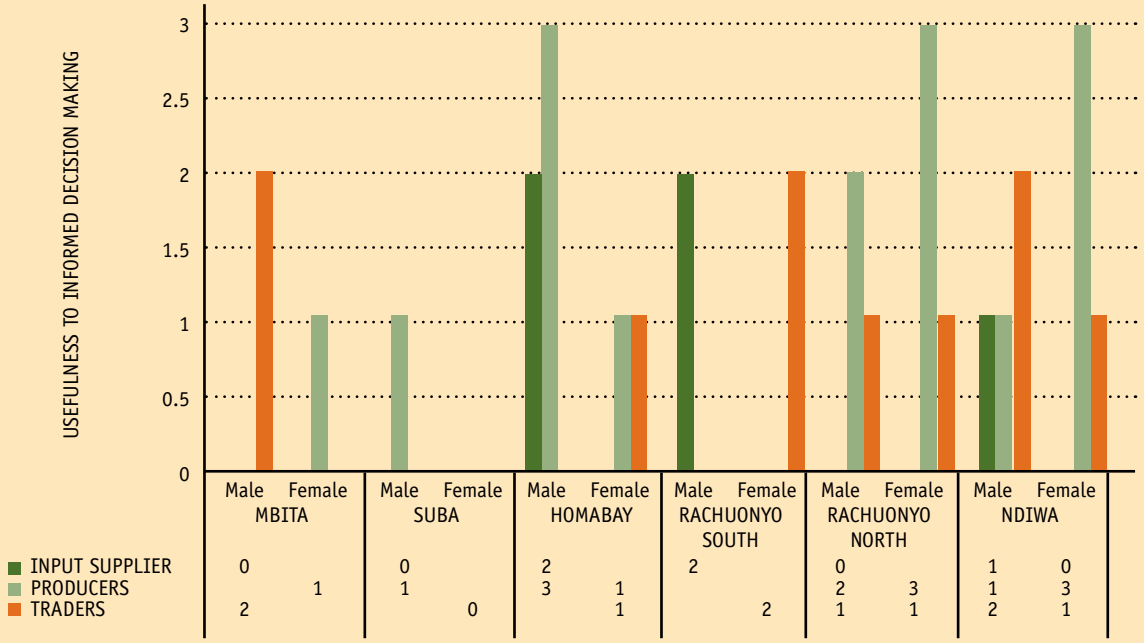


Figure 32. *Level of usefulness of MAM 2014 forecast and advisories for informed decisions amongst poultry value chain actors in Homa Bay County*



CHAPTER 9

The future of PSP

A fruit and vegetable market in Muranga County, Kenya. Credit: Francesco Fionalla/IRI

9.1 From access to use – enhancing agency and innovation

It is important to ensure equitable benefits from advisories (adaptation strategies) through support to implementation of different options presented in advisories, noting that the most vulnerable people are often poor and do not have the capacity for risk taking. As a focus group in Marafa in Niger put it, "everyone can adapt only as much as their means will allow" – implying that improved early warning alone, for example, does not automatically translate into adaptation or risk reduction strategies when people simply lack the means to do anything about the problem they see coming. Despite a number of pro-poor, low cost adaptation strategies introduced across different villages in the Department of Dakoro in Niger, Marafa's village leaders estimate that seven out of ten people do not have the means to adapt, and regularly have to resort to coping strategies that are more likely to erode than sustain their assets. (Otzelberger et al., 2014).

Thus, enabling users to effectively adopt and use advisories is a key concern. This can be done through building the capacity of communities to take action on advisories and capitalize on multi-stakeholder engagement to support action on advisories e.g. Department of Agriculture supplying seeds (using advisories for their planning), or community demanding certain seeds from the Department of Agriculture, taking loans to grow fodder to sell to neighbouring communities, or planning and prioritising options for the season (PICSA Participatory Integrated Climate Services for Agriculture (PICSA) approach to participatory budgeting developed by the University of Reading and supported by the Climate Change, Agriculture and Food Security programme (CCAFS)). Additionally, building the capacity of the communities to enable them to use short-term forecasts to inform operational activities e.g. activate EWS based on short term forecasts is essential to enable action on different advisories and forecast. Above all, participation at the PSP forum should be representative of all groups in the communities and their knowledge, needs and constraints should be heard, listened to and factored into the development of the advisories. Accompanying community engagement, for example to support innovation in farmer field schools, group savings and loans, or extension services and market access, helps to ensure climate information is turned into action.

Innovations within and beyond the PSP approach described in this guide are being developed. One example is from PSPs in Northern Ghana where information and discussions on crop water requirements are included as part of PSP forums and advisories. Researchers at the Savanna Agricultural Research Institute (SARI) in Tamale in Northern Ghana have been studying the crop water requirements for various seed varieties for a number of years. The crop water requirements for different crops are matched with rainfall expectations and predictions of dry spells for the season at the PSP forums, resulting in highly specific agriculture advisories. Also in Ghana, the Ministry of Food and Agriculture (MOFA) is working with Ghana Meteorological Agency (GMET) to communicate climate information and agricultural advisories to farmers, which has resulted in improvement of harvests compared to previous years in farms that directly received climate information from GMET. This has also built confidence in using forecasts from GMET and resulted in increasing demand for advisories from PSP to inform farming decisions.

However, improvements in packaging and dissemination of climate information is still needed. GMET collaborated with ALP Ghana to install rain gauges in six new communities and trained 12 new community monitors to manage the rain gauges aimed at building localised rainfall records in the district. The community monitors are also disseminating rainfall data and advisories to farmers and making it available to the Department of Agriculture for submission to GMET. Rain gauge monitors have developed pictorial graphs from rainfall data collected through links with the PICSA approach which supports farmer crop decision making. Community monitors in Nadowli-Kaleo District were trained in PICSA and efforts are being made to integrate PSP advisories into the information used in PICSA to augment historical data with seasonal forecasts.

9.2 Sustainability of PSP

Sustainability of the PSP process must be considered both when initiating PSP in a new area and when continuing to implement PSP from season to season. It is concerned with measuring whether the PSP process itself and its benefits are likely to continue beyond an initial phase. When evaluating the sustainability of the PSP process, it is useful to consider the following questions:

- Who will carry on the PSP process beyond the current project? What plans, policies, structures and funding are in place to support this? Has the project supported institutionalisation of PSP within mainstream planning systems?
- To what extent are the benefits of the PSP process likely to continue after the initial phase?
- What were the major factors influencing the achievement or non-achievement of sustainability of the PSP process?

Combined with evaluation of other key areas (relevance, effectiveness, efficiency and impact) evidence of sustainability prompts dialogue for support from other actors not already involved in the PSP process and putting in place mechanisms for the continuity of the PSP process beyond the initial phase.

Key issues to address in relation to sustainability are: local capacity and ownership of the PSP process, financing PSP, leadership and coordination of the process, and partners involved. These issues are discussed in the paragraphs that follow.

Creating capacity and ownership: The PSP process is designed to be driven by local stakeholders; therefore, it is essential to seek local partners and involve them from the start of the design process so as to create local ownership of the process. Building the capacity of partners to understand and use climate information, and the related uncertainty in decision making and planning, enables them to effectively engage in PSP, resulting in a wider audience who need to use the information and associated services. This will also build the capacity of local stakeholders to use climate information and draw benefits from it, as they continuously adapt to a variable and changing climate. In turn, large-scale improvement in capacity generates increasing demand for climate information services, emphasising the need for continued information sharing, interpretation of information to suit diverse and changing needs, collaboration and dialogue – all of which are promoted by PSP forums.

Sustainable finance for PSPs: Recognition of the importance of using climate information in planning for development encourages integration of PSP into local plans, as support for managing climate risks and opportunities. In Kenya, PSP has been integrated into Garissa County integrated development plans. Additionally, in 2017 the CIS plan in Wajir County set aside 2% of the county funds to climate information and recognises PSP as a key activity in realizing climate information access in the county (County Environmental Resilience and Social Inclusion Officers, 2017). In Northern Ghana, the approach has been included, and budgeted for, in medium-term development plans in two districts. Inclusion of PSP in development plans – and budgeting for it – is based on an appreciation of the approach as a tangible way of supporting continued adaptation at local level through refining county to community-level plans on a seasonal basis. As national meteorological services (NMS) are mandated to provide meteorological and climatologically services to different sectors, it is critical that they budget for climate communication and dialogue forums, such as PSP, which enable them to better fulfil their mandate at both national and sub-national levels. Government ministries and departments working in climate-sensitive sectors – such as agriculture, livestock, water, energy, disaster management, etc. – need to allocate a budget for climate information to better support adaptation and climate resilience in the sectors. Budgeting for PSP means that local governments, ministries and state departments will be positioned to actively follow up on implementation and reporting of the process. With recognition that localised climate information from PSP can improve the efficiency and impacts of their work, other non-governmental stakeholders – such as NGOs and the private sector – can be brought on board to support the PSP process. Non-governmental stakeholders can help in supporting and tracking the accountability of localised climate information services as is enabled by the PSP approach, thus contributing to wider climate governance. This emphasises the need for all these stakeholders to continually work together in delivering effective and sustainable climate information services.

Sustaining leadership and coordination: The effective engagement of different partners requires structures for coordinating and supporting the PSP process. In Garissa County, for example, a first step was made during the first PSP when participants at the workshop decided to form a taskforce composed of community members, officials from various government ministries and departments, and local NGOs. The taskforce – now known as the Garissa Climate Change Working Group (GCCWG) – coordinates PSP workshops and communication of information from the workshops to stakeholders in Garissa County (see case study 16). The GCCWG has linked up with other local initiatives, such as becoming part of the County Steering Group, which leads to better coordination between partners and strengthens the sustainability of the PSP process.

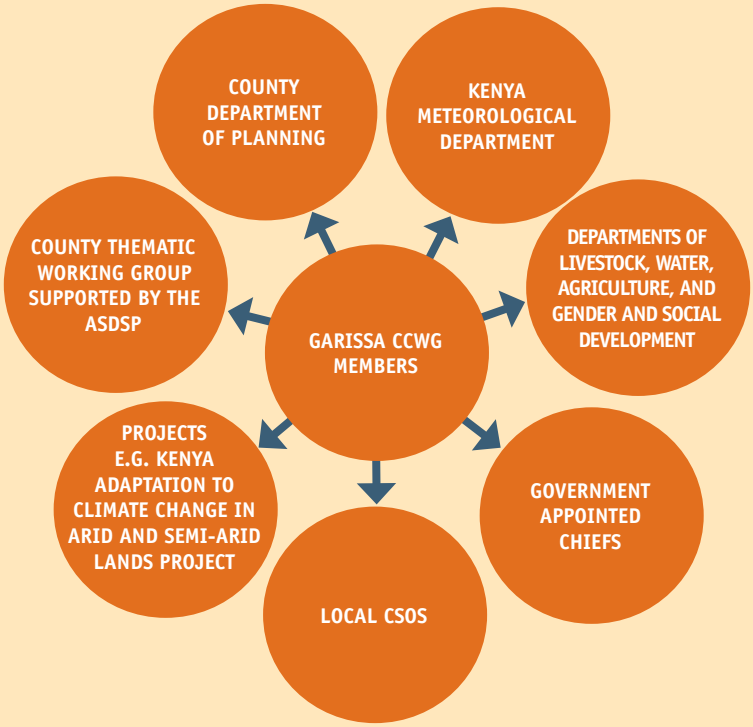
Case Study 16

GARISSA CLIMATE CHANGE WORKING GROUP: A COUNTY STRUCTURE ENSURING SUSTAINABILITY OF PSP

The Garissa Climate Change Working Group (Garissa CCWG) – initially known as Garissa Climate Change Taskforce – was formed in 2011 following the first PSP workshop organised by ALP, for the October to December rainfall season in Garissa County, Kenya. The idea came from government and civil society representatives present at the workshop, in response to the need for better multi-sector coordination to manage climate impacts. It was also a demonstration of immediate appreciation of PSP as a valuable approach for multi-stakeholder planning, using downscaled climate information.

The working group is composed of various government departments, local civil society organisations (CSOs) and projects in Garissa County (see Figure 16).

Figure 33. *Institutions and organisations that form the GCCWG*



Role and functions of the GCCWG

As a taskforce, the technical team took charge of implementing PSP through facilitating the workshops and ensuring effective communication of the interpreted climate information/advisories. Over time, it became clear to county stakeholders that this was a necessary structure. It therefore changed from a taskforce – which meant it would be operational for only a short time – to a working group with longer-term roles and functions. The GCCWG is now spearheading PSP in Garissa County in terms of planning and facilitating the

entire process. The working group is also convening regular meetings to discuss progress in implementing PSP and emerging opportunities for improving the approach to enable better management of challenges in the county as a result of extreme weather and climate.

One of the greatest advantages of GCCWG is that its members are also active members of various county committees involved in planning and budgeting, which provides the working group with recognition and participation in key planning and budgeting processes and activities in Garissa County. This has put the GCCWG in a strategic position to influence the inclusion of PSP in county development and risk management plans, strategy documents and work plans, and mobilising resources to support the sustainability of PSP implementation in the county.

GCCWG championing the integration of PSP in county plans

Integration of PSP into two important county development plans ensures budgetary allocation and continued support for PSP in the county; this is critical to sustainability of the approach.

Submission to the second Medium Term Plan (MTP): Considered as a key stakeholder dealing with climate change adaptation issues in Garissa County, the GCCWG contributed to the development of the second MTP of the Vision 2030 in the county, covering the period 2013-2017. The second MTP identifies key policy actions, reforms, programmes and projects that the Kenya government will implement in 2013-2017 period, in line with its priorities, with the Kenya 2010 constitution and with the long-term objective of Vision 2030, while paying full attention to securing the country's environment and building resilience to climate change. In that regard, the GCCWG submitted a memorandum to the Garissa County MTP secretariat in the Department of Economic Planning, emphasising the need for improving stakeholder access to localised climate information, through approaches such as PSP. This was aimed at improving use of climate information to inform:

- planning for, and allocation of, resources
- implementation of PSP as an adaptation approach that supports coordination, collaboration, information and knowledge exchange
- institutional responsiveness to prepare, plan for and respond to a wide range of climate impacts.

Garissa County Integrated Development Plan (CIDP): Along with other stakeholders, the GCCWG participated in development of Garissa CIDP. CIDPs provide a framework for development and investment initiatives in a county, and guide priority projects, programmes and plans in different sectors and sub-counties. It is prepared in line with the Medium-Term Plan. During identification of priority areas for the CIDP, access to and use of climate information was recognised as critical for planning for climate resilient livelihoods. The aim of including PSP in the Garissa CIDP was, therefore, to enable stakeholders in the county to have better access to services needed to respond to climate information – for example, farm inputs and technical support – and within the required timeframe. It would also provide the county with an integrated and coordinated planning system for supporting climate resilient livelihoods and development. Essentially, integration into CIDPs ensures continued support of the county government in implementing PSP.

Continuity of GCCWG through links with county coordination structures

Sustainability of the GCCWG itself is also key to supporting the sustainability of PSP in Garissa County. Recognising the capacity and expertise of the GCCWG, the Garissa County Steering Group (CSG) appointed the working group as the CSG's technical adviser on climate change and adaptation. The CSG – convened by the National Drought Management Authority and chaired by the County Commissioner – is a county coordination structure that facilitates information exchange and county-wide development planning, including the development of agreed actions to address emerging issues in drought management and food security; it also provides links to government bodies and other actors for implementation of actions. The recognition of

GCCWG by the CSG is an important step towards formalising the working group and making it a sustainable county structure. This enables the GCCWG to better coordinate stakeholders at county level in support of the collaboration and dialogue needed for climate information services to be more effective in meeting local needs, as provided by PSP. It also provides an avenue for the downscaled climate information from PSP to play a greater role in informing development of county contingency plans, assessment of emergencies and decision making for climate resilient development.

9.3 Scaling of PSP

PSP has now been adopted by national meteorological services, government departments and practitioners in various sectors as well as communities across more than six African countries and in South East Asia with its success being attributed to its multi-stakeholder approach to climate informed decision making. Through the inclusion of stakeholders including local government, community members, meteorological services and local NGOs, PSP forum discussions include different aspects of knowledge and generate advisories applicable at that local level. Additionally, participation of the local forecasters who provide indigenous knowledge ensure the inclusion of local knowledge and increase the trust and ownership of the consensus forecast by the community.

An impact assessment study on climate information services conducted to understand the enabling factors of the approach, revealed that PSP is simple and flexible and can be adapted to operate in a complex and evolving context and this has played a role in its widespread adoption. Another particular strength is the regular interaction, which supports continuous dialogue and local innovation for cross sectoral and cross level action, by 'talking about the weather'. Lastly, entering into operational partnership with government institutions which provides established governance structures for service provision strengthens the approach and promotes sustainability.

Case Study 17

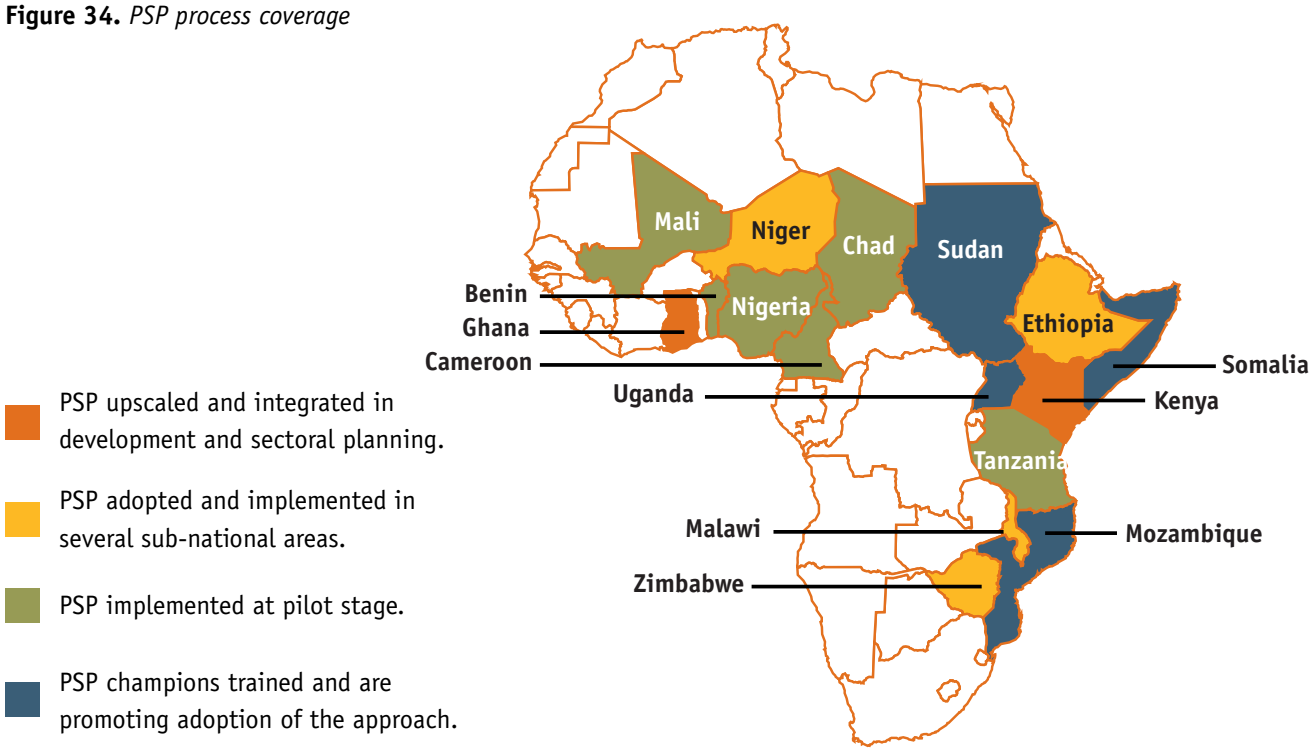
KENYAN PSP EXPERIENCE - ENABLING FACTORS FOR SCALING

In Kenya, meteorological services have been decentralised to county (sub-national) level and PSP has enhanced the role and capacity of County Directors of Meteorology to support climate resilient development. KMD nationally has adopted PSP as its core approach for downscaled seasonal forecast communication at county level and dubbed the forum 'County Climate Outlook' Forums. Counties are being supported to develop county climate services plans in which this forum is a key activity. At the same time, the Agriculture Sector Development Support Programme (ASDSP) in the Ministry of Agriculture, Livestock and Fisheries is operational in all the 47 counties in Kenya, and adopted PSP as an approach to strengthen the climate resilience of agricultural value chains. ASDSP has included PSP in its second phase 2017 to 2021. The two actors were therefore a strategic fit for collaboration in implementing PSP throughout Kenya. Through working with mainstream governance structures, PSP has contributed to transform existing services and relationships and supported the different institutions in fulfilling their mandates. Consequently, riding on mainstream governance structures has enabled the scaling of the PSP approach country wide.

Additionally, during an impact assessment on climate information services for community based adaptation to climate change it was noted that in the arid and semi-arid counties, the international and national NGOs helped deepen the PSP process. This was as a result of their long-term experience in dealing with issues of food security in areas prone to climate variability and their interaction with the communities. The success in this area can also be attributed to the NGO support in organising the workshop, technical input during the workshop, communication through their existing channels and also M&E. Additionally, the establishment of county-owned County Climate Change Working Groups e.g. the Garissa Climate Change Working Group that integrated the PSP process as part of its adaptation strategies, increases the sustainability and ownership by key stakeholders in the long-term.

Nationally, a PSP task force is planned with KMD, ASDSP, some county leaders and INGOs, to support sustainability into the future. The group aim to influence Kenya's next Medium-Term Plan to integrate PSP as a cross cutting flagship approach for counties to adopt. If this succeeds, financing of county PSPs will be better secured.

Figure 34. *PSP process coverage*



9.4 PSP link with climate information services

Climate information services prepare users for the weather they will actually experience. For the services to be effective in responding to diverse and changing user needs, engagement with different actors – both scientists and non-scientists – is essential. This engagement works best when it involves stakeholders from the most basic level (community or ward) to national, regional and international levels.

This chapter presents some key processes in Africa, at county to international levels, that PSP is linked to. It is in recognition that PSP is not an isolated process, but one that is already connected to on-going climate information services processes. Depending on the information that users at the local level want, PSP also presents opportunities to link to other upcoming process.

9.4.1 The Global Framework for Climate Services

One of the main outcomes of the third World Climate Conference was a decision to establish a Global Framework for Climate Services (GFCS). The main components of the Global Framework for Climate Services are:

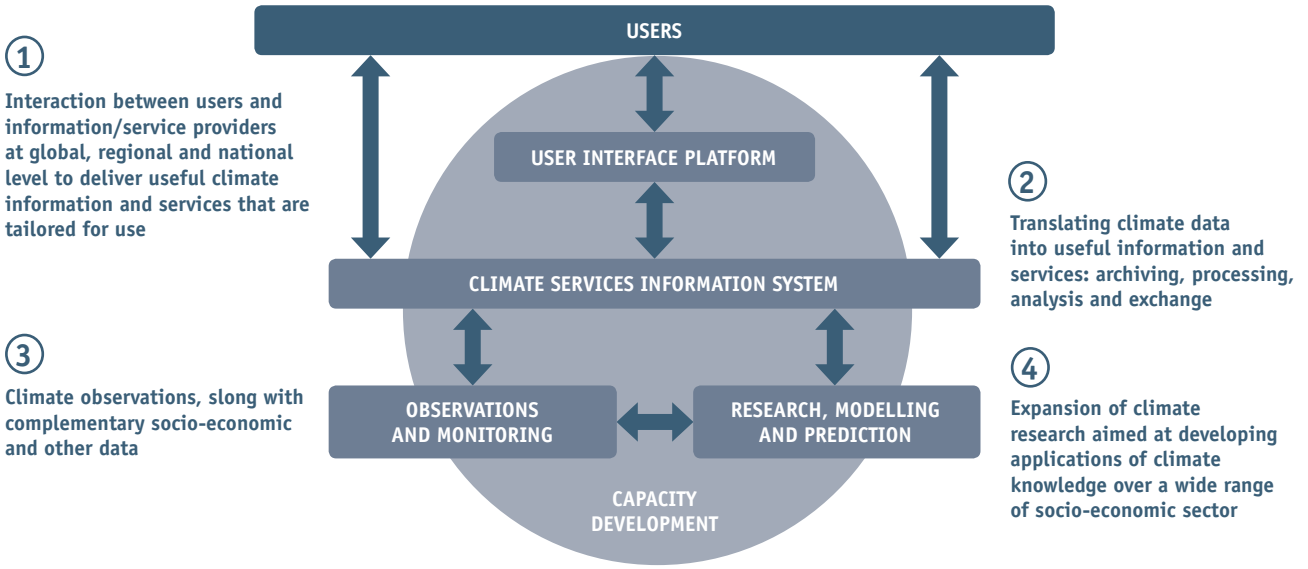
- The User Interface Platform to provide a means for users, user representatives, climate researchers and climate service providers to interact.
- The Climate Services Information System to protect and distribute climate data and information according to the procedures agreed by governments and other data providers.

- The Observations and Monitoring component to ensure that the climate observations necessary to meet the needs of climate services are generated.
- The Research, Modelling and Prediction component will assess and promote the needs of climate services within research agendas.
- The Capacity Building component to support systematic development of the necessary institutions, infrastructure and human resources needed for effective climate information services.

The establishment of GFCS was aimed at strengthening the provision and use of climate products and information worldwide through the development and incorporation of climate information and prediction into planning, policy and practice on the global, regional and national scale. To achieve this, the GFCS at regional and national levels are supporting Regional Climate Outlook Forums (RCOFs) and National Climate Outlook Forums (NCOFs) to ensure access of tailored information that meets the users' needs.

In line with this, PSP supports this goal by creating a user interface platform that cascades from the global to regional – national – sub-national level, providing a means for user representatives, climate service providers, local government representatives, and the private sector to interact at the local level.

Figure 35. *Components of GFCS and their interactions. Adapted from WISER business case. Source: GFCS Implementation Plan*

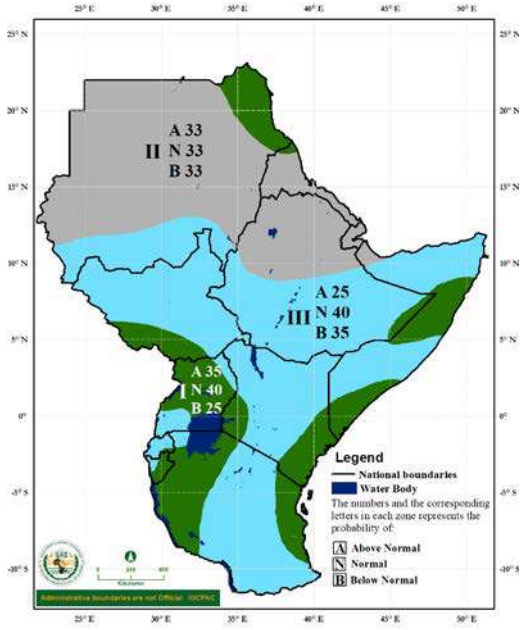


9.4.2 Climate Outlook Forums

Regional Climate Outlook Forums (RCOFs) produce consensus-based, user-relevant climate outlook products in real time in order to reduce climate-related risks and support sustainable development for the coming season in sectors of critical socio-economic significance for the region in question (WMO RCOFs brief). This forum is in line with the User Interface Platform component of the GFCS.

Climate Outlook Forums for the Greater Horn of Africa (GHA) region (GHACOF) are convened by the IGAD Climate Prediction and Applications Centre (ICPAC) three times in a year, in advance of the March to May, June to August and September to December seasons. Like PSP, the forums bring together multiple actors to discuss seasonal climate forecasts for the GHA region. As a specialized institution of the Intergovernmental Authority on Development (IGAD), ICPAC facilitates linkages between all the countries in the GHA region. This is through engaging participants from national meteorological services in the different countries in discussions to generate a consensus forecast for the region (see figure 36).

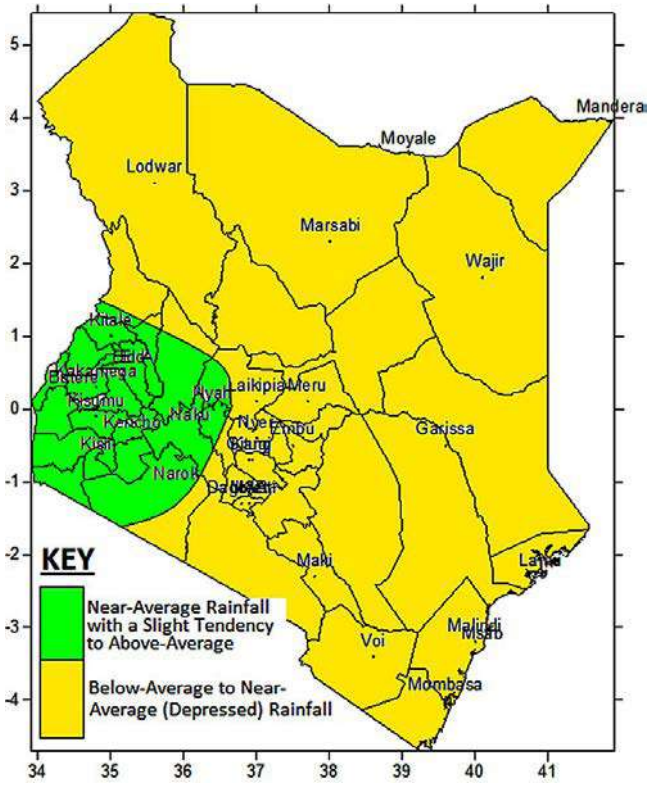
Figure 36. *GHA Consensus Climate Outlook for October to December 2017 rainfall season OND 2017*



Generation of a consensus forecast is done using input from national meteorological services and contributions from the World Meteorological Organisation's Global Producing Centres. The GHACOF forums are attended by climate scientists and actors from different sectors such as – health, disaster management such as The International Federation of the Red Cross Red Crescent Societies (IFRC), agriculture and food security e.g. The Famine Early Warning Systems Network (FEWSNET), water resources and media – as well as non-governmental organisations and development partners. These actors discuss the consensus seasonal forecasts for the GHA region, with a focus on:

- Providing sector specific assessment of the skill and usefulness of the previous season's regional forecast.
- Using the current season's forecast to plan for activities and initiatives in the different sectors, across the GHA region.

Figure 37. *October to December 2016 seasonal rainfall*



9.5 Where next for PSP?

There is great potential for further development of the PSP approach, improving its participation and reach, integrating new climate products as they emerge particularly those that support improved quality of downscaling, expanding the multi-stakeholder platform to address for example, longer term resilience and adaptation plans, or early warning systems to support early action for the coming and following season, or better linkages with short range forecasts and updates and communication channels. Some concrete opportunities include:

- Link PSP with other climate services approaches such as ENACTS (connecting seasonal forecasts with historical information) (see chapter 6 section 6.6.2) and PICSA (enabling use of advisories from PSP, based on historical and context analysis).
- Improving the PSP link with broader decision-making approaches e.g. climate risk or climate vulnerability and capacity assessments as a start to identifying differential climate hazards and risks, and CBA planning for revision of community adaptation action plans possibly on annual basis – towards demonstrating how PSP (CIS) can add value to other approaches and enhance focus on building climate resilience.
- Develop an approach for longer term scenario planning – this will need relevant longer-term climate information (see work by FCFA in Table 2). And can also link to CBA planning at community and local or sector level.
- Going forward, there is potential for organisations to continue to implement a version of PSP that is adjusted to either the approaches that they have ongoing, or their programming / sector context. This makes capacity building on the approach and especially the principles related to good practise in user based climate services quite important, while at the same time allowing organisations to adapt PSP to their contexts.

The PSP Guide will be useful in supporting quality and integrity of the approach, and therefore its dissemination (and demonstrated use) should be targeted at organisations/ institutions that have already adopted and are promoting the approach. These same organisations can use their experiences in the various countries/contexts to update the PSP Guide.

Receiving rainfall information through mobile phones in Kouggou Niger. Credit: Marie Mornimart, 2014

Abbreviations and acronyms

ACCRA	Africa Climate Change Resilience Alliance
ACMAD	African Centre of Meteorological Applications for Development
AGRHYMET	Centre Regional de Formation et d'Application en Agrométéorologie et Hydrologie Opérationnelle Regional Centre for Agro-hydro-meteorology in West Africa
ALP	Adaptation Learning Programme
ASAL	Arid and semi-arid lands
ASDSP	Agricultural Sector Development Support Programme
CAAP	Community adaptation action planning
CBA	Community-based adaptation
CBO	Community-based organisation
CCAFS	Climate Change, Agriculture and Food Security
CCU	Climate Change Unit
CDKN	Climate and Development Knowledge Network
CDMS	County Director of Meteorological Services
CIDP	County Integrated Development Plan
CIS	Climate information service
CISONECC	Civil Society Network on Climate Change
CORDEX	Coordinated Regional Downscaling Experiment
CR4D	Climate Research for Development
CSG	County Steering Group
CVCA	Climate vulnerability and capacity analysis
DRR	Disaster risk reduction
ENACTS	Enhancing National Climate Services
FEWSNET	Famine Early Warning Network
GCCWG	Garissa Climate Change Working Group
GFCS	Global Framework for Climate Services
GHACOF	Greater Horn of Africa Climate Outlook Forum
GHG	Greenhouse gas
ICPAC	IGAD Climate Prediction and Applications Centre
IIED	International Institute for Environment and Development
IPCC	Intergovernmental Panel on Climate Change
IRI	International Research Institute for Climate and Society
KALRO	Kenya Agricultural and Livestock Research Organisation
KMD	Kenya Meteorological Department
M&E	Monitoring and evaluation
MAM	March-April-May season (forecast)
MoALF	Ministry of Agriculture, Livestock and Fisheries
MTP	Medium Term Plan
NDCs	Nationally Determined Contributions
NDMA	National Drought Management Authority
NGO	Non-governmental organisation
NMHS	National Meteorological and Hydrological Services
NMS	National meteorological services
NRM	National Resource Management
NRMTWG	Natural Resource Management Thematic Working Group
NTCCC	National Technical Committee on Climate Change (Malawi)
OND	October-November-December season (forecast)
PSP	Participatory Scenario Planning

SARCOF	Southern Africa Climate Outlook Forum
SARI	Savannah Agricultural Research Institute (Ghana)
SCAP/RU	Système d'alerte précoce et de réponse aux urgences (early warning early action system)
SCIPEA	Strengthening Climate Information Partnerships – East Africa
TOT	Training of trainers
UNFCCC	United Nations Framework Convention on Climate Change
WCRP	World Climate Research Programme
WMO	World Meteorological Organisation
WFP	World Food Programme
WISER	Weather and Climate Information Services for Africa

Works Referenced and Relevant Resources

IFRC; OXFAM; Save the Children; WFP; FAO. Early warning early action: Mechanisms for rapid decision making. Nairobi: International Federation of Red Cross and Red Crescent Societies .

(UNISDR) . (2009). United Nations International Strategy for Disaster Reduction (UNISDR) Terminology. Geneva: United Nations International Strategy for Disaster Reduction.

Adaptation Learning Programme for Africa. Decision-making for climate resilient livelihoods and risk reduction: A Participatory Scenario Planning approach. CARE International.

Ambani, M., & Percy, F. (2014). Facing Uncertainty: the value of climate information for adaptation, risk reduction and resilience in Africa. CARE International.

Ambani, M and Percy, F (May 2017) Participatory Scenario Planning for Climate Forecasts at Scale in Africa: http://careclimatechange.org/wp-content/uploads/2017/07/PSP-ALP-Brief-2017.pdf

Ambani, M and Percy, F (May 2017) Climate Information Centres: http://careclimatechange.org/wp-content/uploads/2017/07/Climate-Info-Centres-ALP-Brief.pdf

Ambani, M and Percy, F (May 2017) Community Rain Gauges For Building Climate Resilience in Niger: http://careclimatechange.org/wp-content/uploads/2017/07/Community-Rain-Gauge-ALP-Brief-2017.pdf

Baede, A. P., Ahlonsou, E., Ding, Y., & Schimel, D. S. (2001). The climate system: an overview. In O. F. J. J. Maccarthy, Climate Change 2001: impacts, adaptation and vulnerability (pp. 87-98). New York: Cambridge University Press.

Bauer, F., & Smith, J. (Eds.). (2015). The Climate Knowledge Brokers Manifesto. Vienna, Austria: Renewable Energy and Energy Efficiency Partnership (REEEP).

CARE International. (2014). Participatory Monitoring, Evaluation, Reflection and Learning for Community-based Adaptation. CARE International.

CDKN & ODI. (2014). The IPCC's Fifth Assessment Report: What's in it for Africa?

County Environmental Resilience and Social Inclusion Officers. (2017). Participatory Scenario Planning for Climate Resilient Agricultural Livelihoods. Nairobi: Government of Kenya.

Dazé, A., Ambrose, K., & Ehrhart, C. (2009). Climate Vulnerability and Capacity Analysis Handbook. CARE.

Dazé, A., Percy, F., & Ward, N. (2015). Adaptation Planning with Communities: Practitioner brief 1. CARE International.

Department for International Development. (1999). Sustainable livelihoods guidance sheets. DFID.

Dinku, T., Cousin, R., Corral, J. d., Ceccato, P., Thomson, M., Faniriantsoa, R., et al. (2016). THE ENACTS APPROACH: Transforming climate services in Africa one country at a time. New York: A World policy paper.

Dinku, T., Cousin, R., del Corral, J., Ceccato, P., & Thomson, M. (2016). The ENACTS approach: Transforming climate services in Africa one country at a time. World Policy Journal .

Dinku, T., Kanemba, A., Platzer, B., & Thomson, M. C. (2014). Leveraging the Climate for Improved Malaria Control in Tanzania. Earthzine .

Dr Glwadys Gbetibouo, Courtney Hill, Dr Anthony Mills, Dirk Snyman, Onno Huyser and René Schieritz et al, June 2017, Regional impact assessment on climate information services for community-based adaptation to climate change, Ethiopia, Ghana, Kenya, Malawi and Niger.

Dr Glwadys Gbetibouo et al, May 2017 Ethiopia Country Report: Impact Assessment on Climate Information Services for Community Based Adaptation to Climate Change http://careclimatechange.org/publications/alp-ethiopia-climate-information-services-country-report

Dr Glwadys Gbetibouo et al, May 2017, Kenya Country Report: Impact Assessment on Climate Information Services for Community Based Adaptation to Climate Change (http://careclimatechange.org/publications/kenya-climate-information-services-country-report/)

Dr Glwadys Gbetibouo et al, June 2017, Ghana, Malawi and Niger Country Reports: Impact Assessment on Climate Information Services for Community Based Adaptation to Climate Change (http://careclimatechange.org/wp-content/uploads/2017/07/Ghana-Climate-Services-Country-Report.pdf, http://careclimatechange.org/wp-content/uploads/2017/07/Malawi-Climate-Services-Country-Report.pdf, http://careclimatechange.org/wp-content/uploads/2017/07/Niger-Climate-Information-Services-Country-Report.pdf)

Epp, M. V., & Garside, B. (2016). Solving 'wicked' problems: can social learning catalyse adaptive responses to climate change? International Institute for Environment and Development.

Gbetibouo, G., Obuya, G., Mills, A., Snyman, D., Huyser, O., & Hill, C. (2017). Impact assessment on climate information services for community based adaptation to climate change - Kenya Country Report. Nairobi: CARE International.

Gbetibouo, G., Obuya, G., Mills, A., Snyman, D., Huyser, O., & Hill, C. (2017). Regional impact assessment on climate information services for community-based adaptation to climate change, Ethiopia, Ghana, Kenya, Malawi and Niger. C4 EcoSolutions and CARE International.

Gbetibouo, G., Obuya, G., Mills, A., Snyman, D., Huyser, O., & Hill, C. (2017). Ethiopia Country Report: Impact Assessment on Climate Information Services for Community Based Adaptation to Climate Change. C4 EcoSolutions and CARE International.

Gbetibouo, G., Obuya, G., Mills, A., Snyman, D., Huyser, O., & Hill, C. (2017). Ghana, Malawi and Niger Country Reports: Impact Assessment on Climate Information Services for Community Based Adaptation to Climate Change. C4 EcoSolutions and CARE International.

GFCS. (2014). Annex to the Implementation Plan of the Global Framework for Climate Services – User Interface Platform Component. Geneva, Switzerland: World Meteorological Organization.

Harvey, B., Ensor, J., Carlile, L., Garside, B., Patterson, Z., & Naess, O. L. (2012). Climate change communication and social learning - Review and strategy development for CCAFS. CGIAR Research Program on Climate Change, Agriculture and Food Security (CCAFS) .

Hawkins, E., & Sutton, R. (2009). The Potential To Narrow Uncertainty In Regionalclimate Predictions. American Meteorological Society .

Intergovernmental Panel on Climate Change (IPCC. (2014). Summary for Policymakers. In: Climate Change 2014: Mitigation of Climate Change.Contribution of Working Group III to the Fifth Assessment Report of the Intergovernmental Panel on Climate Change . Intergovernmental Panel on Climate Change (IPCC.

IPCC. (2013). Annex I: Atlas of Global and Regional Climate Projections. In v. O. G.J., M. Collins, J. Arblaster, J. Christensen, J. Marotzke, S. Power, et al. (Eds.), Climate Change 2013: The Physical Science Basis. Contribution of Working Group I to the Fifth Assessment Report of the Intergovernmental Panel on Climate Change (T. D.-K. [Stocker, Trans.). Cambridge, United Kingdom and New York, NY, USA: Cambridge University Press.

IPCC. (2013). Annex III: Glossary. In T. Stocker, D. Qin, G. Plattner, M. Tignor, S. Allen, J. Boschung, et al., & S. Planton (Ed.), Climate Change 2013: The Physical Science Basis. Contribution of Working Group I to the Fifth Assessment Report of the Intergovernmental Panel on Climate Change. Cambridge, United Kingdom and New York, NY, USA: University Press.

Krätli, S. (2015). Valuing variability: New Perspectives on climate resilient drylands development. International Institute for Environment and Development .

Levine, S., Ludi, E., & Jones, L. (2011). Rethinking support for Adaptive Capacity to climate change. Overseas Development Institute.

Lindgren, M., & Bandhold, H. (2003). Scenario Planning: The link between future and strategy. New York: PALGRAVE MACMILLAN.

Niang, I., Ruppel, O., Abdrabo, M., Essel, A., Lennard, C., Padgham, J., et al. (2014). Africa. In: Climate Change 2014: Impacts, Adaptation, and Vulnerability. Part B: Regional Aspects. Contribution of Working Group II to the Fifth Assessment Report of the Intergovernmental Panel on Climate Change. Cambridge: Cambridge University Press.

Nilsson, A. E., & Swartling, Å. G. (2009). Social Learning about Climate Adaptation: Global and Local Perspectives. London: Stockholm Environment Institute .

OECD. (n.d.). DAC Criteria for Evaluating Development Assistance. Retrieved January 22, 2015, from The Organisation for Economic Co-operation and Development (OECD): http://www.oecd.org/development/evaluation/daccriteriaforevaluatingdevelopmentassistance.htm

Osbahr, H., & Viner, D. (2006). Linking climate change adaptation and disaster risk management for sustainable poverty reduction: Kenya country study. Washington DC: Washington DC: Vulnerability and Adaptation Resource Group.

Otzelberger et al., 2. (2014). Tackling the Double Injustice of Climate Change and Gender Inequality. CARE International.

Otzelberger (2015) Practitioner Brief 2: Integrating disaster risk reduction and adaptation to climate change: Community-based early warning systems in Dakoro, Niger. CARE International

Percy, F., & Oyoo, P. (2016). Adaptation Good Practice checklist. Climate Change Directorate in the Ministry of Enviroment and Natural Resources of Kenya, CARE International, CGIAR Research Program on Climate Change Agriculture and Food Security (CCAFS), & African Centre for Technology Studies (ACTS).

Stephens, E., Coughlan de Perez, E., Kruczkiewicz, A., Boyd, E., & Suarez, P. (2016). Forecast-based Action. University of Reading, Red Cross Red Crescent Climate Centre.

Tall, A., Hansen, J., Jay, A., Campbell, B., Kinyangi, J., & Aggarwal, P. Z. (2014). Scaling up climate services for farmers: Mission Possible. Learning from good practice in Africa and South Asia. CCAFS Report No. 13, CGIAR Research Program on Climate Change, Agriculture and Food Security (CCAFS), Copenhagen.

UNEP. (2014). The Adaptation Gap Report. New York: UNEP.

UNFCCC. (2015). Paris Agreement. United Nations.

UNISDR. (2015). Sendai Framework for Disaster Risk Reduction 2015-2030. United Nations Office for Disaster Risk Reduction (UNISDR).

UNISDR. (2015). Sendai Framework for Disaster Risk Reduction 2015–2030. Third United Nations World Conference on Disaster Risk Reduction. Sendai: UNFCCC.

Vuguziga, F., & Owusu, A. (2016). Rwanda ENACTS case study: WISER partnerships bring new opportunities for national climate services in East Africa. Meteo Rwanda, IRI, CCAFS, UK Met Office.

Wilby, R., & Dessai, S. (2010). Robust adaptation to climate change. Royal Meteorological Society , 180–185 .

WMO. (2015, June 1). New Two-Tier approach on “climate normals”. Retrieved from World Meteorological Organisation: https://public.wmo.int/en/media/news/new-two-tier-approach-%E2%80%9Cclimate-normals%E2%80%9D

World Bank Group. (2016). Climate Information Service Providers in Kenya. International Bank for Reconstruction and Development. Washington, DC: World Bank.

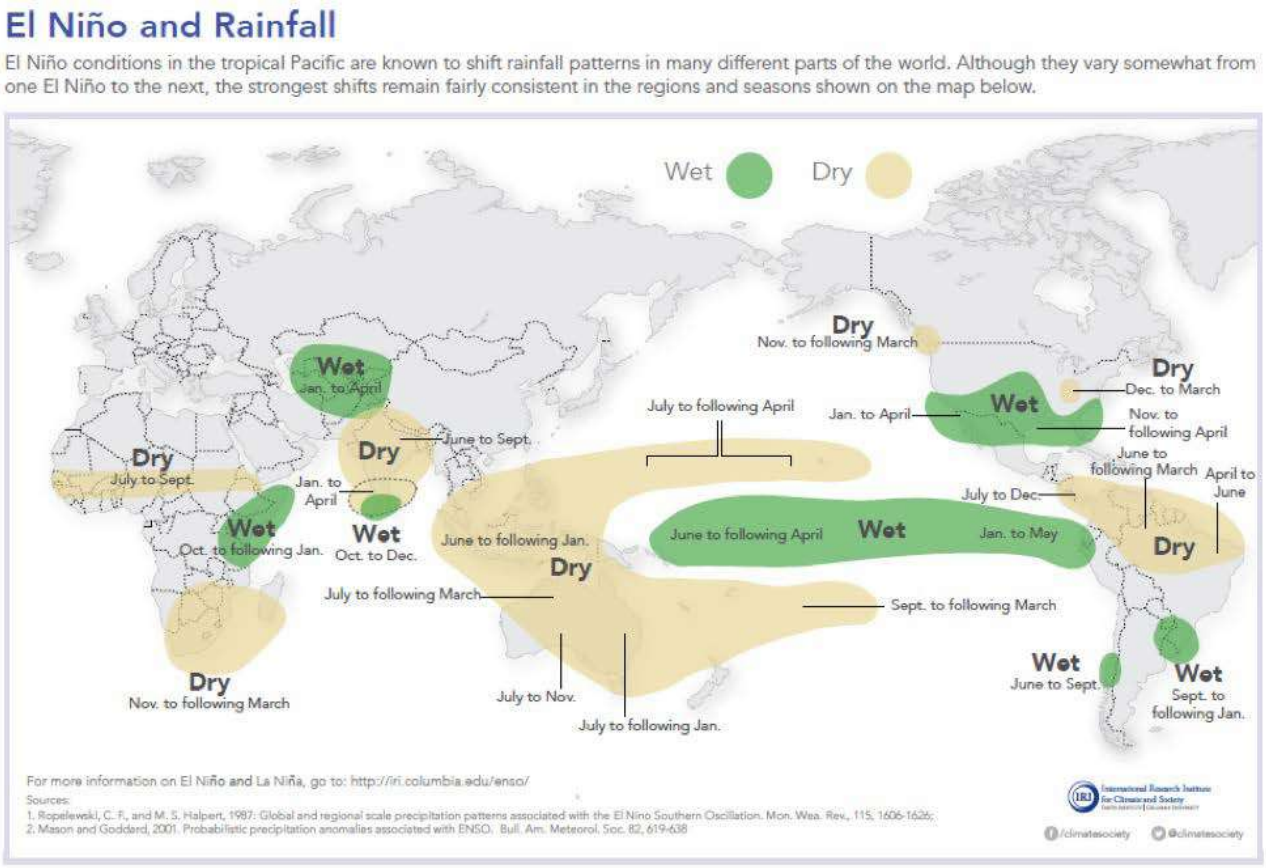
World Bank; IFC; MIGA. (2016). World Bank Group Climate Change Action Plan 2016-2020. Washington, DC: World Bank.

Annexes

Annex 1. El Nino and rainfall

During an El Niño episode, areas in green or yellow are likely to become wetter or dryer than normal during the indicated months.

Source IRI http://iridl.ldeo.columbia.edu/maproom/IFRC/FIC/elninorain.html



Annex 2. Example of partnership agreement from Tana River County

PARTNERSHIP MOU

This Memorandum of Understanding (MOU) is entered into by and between:

THE COUNTY COORDINATOR
ASDSP TANA RIVER COUNTY – (A state program coordinating and promoting commercialization of Agriculture)

(Hereinafter referred to as agency A)

AND

THE PROJECT MANAGER,
GERMAN AGRO ACTION,
TANARIVER COUNTY - (An international NGO supporting pastoral and crop farmer's livelihoods systems within the county)

(Hereinafter referred to as agency B)

PURPOSE.

A. Roles and Responsibilities.

Agency A agrees to:

Responsibility	Activities	Responsible Staff
Provide funds and logistical support to carry out Participatory scenario planning	Technical and managerial support	County Coordinator NRM Officer

Agency B agrees to:

Responsibility	Activities	Responsible Staff
Plan, Organise and Implement the PSP workshop and associated activities.	Hold a PSP planning meeting Hold a 2 days PSP workshop Hold 15 ward based barazas to disseminate PSPadvisories Carry out M&E	The Project Manager Technical officer

B. Reporting Requirements.

The project manager German Agro Action will be responsible for collecting, collating all information and report writing.

C. Funding.

The ASDSP will facilitate GAA with funding to carry out all activities as per Government rates and regulations for allowances and other entitlements.

D. Timeframe.

This MOU will commence on 24th March, 2014 and will dissolve on 31st July, 2014

F. Confidentiality.

All communications as in regard to this agreement are confidential. In order to ensure the safety of clients, all parties to the memorandum of understanding agree to adhere to the confidentiality expectations as outlined in the agreement

That GAA accepts full responsibility for the performance of the collaborative organizations/agencies.

This Memorandum of Understanding is the complete agreement between The County Coordinator, ASDSP TANA RIVER and The Project Manager, German Agro Action, TANA RIVER COUNTY OFFICE and may be amended only by written agreement signed by each of the parties involved.

AGENCY A

Authorized Official: **JUMA M MOHAMMED**

COUNTY COORDINATOR

ASDSP TANA RIVER

Signature: ..... **Date:** 24th March'14

Address: **P.O. BOX 10 HOLA; Telephone(s): 0722676794,**

E-Mail Address: **asdsptanariver@gmail.com**

Official seal:

COUNTY CO-ORDINATOR - ASDSP
24 MAR 2014
SIGN:
TANA RIVER

AGENCY B

Authorized Official: **FLORENCE NTHENGE**

PROJECT MANAGER,

GERMAN AGRO ACTION TANA RIVER

Signature: ..... **Date:** 24.03.14

Address: **P.O. BOX 150 HOLA Telephone(s): 0721567906**

E-Mail Address: **Florence.Nthenge@welthungerhilfe.de**

Official seal:

German Agro Action P.O. Box 398-20 KENYA
German agro action Tana
www.welthungerhilfe.de

Annex 3. Example of level consideration during contextualizing PSP

Level for consideration	Key issues for the level	Overall
Agro-climatic zones	• Similar characteristics so forecasts will be similar across the zone • Similar livelihoods • Face similar hazards • Have shared experiences due to share climate • Easily agree on a common plan because of a shared climate • Easier to aggregate them; they are trans-boundary and can exchange information • Administrative areas can conflict with agro-climatic zones • Agro-climatic zones determine livelihoods	• This helps to think about multi-stakeholders to involve, representation from different interests/stakeholders who need the info, key issues of concern, partnerships • The levels are interdependent • Criteria for selecting the level may depend on interest e.g. hydrologist on catchment, agronomist on livelihood • Best to bring together different stakeholders considering these levels and climate information • Level to also look at financial constraints and time element •
Livelihoods	• Agree with value chains • Livelihoods are representative of agro-climatic zones • More inclusive – covers interests of many actors/partners e.g. development partners • Livelihoods go beyond administrative boundaries • Livelihood decisions differ based on agro-climatic zones • Bringing stakeholders from very different geographical areas who have different experiences based on their agro-climatic zones • Different seasons and seasonal forecasts	
Administrative boundaries	• National verses county/district	
Community	• Livelihoods and crop choices	

Annex 4. PSP work plan and schedule for Trans-Nzoia County, Kenya

PSP step	Activity	Date	Venue	Responsible officers	Resources needed	Expected outcomes	Remarks
Step 2: Planning for PSP Workshop	Pre planning	12-14 March 2014	Salama, Muroki, Seum	CCU,DMS	Fuel Note books Pens	Information on weather/ Climate/ CC and livelihoods collected	Pre Workshop activity
	Writing and Distributing of invitation letters	21,24,25 March, 2014	County wide	CCU,DMS	Fuel Note books Pens	Invitation Letters written distributed	Pre Workshop activity
	Consultative Meetings with facilitators and other participants	21,24,25 March, 2014	County wide	CCU,DMS	Fuel Note books Pens	PSP W/Shop programme discussed and agreed upon	Pre Workshop activity
	Facilitator's meeting	29th March, 2014	Mabanga ATC	All facilitators, Support Staff	Fuel Note books Pens Facilitators	PSP W/Shop programme discussed and agreed upon	Pre Workshop activity at Mabanga ATC in Bungoma
Step 3: PSP Workshop	PSP Workshop	30th March to 1st April, 2014	Mabanga ATC	CCU,DMS	Facilitators LCD Training venue Pens, note books	Forecasts from Community forecasters DMS presented and merged, scenarios developed, advisories made	Workshop activity at Mabanga ATC in Bungoma

Step 4: Communication of advisories from PSP workshop	Documenting Advisories	2nd to 3rd April	KKTTI	DMS,MEDIA,CCU	Funds	Documentaries developed and communicated	3 radio stations,2 TV stations involved, Brochures and hand bills developed
	Post PSP Workshop	4th March, 2014	KTTI	CCU,DMS	Fuel Note books Pens Advisories	Chiefs and FEOs receive the presented forecasts.	Advisories' packages given to participants
	Communication of advisories in Public Barazas	6th, 7th, 8th May 2014	Trans Nzoia West, East and Kwanza	Field Extension Officers in Trans Nzoia County	Fuel Note books Pens Brochures	Each extension officer to hold a baraza with the RA and unpack advisories	Extension officers to choose a convenient date from the three given.
Step 5: Monitoring, evaluation and feedback	Sample Focused Group Interviews to monitor and evaluate the use of advisories	12th, 13th, 14th and 15th May 2014	Salama, Kalwenge, Muroki, Seum, Sibanga, Matunda, Waitaluk and Kwanza Border areas	CCU and NRMTWG,DMS	Fuel, Note books	Reports and other documentaries of the activities	To be done all over the County
	Preparations for the OND PSP workshop	20th to 23nd May 2014	County Wide and KTTI	CCU and NRMTWG,DMS	Fuel Note books Pens		

Annex 5. Discussion to integrate meteorological and local seasonal forecasts

Source of climate forecast	Information available	Gap/ challenge	What can be drawn from the forecast
Meteorological Services	• Written and graphical records of past data and forecasts. • Start (onset) and end (cessation) of the rains for the season. • Probability of different rainfall amounts in the season. • Analogue years (i.e. years in the past with climates similar to the forecast) giving an indication of rainfall distribution in space and time. • Number of days that may receive rainfall in the season. • Possible occurrence of dry spells.	• Cover large areas and thus fail to capture micro-climates that are relevant to local areas. • A big challenge with scientific climate information in Africa is the inadequate number of stations for data recording. This affects the historical analysis of climate in many places and the ability to develop forecasts at local levels.	• Supports planning to address landscape or water shed issues such as knowing if areas further upstream will get high amounts of rainfall with implications on flood risk in areas downstream. • Taking uncertainty into account and finding ways of managing it. • Gives motivation to have dialogue on plans and activities by different actors within the larger area, seeking linkages and mutual support e.g. between crop farmers and livestock keepers, input suppliers and farmers, plans by government officers and livestock keepers etc.
Local forecasters	• Records of past observations and forecasts, though often verbal. • An indication of the amount of rainfall that may be received in a season. • In some cases, prediction of the start of seasonal rains.	• Thresholds to determine whether the rains are good or not vary depending on livelihood activities, location, capacities etc., making it difficult to apply the information at county or higher levels. • There are concerns that the baseline indicators used for forecasting may be changing in behaviour or disappearing in the context of climate change, expanding populations and other environmental pressures.	• Give information on what climate may occur in smaller areas (e.g. a village or a ward) • Enabling stakeholders in that locality to undertake strategies that are specific to their areas. • Calls for more location specific translation of information. • Encourages better understanding, acceptance and use of scientific information.

Annex 6. Sample Monitoring, Evaluation and Feedback report for Elgeyo Marakwet

Sample Monitoring, Evaluation and Feedback report for Elgeyo Marakwet

The PSP monitoring, evaluation and feedback were done based on the dissemination channels that were used in the county as agreed upon during the Stakeholders workshop. Each channel was monitored independently and findings reported on. These were mainly as follows; County Commissioner and the four Deputy County Commissioners, County Executive (as reported by the Sub-County administrators), County Assembly, Ward Agricultural Extension Officers (WAEOs), Radio announcement and Television Documentary, County Digital Communication platforms and Value Chain Project Management Teams (PTMs).

Two different sets of questionnaires (one targeting service providers the other service consumers) were developed and dispensed randomly within the county, to climate information providers and users to determine the effect of weather on the various services in the county. During the 2016, an analysis of the exercise showed that;

- 100% of the respondents received the OND weather advisories as compared to 98% who received advisories for MAM.
- 91% of the respondents in OND received the advisories through radio (same as MAM), 38% through TV (31% during MAM), 75% through government officials (66% during MAM), 55% through friends (47% during MAM) and 11% through County digital communication platforms (6% during MAM). 72% percent received through the council of elders, 54% through church, 46% through the Value Chain PMTs and 61% through CSOs operating in their areas.
- 99% of the respondents agreed that the methods used to disseminate the advisories were sufficient.
- 18% suggested that use of SMS could increase the number of people receiving weather advisories.
- 7% of the respondents suggested that youth groups and women groups should also be considered as forums through which climate information can be disseminated (23% had suggested the same during MAM).
- 96% of the respondents confirmed that they used the weather advisories at the house hold level during the season.
- 88% of the respondents agreed that the advisories were timely (58% during MAM) while 12% said the advisories came when the season was about to start (42% during MAM).
- 100% of the respondents who used the climate advisories agreed that their plans and decisions that were based on PSP advisories improved their food security, increased their desire for environmental conservation and need to build resilience to extreme weather (same as MAM).
- 100% of the respondents in OND considered PSP weather advisories very relevant for productive and resilient agricultural development in Elgeyo Marakwet County.

Source: Participatory Scenario Planning for Climate Resilient Agricultural Livelihoods – Ministry of Agriculture Livestock and Fisheries, Kenya

www.careclimatechange.org

CARE Danmark

Jemtelandsgade 1
2300 Copenhagen S
+45 35 200 100

The Adaptation Learning Programme (ALP) for Africa aims to increase the capacity of vulnerable households in sub-Saharan Africa to adapt to climate change and climate variability. Since 2010, ALP has been working with communities, government institutions and civil society organisations in Ghana, Kenya, Mozambique and Niger to ensure that community-based adaptation approaches and actions are integrated in development policies and programmes. This is achieved through the demonstration and dissemination of innovative approaches for CBA, supported by practical tools, methodologies and evidence of impact. Improved communication of climate information to vulnerable rural communities and local governments is a key element of community based adaptation to climate change. ALP also works to create an enabling environment for CBA by working directly with local and national governments and with civil society to influence national and international policy frameworks and financing mechanisms for adaptation.

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