



MINISTRY OF
ENVIRONMENT AND FORESTRY

**KENYA METEOROLOGICAL
DEPARTMENT**

A toolkit to support the development
of decentralised climate services



CLIMATE INFORMATION SERVICES **TOOLKIT**

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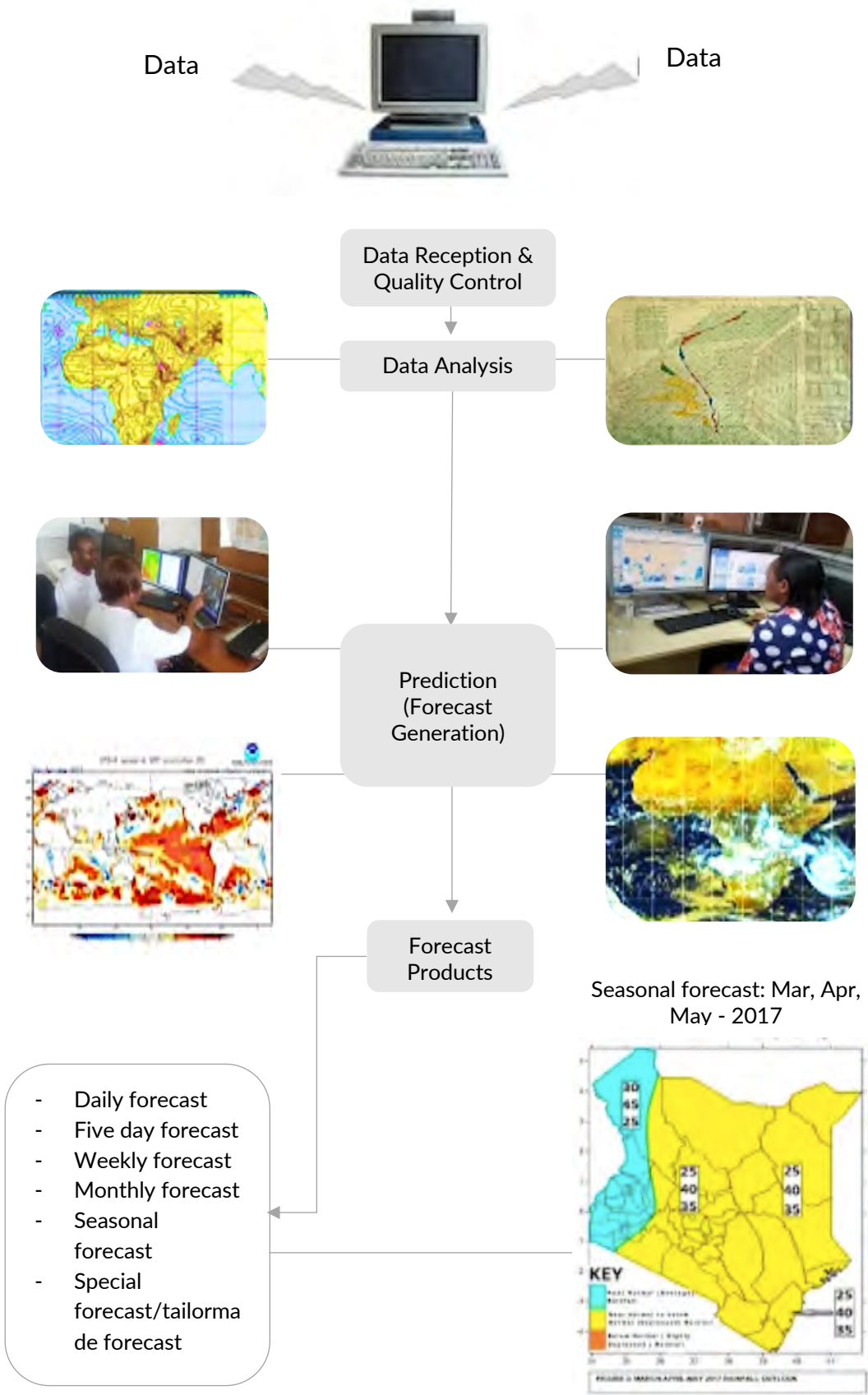


ACKNOWLEDGMENTS

The Kenya Meteorological Department would wish to acknowledge the support of UK Met Office, International Institute of Environment and Development (IIED), Christian Aid, Womankind Kenya, Resource Advocacy Programme (RAP), Arid Lands Development Focus (ALDEF), Anglican Development Services Eastern (ADSE) and the National Drought Management Authority (NDMA) for the support towards realizing this framework.

Our appreciation also goes to the framework development task team from KMD (Samuel Mwangi, Roselyn Ojala, Ayub Shaka, Denis Cheruiyot, Benard Chanzu, Daniel Wanjuhi CDM Wajir, William Ndegwa- CDM Kitui, Samuel Odhiambo-CDM Garissa, Ezekiel Muigai-CDM Isiolo, and David Mutua-CDM Makueni); the Ada team (Sharon Kibor, Yazan Elhadi, Jane Kiiru, Mumina Bonaya, Victor Orindi and Kimberly Asawo).

Weather Forecasting



- Daily forecast
- Five day forecast
- Weekly forecast
- Monthly forecast
- Seasonal forecast
- Special forecast/tailor made forecast

Seasonal forecast: Mar, Apr, May - 2017

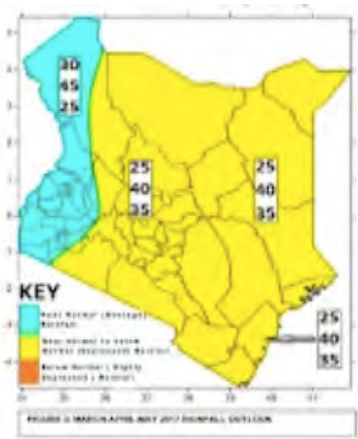


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Foreword by the Director, Kenya Meteorological Department

Following the promulgation of a new Constitution in 2010, Kenya's political and administrative structure was reorganized significantly. Among other changes, the country adopted a devolved governance structure within 47 Counties.

Weather and climate impacts virtually all sectors of the economy. Kenya Meteorological Department is charged with the responsibility of providing meteorological services to support all sectors of the economy. It should be noted that, each county has its unique social, economic and cultural characteristics and priorities. To ensure effective utilization of weather information, the provision of meteorological services need to take into account the unique needs of each county, but in a structured manner.

Even though meteorological services are not devolved, it was considered necessary that ways be sought to facilitate not only an efficient working relationship with the devolved units but also ensure effective delivery and utilization of climate information services at the grassroots level. This was done by establishing County Meteorological Offices (CMOs) in all the 47 Counties, headed by a County Director of Meteorological Services (CDMs). These CDMs needed a framework of delivering these services that are relevant, timely and communicated in the most appropriate channels in each county's level of development. This framework is the County Climate Information Service Plan (CISP)

This Climate Information Services Toolkit has been developed to document the process of development and delivery a County CIS Plan, that enables provision of meteorological services right from the National level downscaled to the user at the sub-national and Ward level. Secondly, it ensures a standardized format of provision of meteorological services while taking into account the specific needs of the users at county level. Each County Meteorological Office is expected to use the toolkit to develop a CIS that suits the local conditions and meet the weather/climate needs of the county. It should be used in conjunction with the Strategic Plan for Development of Decentralised Services and Operations Manual for County Meteorological Directors, two important documents developed at the onset of the decentralization process.

While efforts are continuously being made to ensure improved accuracy of weather forecasts as well as alerts, advisories and warnings of adverse weather events, effective utilization of weather information cannot be achieved without the participation of all the stakeholders at the county level. The County Administration is the most important stakeholder whose participation and input in the development of the weather/climate products is crucial. It is therefore expected that the County Administration, as well as all the other stakeholders at the county level, will actively contribute by providing feedback on how the weather information should be improved to make it more relevant to their needs. KMD will keep all channels open for consultation and engagement to ensure that meteorological services contribute to the improvement of social and economic development and build resilience of all the counties in Kenya.



MR. PETER AMBENJE
DIRECTOR - KENYA METEOROLOGICAL DEPARTMENT

Executive Summary

Recognition of the potential for climate information to support sustainable development, enhance preparedness, protect lives and support production has greatly increased. This has led to a growing focus on developing climate information and services that can better support decision making at all levels, including at national, county and sub-county levels, amongst those people whose lives and livelihoods are directly impacted by climate.

In Kenya, the decentralisation of meteorological services has afforded an opportunity to develop climate services tailored to the specific and different needs of each County. In support of this process, the Kenya Meteorological Department (KMD) has developed a framework for co-producing County Climate Information Service (CIS) Plans together with key stakeholders from across County Government, technical services and agencies, livelihood and social groups. Through building an understanding of the specific types of climate information that decision makers need, when they need the information, what format and language they need it to be provided in, and when and how they need to receive it, the County CIS Plan maps out how climate information can best support the people in the County in addressing the climate-related, socio-economic challenges that they face.

The development of the County CIS Plan was initiated by the Adaptation Consortium in 2013, when plans for five arid and semi-arid Counties were developed. The County CIS Plan approach was adopted by KMD and subsequently scaled up within the Weather and Climate Information Services for Africa (WISER) programme's Decentralised Climate Information Services for Decision Making in Western Kenya (WISER Western) project for nine counties in the Lake Victoria region. Based on learning developed through these two projects, both funded by the UK Government Department for International Development (DfID), this toolkit aims to (a) support scaling-up within Kenya, to develop a County CIS Plan for each County, and (b) document and share transferable learning on the process to support complementary initiatives seeking to develop decentralised climate services in the region and more widely.

This toolkit maps out six key steps in the process of developing a sub-state climate information services plan:

1. Understanding the roles of National Meteorological and Hydrological Services (NMHS) staff supporting decentralized climate services
2. Undertaking a technical assessment of existing observation networks and data sources and reviewing the current development and communication of climate information products.
3. Identifying the climate information needs of key stakeholders across County Administration and amongst the County's principal livelihood groups
4. Drafting the County CIS Plan
5. Reviewing and finalising the County CIS Plan with key stakeholders and planning implementation, monitoring, evaluation and regular review of the County CIS Plan
6. Implementing the plan.

Each step is supported by a module comprising an introductory overview, followed with one or more practical exercises and approaches through which the County Directors of Meteorological Services (CDMS), or NHMS staff supporting decentralized services, can gather the information required to complete the County-specific, or local, input required. The exercises and approaches are illustrated with examples drawn from the development of County CIS Plans from across a range of Kenyan Counties.

The toolkit is designed to be used in conjunction with a template that includes both generic text, appropriate for all County contexts, and highlights areas which require County-specific input. Use of the toolkit in another country requires the development of a complementary template for developing decentralized climate services.

Acronyms

ADA	Adaptation Consortium
CCISP	County Climate Information Services Plan
CCM	County Climate Monitor
CDMS	County Director of Meteorological Services
CIDP	County Integrated Development Plan
CIS	Climate Information Services
CMO	County Meteorological Office
DFID	Department for International Development
KMD	Kenya Meteorological Department
NMHS	National Meteorological and Hydrological Services
WISER	Weather and Climate Information Services for Africa

Glossary of Key Terms¹

Adaptation	Adjustment in natural or human systems in response to actual or expected climatic stimuli or their effects which moderates harm or exploits beneficial opportunities
Climate change	A change in the state of the climate that can be identified (for example by using statistical tests) by changes in the mean and/or the variability of its properties, and that persists for an extended period, typically decades or longer. Climate change may be due to natural internal processes or external forcing, or to persistent anthropogenic changes in the composition of the atmosphere or in land use (IPCC, 2014).
Climate Information	Meaningful data, products and/or knowledge about the atmosphere ocean system across short-term (hours to days) and longer-term (seasons to decades) time scales that addresses decision makers' needs.
Climate Service	The development and delivery, with key stakeholders, of accessible, Information Services timely and relevant weather and climate-related information that can support decision making across timeframes, sectors and livelihoods.
Climate Monitors	Climate Monitors are usually individual members of the community, farmers or employees of government and non-governmental institutions who carry out basic observations. Climate Monitors are also referred to as "Volunteer Observers",
Climate Variability	Variations in the mean state and other statistics (such as standard deviation or the occurrence of extremes) of the climate on all spatial and temporal scales beyond that of individual weather events. Variability may be due to natural internal processes within the climate system (internal variability), or to variations in natural or anthropogenic external forcing (external variability) (IPCC, 2007).
Disaster	A serious disruption of the functioning of a community or a society involving widespread human, material, economic or environmental losses and impacts, which exceeds the ability of the affected community or society to cope using its own resources.
Disaster Risk	The potential disaster losses, in lives, health status, livelihoods, assets and services, which could occur to a particular community or a society over some specified future time period (UNISDR)

¹ Definitions from the 2016 Climate Change Act, the 2016 Climate Risk Management Framework for Kenya: Integrating Disaster Risk Reduction and Climate Change Adaptation at National and County levels and the KMD (2015) Operations Manual for County Meteorological Directors.

Disaster Risk Management	It is the systematic process of using administrative directives, organizations, and operational skills and capacities to implement strategies, policies and improved coping capacities in order to lessen the adverse impacts of hazards and the possibility of disaster.
Disaster Risk Reduction	The concept and practice of reducing disaster risks through systematic efforts to analyse and manage the causal factors of disasters, including through reduced exposure to hazards, lessened vulnerability of people and property, wise management of land and the environment, and improved preparedness for adverse events (UNISDR, 2009).
Early Warning System	It is the set of capacities needed to generate and disseminate timely and meaningful warning information to enable individuals, communities and organizations threatened by a hazard to prepare and to act appropriately and in sufficient time to reduce the possibility of harm or loss.
Hazard	A dangerous phenomenon, substance, human activity or condition that may course loss of life, injury or other health impacts, property damage, loss of livelihoods and services, social and economic disruption, or environmental damage.
Mainstreaming ‘	The integration of climate change actions into decision making and implementation of functions by the sector ministries, state corporations and county governments’.
Mitigation	Efforts that seek to prevent or slow down the increase of atmospheric greenhouse gas concentrations by limiting current or future emissions and enhancing potential sinks for greenhouse gases.
Resilience	The capacity of social, economic and environmental systems to cope with a hazardous event or trend or disturbance, responding or reorganising in ways that maintain their essential function, identity, and structure, while also maintaining the capacity for adaptation, learning and transformation (IPCC, 2014).
Sensitivity	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 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, 2007).



Introduction

Toolkit - Climate Information Services
Kenya Meteorological Department

1.0 Introduction

1.1 Background

There has been increased recognition of the potential for climate information to support sustainable development, supporting production, enhancing preparedness and protecting those people whose lives and livelihoods are directly impacted by climate risks. This has led to a growing focus on developing climate information and services that can better support decision making at all levels, including at national, County and sub-County levels, as well as amongst specific livelihood and social groups.

The decentralisation process in Kenya has afforded the Kenya Meteorological Department (KMD) the opportunity to develop climate services tailored to the specific and different needs of each County. In support of this process, KMD has developed a framework for co-producing County Climate Information Services (CIS) Plans together with key stakeholders.

While the County CIS Plan framework has been developed to support decentralisation in Kenya, there is a common need to develop climate services that better meet varying, localised climate information needs. As such this toolkit aims to both:

1. Support scaling-up within Kenya, to develop a County CIS Plan for each County; and
2. Document and share transferable learning on the process to support complementary initiatives seeking to develop decentralised climate services in the region and more widely.

1.2 What are County CIS plans and why are they necessary?

Developing a County CIS Plan is a process by which the County Meteorological Office (CMO) undertakes to jointly develop, with key stakeholders, a plan through which climate information can best support the people in the County in addressing the climate-related socio-economic challenges which they face.

In line with the process of devolution and decentralisation, KMD has established County Meteorological Offices (CMOs) in each County. KMD recognises the need for its CMOs to be providing climate information which is relevant for key decision makers within County Administration and the County's main livelihood groups. This, in turn, requires that CMOs establish an understanding of the specific types of climate information which these decision makers need, when they need the information, what format and language they need it to be provided in, and when and how they need to receive it, to ensure that it can appropriately support specific decision-making processes.

Equally, KMD recognises that the process of developing decision-relevant information requires co-production and engaging technical expertise from across different ministries (for example to develop livestock and agricultural advisories). It also requires CMOs to appreciate local and indigenous knowledge about weather and climate and their impacts on environment and livelihoods.

In Kenya, the CMO, managed by the CDMS, is responsible for initiating the process of developing and implementing the County CIS Plan. KMD headquarters is responsible for providing guidance and resources, where required, to support the development and implementation of the plan. The active engagement of key stakeholders from across County Administration and the County's principal livelihood groups is essential for ensuring that: (i) the plan is appropriate for meeting County-specific needs, (ii) the climate information produced by the CMO will be used and (iii) the CMO receives support from the County Administration and key stakeholders to enable the plan's effective implementation and sustainability.

1.3 What is this toolkit and how to use it?

This toolkit maps out six key steps in the process of developing a sub-state climate information services plan. Each step is supported by a module comprising an introductory overview, followed with one or more practical exercises and approaches through which the CDMS, or NHMS staff supporting decentralized services, can gather the information or undertake the exercises required to complete the County-specific, or local, input required. The exercises and approaches are illustrated with examples drawn from the development of County CIS Plans from across a range of counties.

The toolkit is designed to be used in conjunction with a CIS plan generic template. The toolkit references the KMD County CIS Plan template (see Annex 1), which includes both generic text, appropriate for all County contexts, and highlights areas which require County-specific input. Use of the toolkit in another country requires the development of a complementary template for developing decentralized climate services.

The introduction to each module notes key background source materials. These refer to Kenyan national policies and programmes and again need adapting for a different country context.

More fundamentally the toolkit assumes that:

- > A country supports the decentralisation of climate services;
- > There are staff with designated and approved roles and responsibilities to develop and provide decentralised climate services;
- > Resourcing of these staff to enable provision of decentralised services;
- > Capacity building of these staff to:
 - i) generate required services
 - ii) engage with stakeholders
 - iii) communicate effectively
 - iv) technically use relevant tools to deliver services.

The process of developing a County CIS Plan entails a number of steps:

- a) Understanding the roles of NMHS staff supporting decentralized climate services.
- b) Undertaking a technical assessment of existing observation networks and data sources and reviewing the current development and communication of climate information products.
- c) Identifying the climate information needs of key stakeholders across County Administration and amongst the County's principal livelihood groups (or other decentralised administrative region).

- d) Drafting the County CIS Plan using the generic template.
- e) Reviewing and finalising the County CIS Plan with key stakeholders and planning implementation, monitoring, evaluation and regular review of the County CIS Plan.
- f) Implementing the plan.

This toolkit is principally based on learning developed through two projects funded by the UK Government Department for International Development (DFID). The development of the County CIS Plan was initially piloted in the Adaptation Consortium starting in 2013 (<http://www.adaconsortium.org/>)². This project supports County Governments to mainstream climate change in planning and implementation, as well as preparing them to access global climate finance in support of adaptation and climate resilient development. Here County CIS Plans were developed for each of the 5 arid and semi-arid counties where the Consortium is working (namely Kitui, Makueni, Wajir, Garissa and Isiolo).

The County CIS Plan approach was subsequently scaled up within the Weather and Climate Information Services for Africa (WISER) programme's Decentralised Climate Information Services for Decision Making in Western Kenya (WISER Western) project³ for 9 counties in the Lake Victoria region (namely Trans Nzoia, Kisumu, Vihiga, Siaya, Kakamega, Migori, Homa Bay, Busia and Bungoma, as well as well as Embu. This toolkit directly builds on the Guide for Developing a County CIS Plan developed within the WISER Western project⁴.

² Bringing together the NDMA (hosting Ada Secretariat), KMD, IIED, UK-Met Office, the Adaptation Consortium brings together government agencies (National Drought Management Authority, and the Kenya Meteorological Department) international NGOs (International Institute for Environment and Development, UK-Met Office and Christian Aid) and local NGOs (Resource Advocacy Programme, Arid Lands Development Focus (ALDEF), Resource Advocacy Programme (RAP), Anglican Development Services – Eastern (ADS-E) and WomanKind Kenya) and is funded by the Department for International Development (DfID) and the Swedish Government.

³ Funded by UK DFID, further information is available at: <https://www.metoffice.gov.uk/about-us/what/international/projects/wiser/cis-kenya>

⁴https://www.metoffice.gov.uk/binaries/content/assets/mohippo/pdf/international/wiser/guide_developing-a-County_CIS_Plan.pdf

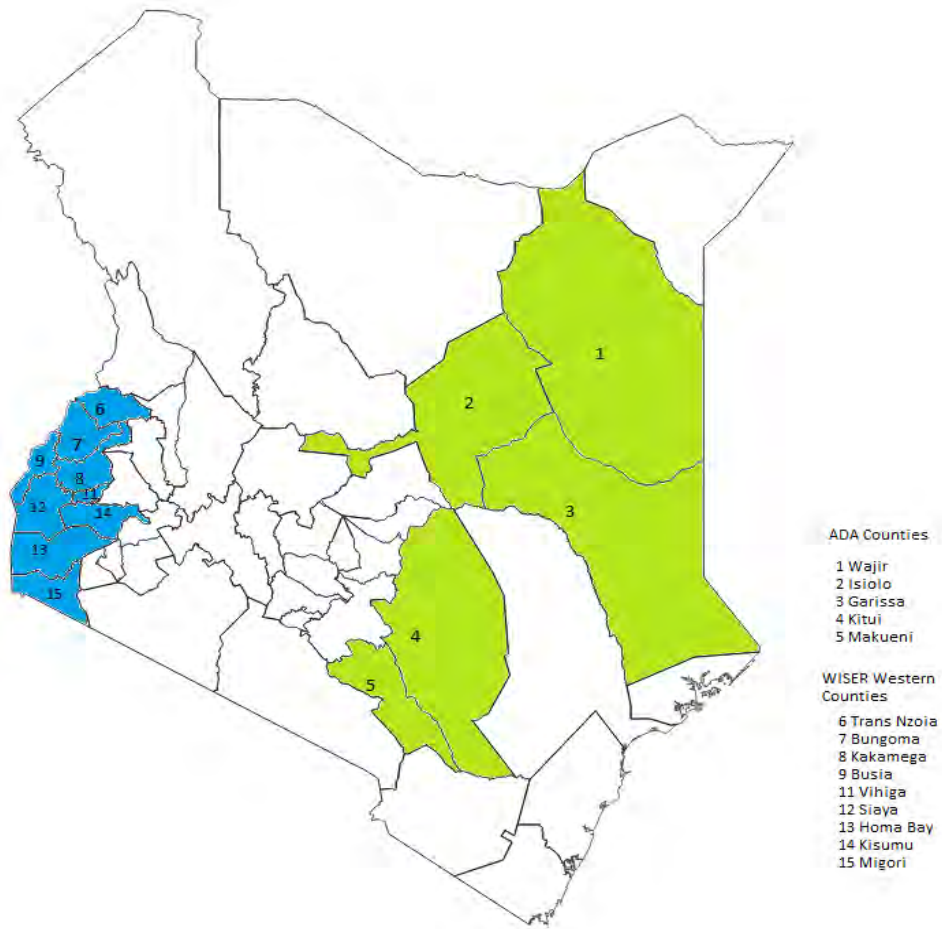


Figure 1: Counties where County Climate Information Plans have been developed



Module 1

Understanding the roles of NMHS staff supporting decentralized climate change services

Toolkit - Climate Information Services
Kenya Meteorological Department

2.0 Module 1: Understanding the roles of NMHS staff supporting decentralized climate services

Module 1 aims to ensure the foundational understanding essential to developing relevant decentralized services. It includes a review of the roles and responsibilities of the staff charged with developing these services, the principals underpinning the provision of services that can support the County or Sub-state and its people, and a review of the international, national and County policies and programmes that the County Climate Information Services seek to build on, support and operationalize.

Table 1: Module 1 Activities

Key activities	Section of County CIS Plan template (Annex 1) which this module will provide information for	Potential approaches methodologies and key source materials in Kenya
1.1 Review the roles of the NMHS staff supporting decentralised services and the support provided by national head office	Section 1.1 in the County CIS Plan template outlines the reasons for developing the County CIS Plan and KMD's mandate.	Kenya 2016 Climate Change Act National Adaptation Plan 2015-2030
1.2 Review the principles of developing decision-relevant climate information	Section 1.2 outlines the roles and responsibilities of the CMO and CDMS.	County Integrated Development Plan
1.3 Identify the gaps in county policies and plans and align them with international, regional, national and NMHS statutes, policies, plans and structures regarding climate, adaptation, development and disaster risk reduction	Section 1.3 Reviews international, regional, national, County and NMHS policies and plans relevant to the development of the County CIS Plan.	County Sectoral Plans KMD (2015) Strategic Plan for Development of Decentralised Services, Working draft KMD County CIS Plan Template with core content (Annex 1)

2.1 Review the roles of NMHS staff supporting decentralised climate services

Each NMHS has its own structure and process for developing decentralised and localised climate services, with differing roles and responsibilities across the organisation. KMD has developed the roles and responsibilities of the CMO and CDMS and these are included in the County CIS Plan Common Content (see Annex 1, Sections 1.1 and 1.2).

It is important that the CDMS clarifies the support provided by KMD, including the schedule for issuing of daily, weekly and seasonal forecasts, as well as monthly updates, and the issuing of extreme weather events.

It is also important that the CDMS/CMO reviews its roles and responsibilities, as well as its existing capacities and resources to ensure that the aims of the County CIS Plan are realistic and achievable.

2.2 Principles guiding the development of decision-relevant climate information services

Aware of the need to ensure that it is developing climate information which is relevant for decision makers and building on WMO Guidelines and complementary initiatives as well as the national constitution and legislation⁵, KMD has agreed a set of guiding principles recognising that, to be effective, climate information services need to:

- › Provide reliable probabilistic climate information
- › Be relevant to users' needs and gender-sensitive
- › Be accessible
- › Foster increased trust through developing two-way channels of communication for co-production of weather and climate knowledge
- › Support increased understanding, strengthening appropriate communication and use of probabilistic and uncertain information.

Section 2 of the County CIS Plan template requires a County-specific understanding of each of these principles. CMOs can draw from the stakeholder discussions undertaken within Module 3.2 (Finding out the climate information needs of each of the key stakeholder groups) to illustrate each of the principles. Consultation during the development of the County CIS Plan in Makueni led to the extension and expansion of the principles underpinning KMD climate services to reflect local concerns and priorities (see box 1, below).

⁵ Climate Services Partnership Working Group on Climate Services Ethics (2015) Toward an ethical framework for climate services <http://www.climate-services.org/wp-content/uploads/2015/09/CS-Ethics-White-Paper-Oct-2015.pdf> and WMO Global Framework for Climate Services Principles <http://www.wmo.int/gfcs/principles>. Climate services provision in Kenya needs to adhere to the Constitution of Kenya, the 2016 Climate Change Act and other key provisions (see further Section 1.3 below).

Box 1: Developing County-specific principles to underpin the Makueni County CIS Plan.

In Makueni County widespread consultation led to the expansion of the core KMD principles guiding national climate information services. Makueni County CIS Plan includes as additional principles that the Plan ensure:

- i. High priority for the needs of climate-sensitive sectors*
- ii. Climate services must be operational and continuously updated (sustainability)*
- iii. The CISP will encourage global, free and open exchange of climate-relevant data*
- iv. The CISP will facilitate and strengthen existing climate services*
- v. The CISP will be built through partnerships*

In relation to the principle of giving high priority for the needs of climate-sensitive sectors, the Makueni County CIS Plan notes:

'Agriculture and food security: In an era of rapid population growth, food security remains a major concern. Agriculture is vulnerable not only to market fluctuations but also to climate variability and climate change and natural hazards. This example illustrates how climate services can improve delivery and provides a set of actions that will improve uptake and use climate services in this sector.

Disaster and risk reduction: Most natural hazards are caused by weather and climate. This example illustrates how user-friendly climate services can help counties and communities build greater resilience against floods, droughts, storms and other hydrometeorological hazards (e.g. Landslides).

Energy: energy systems are the engine of economic and social development. Energy generation and planning of operations are markedly affected by meteorological events and energy systems are increasingly exposed to the vagaries of weather and climate affecting both the availability and energy demand.

Health: Climate variability and climate change have important repercussions on public health. Temperature and rainfall conditions influence the spread of communicable diseases while extreme weather events cause injury and death. This example also illustrates how demand-driven climate services can empower the health community/emergency agencies to save lives.

Water: Water is vital for life, but an over or under supply can threaten life, societies and economies. The amount and availability of water is strongly influenced by climate variability and change. As this example illustrates, seasonal climate outlooks and other climate services and products can greatly improve water supply management.'

Producing relevant climate information is a process requiring engagement of users and technical expertise from across different sectors. This engagement needs to be supported by a process of continued two-way dialogue, employing channels for regular feedback and feedforward, ensuring that the challenges and benefits of employing climate information inform an ongoing process of product development and review.

As shown in Figure 1 below, the process of developing decision-relevant climate information involves (1) developing a shared understanding of decision processes, capacities and risks, key climate concepts and terms and preferred communication formats and channels, (2) enabling access to relevant climate information and supporting regular channels for decision makers and climate information providers to communicate and review, and (3) supporting appropriate application of decision-relevant information. This process is recognised in the series of steps proposed for developing, implementing and monitoring a County CIS Plan.

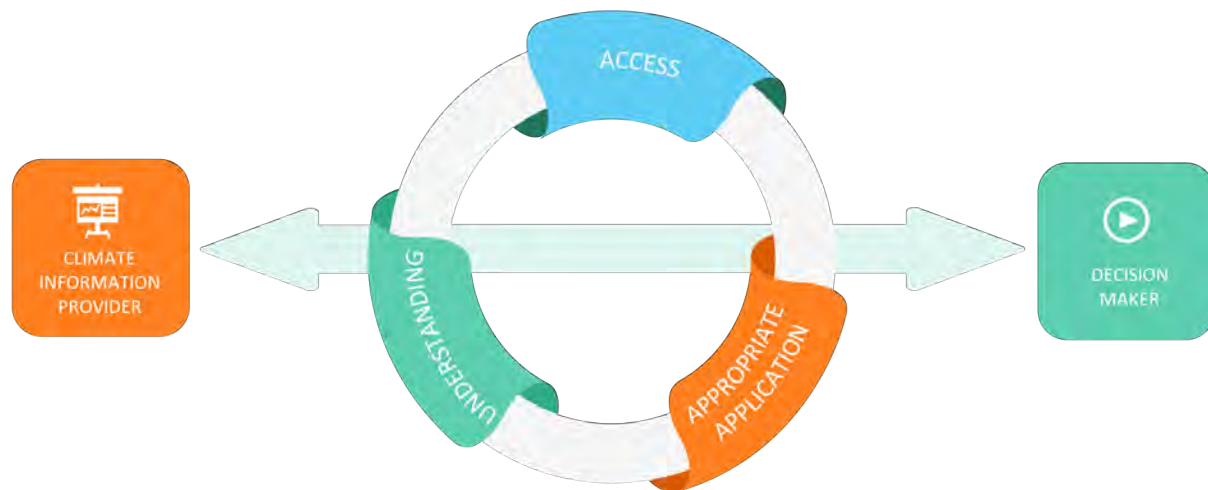


Figure 2: The process of developing decision-relevant climate information⁶

Reviewing key international, regional, national, NMHS and County statutes, policies, plans and structures regarding climate, adaptation, development and disaster risk reduction

CDMS need to be aware of provisions within the 2010 Constitution of Kenya (COK) relevant to KMD’s provision of climate services⁶. The Climate Change Act of 2016 adopts a mainstreaming approach, for climate change considerations to be integrated into planning, budgeting and implementation at all levels and across sectors of government, at national and county levels⁷. Figure 2, below, outlines the Climate change institutional coordination structures provided for in the 2016 Climate Change Act. Article 19(2) of the 2016 Climate Change Act requires a county government to mainstream implementation of the Act within the ‘development, updating and approval of the County Integrated Development Plan (CIDP), and the County Sectoral Plans’. Article 20 specifically requires authorities to ‘integrate climate risk and vulnerability assessment into all forms of assessment, and for that purpose liaise with relevant lead agencies for their technical advice’. The Government has also supported the development of an integrated framework for Climate Risk Management Framework, bringing together disaster risk reduction and climate change adaptation⁸.

⁶ The Constitution of Kenya Preamble states the people of Kenya need to be respectful of the environment which is our heritage and determined to sustain it for the benefits of future generations. The Constitution also guarantees Kenyan citizens the right to a clean and healthy environment and clean and safe water under the Bill of Rights (Article 42 and 43). See also in particular Articles 69, 70, 71, 72, 162 (2)) (b).

⁷ The Change Act ‘demonstrates recognition by the law that climate change is a cross-sectoral issue that has economic, social and environmental impacts across the board.’ Ministry of Environment and Natural Resources (2017) Climate Change Act, 2016: Regulatory Impact Assessment, Confidential Report. p6.

⁸ A Climate Risk Management Framework for Kenya: Integrating Disaster Risk Reduction and Climate Change Adaptation at National and County levels (2016)

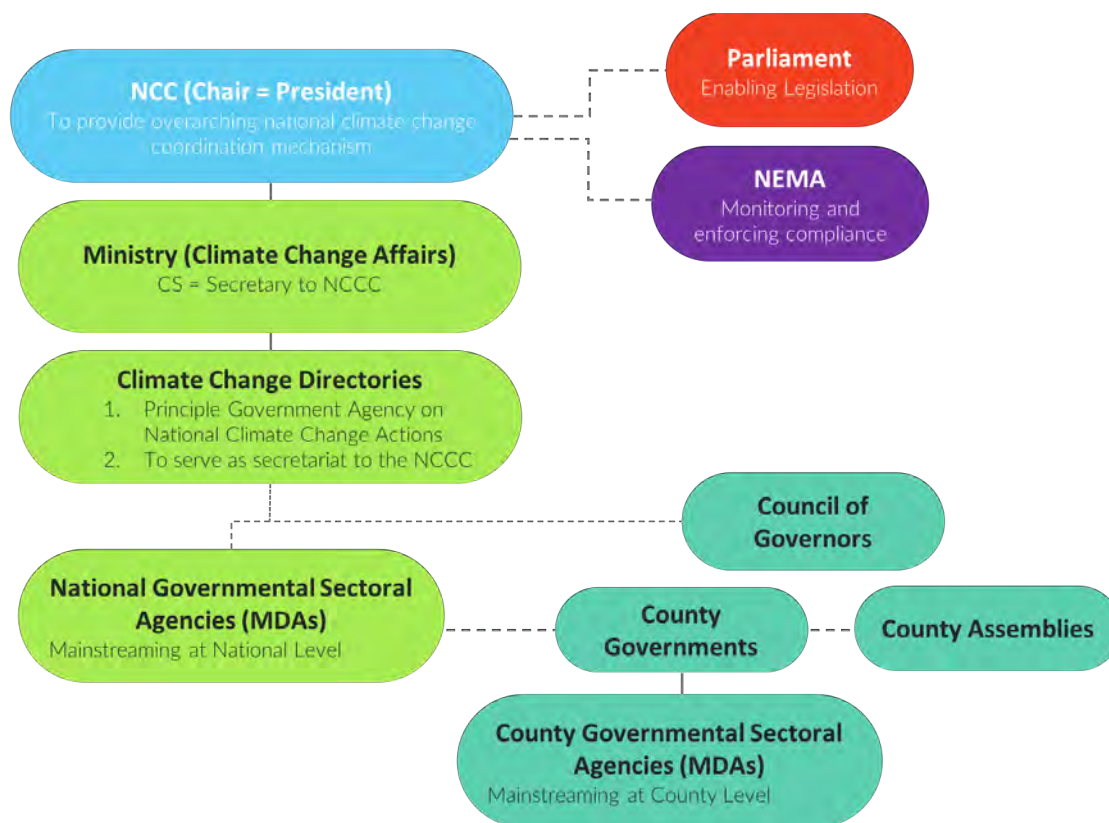


Figure 3: Climate change institutional coordination structures in the 2016 Climate Change Act, Kenya National Adaptation Plan (2016) p10

County governments have integrated climate change in their County Integrated Development Plans (CIDPs) to varying degrees. Some counties have passed regulations to establish climate funds, and other county governments are establishing institutional structures to mainstream climate change in plans and programmes⁹. The County Government of Kisumu has established a County Climate Change Office, a department of green energy and climate change in the Office of the Governor. Moreover, the Kenya Institute of Curriculum Development, Kenya School of Government (KSG), and the Ministry of Environment and Forestry (Climate Change Directorate (CCD) and KMD) have supported a Short Course Curriculum for Mainstreaming Climate Change in County Policy, Planning and Budgetary Processes. This is being used by the Kenya School of Government to train county officials.¹⁰

The Government of Kenya has also established a National Drought Contingency Fund, managed by the National Drought Management Authority that provides flexible financial resources to those impacted by drought. ‘The fund facilitates early payment to reduce the time between warning of drought stress and response at the county level, reflecting a policy shift from crisis management to

⁹ Ministry of Environment and Natural Resources (2016) Addressing Climate Change: Success Stories from Kenya, Government of Kenya.

¹⁰ Ministry of Environment and Natural Resources (2016) Addressing Climate Change: Success Stories from Kenya, Government of Kenya.

risk management. The Fund is the first of its kind in Africa and is expected to reduce the destructive impact of droughts'.¹¹

Key national policies and frameworks relevant to the development of the County CIS Plan include:

- › Climate Change Act (2016)
- › Kenya's National Adaptation Plan (2015-2030)
- › Kenya's Climate Smart Agriculture Framework (2015-2030)¹²
- › A Climate Risk Management Framework for Kenya: Integrating Disaster Risk Reduction and Climate Change Adaptation at National and County levels (2016)
- › National Disaster Management Policy
- › Common Programme Framework for Ending Drought Emergencies (EDE) in Kenya 2012-2022

Key KMD policies guiding the development of the County CIS Plan include:

- › Draft KMD (2015) Strategic Plan for Development of Decentralised Services,
- › Draft KMD (2015) Operations Manual for County Meteorological Directors,

CMOs will also need to be aware of WMO standards and guidelines including:

- › WMO Strategic Plan 2016-2019
- › Technical Regulations, Annexes and related Guides
- › Global Framework for Climate Services

The CMO will need to identify key programmes, plans and legislation of the County, or local government structure, that require support from climate information services. This information will be required to support Step 3, identifying the climate information needs of key County stakeholders (see further, below). While some processes are common to all Counties, there are also areas where Counties have developed legislation, programmes and plans specific to the County's priorities and preferred approaches. NMHS should engage with the County /Regional authorities to have weather and climate issues factored in their planning documents among them:

- › County Integrated Development Plan (CIDP)
- › County Sectoral Plans (for water, agriculture, livestock, infrastructure, education, health and other sectors)
- › County Adaptation Plan
- › County Contingency Plan
- › County Environmental Action Plan
- › County Geospatial Plans
- › Guidelines for developing County Integrated Development Plan

¹¹ Ministry of Environment and Natural Resources (2016) Addressing Climate Change: Success Stories from Kenya, Government of Kenya, p5.

¹² Amongst the proposals included in the adaptation technical analysis report (ATAR) for the agricultural sector, developed to inform the MTP, was contribution 'to development of climate information sharing and knowledge management systems; strengthen collaboration between MoA, KMD and others; enhance capacity for agro-meteorological information provision and ensure effective service delivery mechanisms including climate smart extension.' NCCAP 2013-2017, p59.



Module 2

Undertaking a technical assessment of existing observational networks and data, and reviewing current climate products and their communication

Toolkit - Climate Information Services
Kenya Meteorological Department

3.0 Module 2: Undertaking a technical assessment of existing observational networks and data, and reviewing current climate products and their communication

Having established an understanding of the purpose for developing a County CIS Plan within Module 1, Module 2 supports the collation of baseline information concerning the CMO’s current infrastructure, data and products. This module includes a technical assessment of the County’s current observations network, the state of understanding regarding the County’s climatology and projected future climate trends, as well as the existing climate products and services currently being provided.

Table 2: Module 2 activities

Key activities	Section of County CIS Plan which this step will provide information for	Potential approaches / methodologies / key source materials
2.1 Review and map the existing observations network for the County or administrative area covered by the plan	Section 1.5, Overview of the County Climate Section 1.6, Climate and its effects on human, animal and plant health	Employing approaches outlined in KMD’s CDM’s Operational Manual Reviewing data held in CMO and KMD headquarters
2.2 Review existing climate data to produce an overview of the County’s climatology, observed trends and current understanding of future trends	Section 3.1, The existing observations network Section 4.1, Existing weather and climate products	Reviewing all climate information currently produced by the CMO and KMD relevant to the County Developing maps from KMD Maproom. (http://kmddl.meteo.go.ke:8081/maproom/Climatology/#tabs-1)
2.3 Review what climate information is currently provided for the County by the CMO and KMD and the channels through which these products are currently communicated	Section 7.1, Monitoring and evaluation – providing a baseline of current climate service provision	

3.1 Review and map the existing observations network in the County

The CMO, or entity responsible for supporting decentralised climate services, needs to ensure regular review and maintenance of the existing observations network across the County. This will include assessing NMHS-managed facilities, services provided by Community Climate Monitors (CCMs), as well as weather monitoring instruments not managed by KMD, or the NMHS.

The CMO needs to develop a map of the County’s existing observations network for inclusion in the in County CIS Plan Section 3.1.

This assessment provides a baseline of the current observations network in the County (see County CIS Plan Section 7.1), enabling identification and planning of required strengthening of the network, as well as monitoring of changes undertaken through implementation of the plan.

3.2 Review the existing climate data for the County to produce an overview of average seasonal rainfall, observed trends and current understanding of future climate changes.

If available, include within the County CIS Plan:

- › A map of the County's main climatic zones, County CIS Plan Section 1.5
- › Maps of the average rainfall of each season across the county, County CIS Plan Section 1.5

Section 5.2.2 of the County Directors Operations Manual provides some guidance on developing a local climatology.

3.3 Review what climate information is currently provided for the County by the CMO and KMD and the channels through which these products are currently communicated

This assessment provides a baseline of the current climate information services provision in the County (see County CIS Plan Section 7.1), again vital to enabling planning of improvements to the services provided and monitoring changes through implementation of the plan.

In reviewing the current provision of climate information to the County, CMOs will need to consider both the scientific quality and appropriateness of communication approaches employed.

Key questions include:

- › What weather and climate products are currently being produced? (Detailing the timeframe, geographic scale (national, regional, County, sub-County level), sector-specificity, format, information and language in each type of climate product. What information is provided to support longer-term planning (including the County's climatology and future projections for the County)?
- › Which decision makers have the forecasts been developed for?
- › Which media channels and organizations are they communicated through?
- › Is the probabilistic nature of weather and climate information conveyed? If yes, how?
- › What is the level of capacity to understand and appropriately use climate information by all stakeholders?
- › What capacities does the CMO have to support stakeholders in understanding and using climate information?
- › Have County stakeholders been engaged in the development of climate information services? If yes, how have they been engaged?
- › How 'good' do the CMO and KMD assess their products to be across timeframes and geographic scales? (What level of technical/scientific skill do they assess their products to have?) Are the levels of skill of the products communicated to stakeholders?
- › Has there been regular feedback and review to ensure the continuous improvement of services?



Module 3

Identifying stakeholder's climate information needs

Toolkit - Climate Information Services
Kenya Meteorological Department

4.0 Module 3: Identifying stakeholder’s climate information needs

Module 3 enables the CMO to appreciate the climate information requirements of the County Government, the County’s principal economies, social and livelihood groups. This profiling is established through (1) mapping of, and (2) direct consultation with, decision makers across sectors and scales, (3) reviewing key County policies and plans and assessing how these align with national, regional and international frameworks, and (4) scoping the communications channels through which each of the key sets of actors can best be reached.

Table 3: Module 3 Activities

Key activities	Section of County CIS Plan which this step will provide information for	Potential approaches / methodologies / key source materials
3.1 Mapping key stakeholders across ministries, decentralized agencies and principal livelihood groups.	Section 1.3, 2, 4, 5	For 3.1, stakeholder mapping and analysis.
3.2 Reviewing key County policies and programmes, including the CIDP, assessing how these align with national, regional and international policies and programmes, and where climate information could strengthen these.		For 3.2, Reviewing approaches used and issues raised in CIDP development meeting across different Counties
3.3 Finding out the climate information needs of each of the key stakeholder groups through direct discussion.		For 3.3, Focus groups, surveys and key informant interviews
3.4 Scoping the reach of existing media channels and social networks.		For 3.4, scoping of communications channels and social networks through meeting with radio, TV, and integrating questions on trusted social networks within 3.3.

In developing the County CIS Plan, the CMO identifies how climate information can best support decision making in the County across livelihoods, timeframes, sectors and levels of decision making.

As outline in Figure 3 below, this requires considering the following key questions:

- › What are the County’s principal social and economic sectors and main livelihood groups?
- › How sensitive are decisions in each sector and livelihood to climate variability and changes?
- › How is the impact of climate variability and change currently being considered in decision making for each of these sectors and livelihood groups?
- › What decisions are being made that may be better made with the input of relevant climate information?
- › Would the ability to make appropriate decisions be improved by providing revised or additional kinds of climate information? And, if so, how?
- › How can climate information best reach decision makers, including the marginalised?

This analysis provides a foundation from which to develop a stakeholder engagement strategy to support the development of the County CIS Plan.

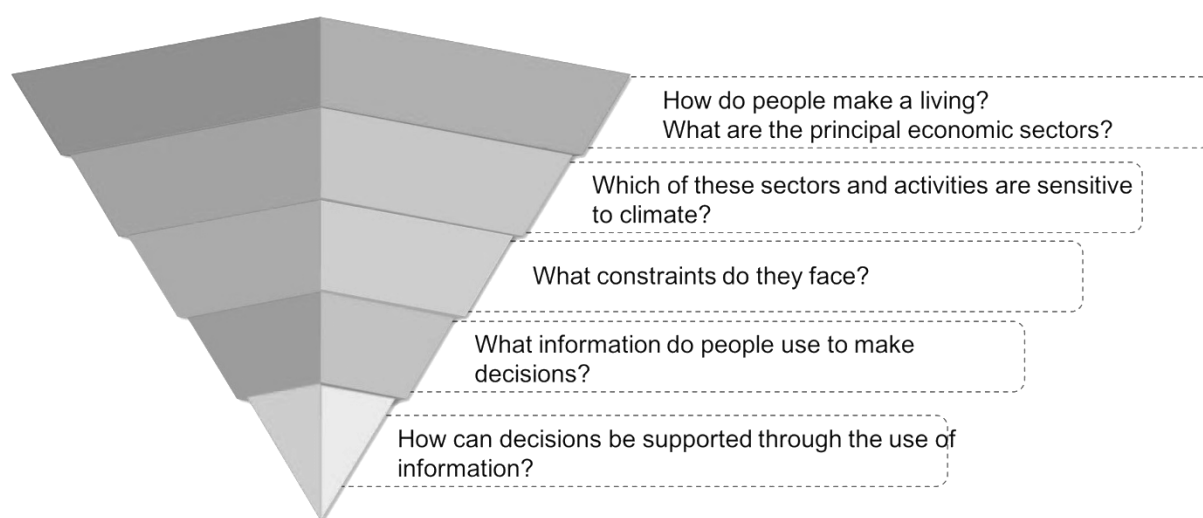


Figure 4: How climate information can support a specific decision-making process¹³

4.1 Mapping key stakeholders across sectors and livelihoods

Who are the principal users of climate information services? And how can the CMO best engage with each? This analysis will be vital to ensuring that you develop a County CIS Plan which meets the needs of key decision makers in your County both within County Administration and key livelihood groups.

Key stakeholders are likely to include:

¹³ Kniveton et al (2016), p7.

- › County Directors and technical experts for Agriculture, Livestock, Health, Planning and the County's other principal economic sectors;
- › County Committees engaged in key areas including disaster and/or drought management and contingency planning, developing the CIDP and budgeting;
- › NGOs and local community organisations engaged in major rural development, disaster risk reduction and humanitarian response projects in the County;
- › The Kenya Red Cross County coordinator;
- › Senior representatives of the County's principal faith groups;
- › Leaders of livelihood associations including: farmers', pastoralists' and/or fishermen's associations;
- › Senior representatives of large public or private sector organisations and initiatives, such as the Hunger Safety Net Programme and the Climate Smart Agriculture Project; and
- › Relevant sectoral experts from local universities and research institutes.

Stakeholder analysis comprises a series of steps including:

1. Identifying the key issue or 'target group' that you are trying to support – those whose lives and livelihoods are directly impacted by climate-related risks.
2. Identifying all key sets of actors directly or indirectly involved with the key issue or supporting the target group.
3. Considering why climate information is important for each group of actors and how it could effectively support each group's decision-making processes.
4. Assessing the current interest of each stakeholder in using, as well as their influence/power in promoting strengthened use of, climate information.
5. Map the links between stakeholders, to understand the current flows of climate information and identify gaps in communication/use and relevant entry points for its strengthened use.

Identification of key stakeholders can be undertaken through consultation with a group of well-informed decision makers from across key sectors and livelihood groups. The CMO should remain open to the identification of additional key stakeholders during in-depth consultation to identify specific climate information needs (steps 3.2 and 3.3). Box 2, below, outlines the key stakeholders identified through consultation for the Makueni County CIS Plan.

Box 2: Planning bodies and frameworks that the Makueni County CIS Plan seeks to support

Level of decision making	Principal planning and sectoral bodies and frameworks which the Makueni County CIS Plan seeks to support
County level	County Integrated Development Plan (Governor's Office) County Steering Group on Drought Emergency (CSG) Ministry of Environment, Energy and Natural Resources Ministry of Agriculture, Water and Irrigation County Climate Change Planning Committee (CCCPC) Executive Finance Committee and Budget and Economic Forum County's Disaster Management Committee County Environment Committee
Ward level	Ward Climate Change Planning Committees (WCCPCs) Council of elders (Atumia ma thome) Water Resources User Associations (WRUAs), Community forest associations (CFAs)

There are a range of tools to support stakeholder mapping. These include power/interest mapping (as outlined below) and political economy analysis. Useful resources include:

People and connections is a tool for mapping target audiences and working out how to support them <http://diytoolkit.org/tools/people-connections-map/>

Christian Aid's power mapping tool supports analysis of stakeholders and consideration of how best to engage with and influence key actors <http://www.christianaid.org.uk/Images/Power-Mapping-Power-Analysis-Tool-2.pdf>

CARE's Climate Vulnerability and Capacity Assessment Handbook (2009) outlines the process for undertaking institutional analysis, policy analysis and a Venn diagram tool for identifying those institutions most important to at risk communities http://www.careclimatechange.org/files/adaptation/CARE_CVCAHandbook.pdf

The County Directors' Operational Manual also includes a section on Stakeholder Engagement. Section 3 defines who stakeholders are, what stakeholder engagement is and why it is important, types of stakeholder engagement, how to identify stakeholders and their interest, designing a stakeholder engagement strategy and meeting and using stakeholder feedback to inform the development of climate services.

4.2 Mapping stakeholders' power and interest

This process maps the interest of stakeholders in CIS and their power in relation to decision making. It is especially helpful in allowing the CMO to develop a stakeholder engagement strategy for their County CIS Plan.

As indicated in the figures below, the process divides stakeholders into four groups of people

- > Low Power + Low Interest
- > Low Power + High Interest
- > High Power + Low Interest
- > High Power + High Interest

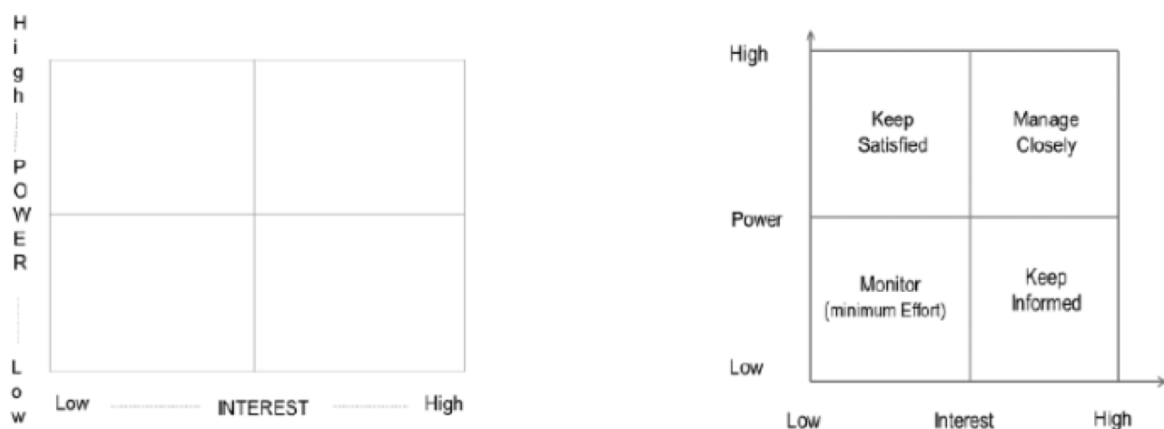


Figure 5: Mapping the power and interest of key stakeholders

The stakeholders in each group require different types of engagement:

4.2.1 High Power, interested people: The 'manage closely' group

These are people you must fully engage with and make greatest efforts to satisfy. They are "Key players" who deserve maximum attention. It is important to identify who can influence them.

- > Concentrate on these key players
- > Involve them in governance/decision making
- > Make reference to them regularly during consultative process

4.2.2 High power, less interested people: The 'keep satisfied' group

Put enough work into approaching these people to keep them satisfied, but not so much that they become bored with your message. Be sure to meet their needs as they have power and they may become interested.

- > Engage and consult these stakeholders on specific areas of interest
- > Try to increase their level of interest
- > Aim to move them into upper right part of the matrix (the 'manage closely' group)

4.2.3 Low Power, but interested people: The 'keep informed' group'

Keep these people sufficiently engaged.

- › Make use of their interest by involving them
- › Keep them informed and consult them on specific issues
- › Consider them as potential supporters/goodwill ambassadors

4.2.4 Low power, less interested people: The 'monitor' group

Monitor these people, but do not bore them with excessive communication. They may become interested and/or powerful.

- › Invest minimum effort
- › Inform via general communications- newsletters, websites
- › Aim to move them into the right part of the matrix (generating their interest)

4.3 Identify the gaps in Key County (or local government) policies and plans in addressing climate risks and align them with national, regional and international climate-related policies and programmes

This step is informed by Module 1.3.

Analysis from this step informs County CIS Plan Sections 1.3, 2.4, 4, 5, 6, 7

It is important that the CMO to review and identify the gaps in key county policies, including the County Integrated Development Plan (CIDP) as well as policies and recommend suggestions for improvement to ensure they are climate sensitive. For example, Kenya's Climate Change Action Plan 2018-2022 highlights the need to ensure that 'infrastructure is "climate proofed" – that is, designed, constructed and operated in a way that accounts for anticipated risks and opportunities that result from climate change, ensuring that infrastructure investments are not compromised in the future.'¹⁴

Using the information gathered in step 2.2, to collate historical data and understanding of both current and future trends, the CMO needs to consider how development in the County has been impacted by observed trends, is currently being impacted by climate variability and may be impacted by longer-term climate change.

In analysing the key policies and plans of the County, or relevant local administrative body, key issues to consider include:

- › How sensitive is the plan or policy to climate variability and change?
- › Does the plan or policy specifically recognise climate-related risks and opportunities?
- › How does the plan integrate climate variability and change within its planning across key sectors and livelihoods? What specific climate-related activities are included within the existing policy or plan?

¹⁴ NCCAP (2018) p3.

- › Could the CIDP, or other County policy, be strengthened by closer integration of climate risks and opportunities? And, if so, how? Can you identify specific ways and practical activities which the CIDP could include to better address climate risks and maximise climate opportunities?
- › What climate information do the decision makers developing the CIDP currently have access to?
- › Is there additional climate information which the CMO could provide or develop to strengthen the development of the CIDP?

In 2016 KMD initiated a process to review how the first generation of CIDPs, for the period 2013-2017, addressed climate risks and opportunities with a view to strengthening their integration within the next generation of CIDPs. In 2016-2017, KMD was also involved in the broader, country-wide process of promoting strengthened climate mainstreaming within the development of the second generation of CIDPs (see box 3, below). KMD supported a climate change awareness workshop for County planners and curriculum development for elected officials, including on the importance of climate information to support planning. The initiative heightened recognition of the need for planning to be informed by climate information and advocated for the inclusion of County CIS Plan within the CIDP process.

Box 3: Excerpts from Engaging with the County Integrated Development Plan Process – WISER Western, 2016¹⁵

During the first phase of the WISER Western project, work was undertaken to explore how climate information could be more readily mainstreamed into the planning process at the county level. Up until this point the availability and use of climate information at the county administration level to inform the climate proofing of planning decision had been limited and inconsistent. Since 2012 each of Kenya's 47 counties had been tasked with preparing five-yearly County Integrated Development Plans (CIDPs), establishing strategic targets and their implementation. However, without acknowledging the risks that climate impacts can have on the successful delivery of these plans, there is a very real threat that the development goals which these plans purport to support will be severely undermined. Improving the incorporation of climate information within the plans has become imperative, ensuring that climate-smart investments can be delivered over the short to medium term.

As the next generation of CIDPs was due for renewal in 2017, this project undertook some work to explore the means by which climate information can better inform the second generation of these plans. The activities during this phase were primarily focused on two principal themes:

1. Understanding the processes and responsible bodies which will lead the production of the CIDPs.
2. Exploring and advocating for the anchoring of the County Climate Information Services Plans (County CIS Plan) in the CIDPs.

A baseline assessment of the CIDP for the county of Trans Nzoia noted recognition of climate risks but with little information regarding plans for mitigation and adaptation. The WISER Western project team collaborated with the Ministry of Devolution and Planning (MODP) and the United Nations Development Programme (UNDP) in running a climate change awareness workshop for county planners. This provided an opportunity to work with the principal organisations involved in the CIDP process and to reach a large number of stakeholders from a variety of different sectors. Additionally, the project team helped to inform the design of a curriculum for the Kenyan School of Government (KSG). This covered key concepts which underpin weather and climate, why it is important in the planning process, and where the necessary weather and climate information can be accessed.

The potential for County CIS Plans to play a key role in the generation of the next round of CIDPs was almost universally recognised by the county and national administrations consulted. The Council of Governors stated that they were happy to provide leadership in incorporating the CIS Plans into the CIDPs and would strongly promote buy-in from the counties. Training on the County CIS Plans was requested for the County Executive Directors of planning, energy, water, environment and natural resources.

¹⁵ https://www.metoffice.gov.uk/binaries/content/assets/mohippo/pdf/international/wiser/report_engaging-with-cidp-process.pdf

In February 2018, KMD representation was sought by Kakamega and Siaya Counties to support finalisation of CIDP draft documents before submitting for public participation. KMD's contributions were highly appreciated. The approach for strengthening the climate-sensitivity of CIDPs was further developed, enabling CMOs to

- › Undertake chapter-by-chapter assessment to identify areas where CIDPs (i) had insufficiently integrated climate issues and (ii) insufficiently aligned with national and international policies and programmes related to climate and development; and
- › Use this assessment to develop practical proposals on how climate could be further mainstreamed and identify concrete opportunities for addressing climate-related risks and opportunities.

Included in box 4, below, is an overview of the framework employed for analysing the climate-sensitivity of the draft 2018-2022 CIDPs, followed in boxes 5-6 by excerpts from the assessments undertaken in Kakamega and Siaya Counties to illustrate the sector- or organisation-specific outputs of reviewing (i) climate mainstreaming and alignment with key national and international policies; and (ii) proposals for strengthening the climate-resilience of the CIDP.

While the assessments identify a wide range of ways for strengthening climate-mainstreaming and resilience building within the CIDPs, it is worth noting that recommendations include:

- › The County Assembly collaborate 'with KMD and other stakeholders in the development and implementation of an efficient and effective integrated county climate information communication strategy';
- › 'government programmes/projects/policies across the organizational flow should have been screened through a climate lens" and 'new climate smart project proposals and on-going projects will be reviewed for climate proofing';
- › 'Inclusion in the county and sub county forums of "the County Meteorological Office' ... 'in order to support the climate resilience building related activities".

Box 4: Overview of the approach employed for undertaking a chapter-by-chapter analysis of the how the CIDPs (i) address climate risks and opportunities and (ii) align with national and international policies and programmes related to climate and development

Criteria used and Corresponding Chapter by Chapter Findings
Climate related issues in the County mission, vision or core values
Do the vision, mission and core values integrate climate-related risks and opportunities?
Objectives aligned with climate change responses
To what degree do sector objectives recognize and integrate consideration of the opportunities and risks associated with climate? Do interventions recognize the adjustment and additional measures required to ensure production and long-term sustainability in a changing climate? For example, does the CIDP clarify what upgrades are required to address climate risks to existing infrastructure? Has the health sector considered the likely impact of climate change on changes in disease?
Evidence of defined responsibilities for responding to climate change
Is there effective coordination on climate-related issues and initiatives? Is there sufficient capacity to appropriately integrate climate information within planning? Has the County assessed the climate-sensitivity of County programmes and investments? Does the County have access to the technical expertise to undertake assess climate-sensitivity across sectors and plans, or where can it source this?
Clearly outlined climate-related activities
Are there areas where climate has not been adequately integrated within proposed sector plans? Does the Plan consider the range of actions required to enable the County's people, biodiversity, environment and infrastructure to deal with a changing climate? Has is considered the activities required across every sector, including health, disaster risk reduction, agriculture and livestock, infrastructure, education, biodiversity, forestry, natural and water resource management? What activities are included to address climate mainstreaming, including training?
Coherence among existing and planned sectoral policies and plans on climate change issues
Does the CIDP align with the Climate Change Act, the National Climate Change Action Plan, national Mid Term plans and national programmes related to climate such as the Kenya Climate Smart Agriculture Strategy? Are there references to national and international climate programmes and funding sources?
Implementation, monitoring and evaluation frameworks specific to tracking climate objectives and implementation of activities
Is the need for climate sensitivity screening of County Plans and Programmes recognized? Does the CIDP provide sufficient coverage of their methodologies for reporting on climate change issues as required by the 2016 Climate Change Act, guided by the national climate change reporting mechanisms and coordinated by the Climate Change Directorate (CCD)?

Box 5: Excerpt from the analysis of draft 2018-2022 Siaya CIDP in terms of climate-mainstreaming and alignment with national and international policies and programmes

Criteria used and Corresponding Chapter by Chapter Findings
Climate related issues in the County mission, vision or core values

The CIDP has spelled out the county's vision and mission statements, but none of them captures climate issues

Objectives aligned with climate change responses

Chapter 1:

- › The CIDP has not presented any overall and/or sector-specific objectives of what the county aims to achieve in the plan period that could be traced to raising the profile of climate issues in the planned programmes, projects and activities.
- › A general introduction to the CIDP has been made but still remains weak on consideration of climate and climate change related issues in terms of vulnerability, impacts and the need to invest in response measures that support mitigation against, adaptation to and eventually building resilience to climate change effects and impacts.
- › Presentation of the status of county sectors also lacked strong framing of climate change effects and impacts on the county development sectors and overall environment to lay sound foundation for the need for mainstreaming climate information into CIDP.
- › Sector programmes, sub programmes, projects and activities are weak on integration of climate change issues

Chapter 2:

- › While the CIDP reviews the county performance during the 2013- 2017 period in a comprehensive manner, there is no evidence of inclusivity of climate change concerns in the CIDP for this period
- › The data presented in the analysis do not reflect climate change related expenditure on activities, outputs, and achievements
- › The challenges and lessons relating to the effects and impacts of climate on investments, if any, are not reflected in the implementation of the 2013-2017 CIDP

Chapter 3:

- › In section 3.1, while in the preamble paragraph, there is clear indication of how the spatial framework within which development projects and programmes will be implemented, there is no indication of the need to integrate weather and climate information and any likely climate change impacts on the planned spatial development and resilience building actions
- › The policy thrust as well as set out measures and policy statements across sectors are devoid of climate information functions, climate change response actions and outcomes for sustainable development

- › In section 3.2, the CIDP fails to recognize that though climate change has been looked at from the threat perspective, it also presents enormous opportunities and consequently can offer sustainable management strategies across sectors
- › In section 3.3, the CIDP fails to link the planned development priorities and strategies to the National Climate Change Action Plan (NCCAP) as well as the Nationally Determined Contributions (NDCs).
- › In section 3.3.1, the SWOT analysis fails to recognize lack of policy and legal frameworks on uptake and utilization of weather and climate information products and services as well as lack of awareness about climate change impacts on development as major weaknesses and threats to attainment of climate resilient development
- › Under needs analysis, the plan fails to prioritize climate smart approaches in addressing planned activities and climate related strategies in formulating county level climate change act, training/ capacity building, fostering collaboration with climate service providers, coordination structure for climate change activities, and awareness creation on climate change impacts on development.
- › In section 3.3.1, Sector Programme objectives do not address climate change related issues

Evidence of defined responsibilities for responding to climate change

3.3.1 County Assembly

- › The proposed enactment of laws or bills do not include those on climate change related issues
- › No evidence of development programmes/ sub programmes aimed at responding to climate challenges in infrastructure, communication, disaster risk management, hazard early warning, awareness creation, and capacity building

3.3.2 Public Service and Governance

- › Lack of linkage of sector plans to approaches set out in the Climate Change Act (2016) and the National Climate Change Action Plan (NCCAP) which would strengthen climate change coordination and governance, and integration of climate change considerations
- › Failure of the sector to recognize its weaknesses in mainstreaming climate change into development planning, budgeting and implementation
- › Lack of clear values regarding climate change impact on individuals and social responsibility
- › No indication of mechanisms for developing synergies among stakeholders for production and use of climate information in development
- › Absence of policies and structures for mitigating against, adapting to and building resilience to climate change effects and impacts
- › Perceived laid back attitude towards climate change impacts
- › No indication of engaging enforcement officers to coordinate sectoral climate issues including DRR
- › No plans for sensitization on the role of climate information products and services in attainment of sustainable development goals
- › No indication of planned training in DRR preparedness for and management of climate related risks
- › Lack of sector climate change coordination structure

3.3.3 Finance and economic planning

- › Sector does not recognize the county's low absorption of available climate change response financing mechanisms
- › Plan fails to highlight inadequacy of capacity to integrate climate change into planning and budgeting processes
- › No global, international and local financing mechanisms that address climate change are considered in resource mobilization plan
- › Absence of a budgetary unit for climate change related issues
- › Climate issues are not factored into policies and plans
- › No evidence of coordination of cross-cutting sectoral programs including climate change issues

3.3.4 Agriculture, Livestock and Fisheries:

- › No commitment to implement recommendations and guidelines contained in Kenya Climate Smart Agriculture Strategy, Agriculture, Fisheries and Food Authority Act (no 13 of 2013), and the National Drought Management Authority Act 2016, that are essential for mitigating against and adapting to climate change
- › No evidence of intention to develop and implement a climate smart agriculture (CSA) plan
- › The sector does not recognize its inability to fully exploit available weather and climate resources developed and disseminated by KMD
- › Lacks mechanisms of exploiting weather and climate information products to guide planning and decision making across the sector's value chains
- › The plan does not state the need for development of stakeholder engagement plan and coordination structure
- › The plan is silent with regard to promoting uptake and utilization of climate information and prediction products in planning and decision making
- › There is no indication of the likely development of collaborations with the weather and climate services providers
- › No plans for capacity building on climate smart land use planning and management
- › There is no indication for climate smart fisheries resource development and management plans
- › There is no evidence of promoting Insurance schemes for climate risky fishing operations
- › Plan has omitted implementation of the weather and climate forecasting and early warning system for fisheries
- › There is no clear indication for promoting the alternative renewable energy sources in intensive dairy production by adoption of bio-digesters
- › Lacks commitment on the formation of collaboration with climate information providers on climate induced livestock disease surveillance and disease early warning systems

Box 6: Excerpts from the proposals to strengthen mainstreaming and resilience building within the CIDPs of Kakamega and Siaya Counties

No	Sector	Resilience building interventions
1	County Assembly	<ul style="list-style-type: none"> › Climate proofing construction of the Speaker’s residence, Assembly complex, Ward offices, Sewer line, Sentry box and walkway shades › Implement capacity building activities of Siaya County Assembly in climate disaster risk reduction for sustainable county socio-economic development. › Collaboration with KMD and other stakeholders in the development and implementation of an efficient and effective integrated county climate information communication strategy › Establishment and operationalization of multi-sector climate change capacity building and coordination unit
2	Public Service and Governance	<ul style="list-style-type: none"> › Integration of weather and climate information products and services into development programmes, projects and activities › Building, expanding and strengthening synergies among stakeholders for production and use of climate information in development › Developing and strengthening policies and structures for mitigating against, adapting and building resilience to climate change effects and impacts › Developing and implementing a disaster risk reduction plan and climate early warning system
3	Finance and Economic Planning	<ul style="list-style-type: none"> › Integrating climate information in planning and decision making processes › Promoting microfinance facilities that would support households and communities to invest in climate hazard tolerant and diversified livelihood activities › Developing and enforcing implementation of climate-proofed budget preparation policies and guidelines

4	Agriculture, Livestock And Fisheries	<ul style="list-style-type: none"> › Promoting precision agriculture practices that consider expected weather and climatic factors ahead of agricultural decisions › Developing and adhering to weather/climate based sub-sector/sector seasonal and annual calendars › Developing and implementing climate driven disease surveillance and early warning systems › Promoting use of efficient climate smart agricultural technologies › Strengthening collaboration with climate services providers in order to develop and disseminate agro-weather advisories as a component of the agricultural extension system › Developing capacity of value chain actors in the uptake and use of climate information products and services › Promoting of alternative energy sources in intensive dairy production by use of bio-digesters › Improving utilization of quality inputs as informed by climate forecasts and projections
		›

4.4 Identifying the climate information needs for each of the key stakeholder groups through direct discussion

Information from this step informs County CIS Plan Section 2.

Building on Step 3.2's analysis of key County/local administration planning and policies, a range of methodologies, including focus groups, surveys, key informant interviews and informal discussion during meetings and workshops, can be used to understand the different climate information needs of key stakeholders. Further below in this section are a series of questions designed to find out:

- › How people's decisions, lives and livelihoods are affected by weather and climate;
- › People's access to, understanding and use of climate information; and
- › The channels through which to effectively communicate with key livelihood groups.

Annex 2 also includes a survey employed within the County Climate Outlook Fora, within the WISER Western project, to baseline and monitor access to, understanding and use of decentralised climate services. Annex 3 includes a sample score-card for collating data on access to, understanding and use of decentralised climate information to support County Government and principal livelihoods.

It is usually best to use at least two different methodologies to enable cross-checking and so strengthen the evidence base. It is important to review indirectly identified climate information needs, resulting, for example, from desk-based review of CIDPs or other County planning and policies, with face-to-face and in-depth discussion, on both an individual and group basis, with representatives of key livelihood and decision-making groups.

CMOs need to ensure consultation with a range of stakeholders from across different ministries, sectors and livelihood groups. Box 7, below, outlines the climate information requirements of a range of key stakeholders in Kakamega and Siaya Counties, ascertained through discussion in meetings and workshops, rapid assessment and review of CIDPs.

In meeting with social and livelihood groups, CMOs should conduct meetings with different groups to ensure consultation is representative of:

- › **The main different types of livelihood in the county.** Farmers and livestock herders normally predominate. Coastal and lake side communities may also have large fishing communities. In counties with large urban populations, a community group in the main city should also be consulted.
- › **The main climatic zones** if there are significant differences of climate within the county, a community should be consulted within each zone.
- › **The main areas prone to weather-related hazards** if any parts of the county are particularly exposed to weather-related hazards, such as floods or landslides, a community within this high-risk zone should be consulted.

- › **Different genders as well as socially marginalised groups.** Separate discussions with women may enable more active consultation on their specific climate information needs. It will also be essential to ensure that consultation encompasses consultation with those social groups who are not of the majority religious, ethnic, livelihood or other social groups within the County.

In meeting with livelihood groups, key questions include the following (and this set of questions can be adapted to support relevant discussion with County Administration, key ministries and other relevant stakeholders):

Questions to identify how people's decisions, lives and livelihoods are affected by weather and climate:

- › What are the main sources of livelihood in this ward/district/County/region?
- › How are each of these affected by weather and climate? (for farmers include consideration of how each major crop is affected by weather and climate as well as considering access to markets)
- › How are your houses and families affected by weather and climate? (including consideration of flood risk, drought risk, climate-related health issues)
- › What kind of weather and climate information do people in your area need? (and then rank priorities for the climate information needs identified)
- › How does weather and climate impact on the different gender responsibilities, for example fetching water for domestic use during periods of extended drought or caring for those most vulnerable, including children and old people, in case of floods and storms?

Questions related to people's access to, understanding and use of climate information:

- › Currently how easy is it for you to access weather and climate information relevant to your livelihood/decision making?
- › What kind of weather and climate information do you currently receive? (For example seasonal forecasts, early warning, and longer-term trends).
- › Through which channels do you receive this information? Identify the top three channels.
- › Do you know where this information comes from (KMD and other providers)?
- › How accurate is the weather and climate information which you currently receive?
- › Do you currently use (scientific sources of) weather and climate information?
- › Do you use local knowledge about the weather and climate and/or indigenous indicators? If yes, what are these?
- › What decision have you made using weather and climate information?
- › Did you find it difficult to use the information in your decision making? Do you feel confident in using weather and climate information in short-term planning (now to seasonal timeframes)? Do you feel confident in using climate information in long-term planning? Can you access technical support where you are not confident in using climate information?
- › Do you receive the information in time for it to support your decision making?
- › What improvements could be made to existing products and services to make them more useful?
- › How often do you need to receive weather and climate information?
- › Do you have specific suggestions about how weather and climate information could be made more useful for you?

Questions for scoping the channels through which to effectively communicate with key livelihood groups:

- › How many households in the community have access to radio?
- › Which radio stations do people listen to? List the top three stations.
- › How often do most people listen to the radio? What time of day do most people listen to the radio? What kind of radio programmes do people in your community prefer to listen to?
- › How many households in the community have access to TV?
- › Which TV channels do people most watch? How often do they watch? What time of day do most people watch? What kind of programmes do people prefer to watch?
- › How many households have access to a mobile phone? How many mobile owners have a smart phone or use their phone to access the internet? How many people use their mobile phones to send and receive SMS messages?
- › Which channels of communication do men prefer to receive information through?
- › Which channels of communication do women prefer to receive information through?

(Considering the channels already discussed as well as social networks including specific types of community meetings, such as women's groups, religious networks, talking to friends and family)

- › Which channels of communication are most effective in reaching women? Do these channels allow for information to reach women quickly in case of an extreme weather event, such as very heavy rainfall?
- › Which are the primary and secondary languages spoken by people in your community?
- › What proportion of people in your community can read and write?
- › What language(s) do people find easiest to read in?

Box 7: An excerpt of Sector Climate Information Needs in Kakamega and Siaya Counties identified through reviewing the draft CIDPs, discussions during workshops and meetings and rapid assessment

No	Sector	Climate Information Needs
1	County Assembly	<ul style="list-style-type: none"> › Daily weather forecasts of rainfall, temperature, wind speed and direction, visibility, cloud cover, solar radiation, humidity, sunshine hours › Seasonal climate outlook and advisories for rainfall and temperature › Dekadal climate outlook of rainfall amounts and distribution; temperature › Monthly climate outlook of rainfall amounts and distribution; temperature › Climate change projections of rainfall and temperature
2	Public Service and Governance	<ul style="list-style-type: none"> › Weather and climate data › Summaries and normal of rainfall amount and distribution, maximum and minimum temperatures, wind speed and direction, sunshine hours, solar radiation and relative humidity › Climate change projections and scenarios of rainfall and temperature › Daily weather forecasts of rainfall and temperature, wind speed and direction, visibility, cloud cover, solar radiation, humidity, sunshine hours › Seasonal climate outlook and advisories for rainfall and temperature › Dekadal climate outlook › Monthly climate outlook
3	Finance and Economic Planning	<ul style="list-style-type: none"> › Weather and climate data › Daily weather forecast on rainfall › Weekly weather forecast on rainfall, temperature › Agro-meteorological advisories › Dekadal climate outlook › Monthly climate outlook › Seasonal climate outlook and advisories › Climate change projections and scenarios of rainfall and temperature › Advisories/alerts of drought, strong wind, dust storms, flash-floods

4

Agriculture,
Livestock and
Fisheries

- › Weather and climate data
- › Daily weather forecast on rainfall and temperature
- › Daily weather forecasts of rainfall and temperature, wind speed and direction, visibility, cloud cover, solar radiation, humidity, sunshine hours
- › Weekly weather forecast on rainfall, temperature
- › Agro-meteorological advisories
- › Dekadal climate outlook
- › Monthly climate outlook
- › Rainfall onset and cessation dates
- › Rainfall amounts and distribution
- › Seasonal climate outlook and advisories
- › Climate change projections and scenarios of Rainfall and Temperature
- › Advisories/alerts of drought, strong wind, dust storms, flash-floods
- › Early warnings (outbreaks of pests and diseases)
- › Length of dry spells
- › Frost occurrence forecasts
- › Hail occurrence forecasts

4.5 Scoping the reach of existing media channels and social networks

The CMO needs to map out the County's key media and communications channels, including social networks.

This requires meeting with those running each of these media to find out about:

- › their reach: how wide an area they cover;
- › their principal audiences;
- › the formats in which they provide information;
- › the types of programmes they run;
- › their scheduling (for example their weekly programmes or newspaper editions); and
- › the languages they use.

It is particularly important to find out whether each channel monitors and supports feedback, and how they do this. Find out if they currently provide weather and climate information and, if so, what type of information they provide, where they source this, how often they provide this and in what format.

Visit all **the local and regional radio and TV stations** which, in the discussions undertaken in Step 3.3, people in the county say they like and listen to or watch frequently to assess their:

- › Main broadcast language(s)
- › Type of programming
- › Area of broadcast coverage
- › Willingness and capacity to collaborate in the communication of CIS information.

It is important to bear in mind that these regional radio and TV stations may often be based outside the county, even though they have many loyal listeners and viewers among the local population.

Assess **mobile telecoms geographical coverage** of the county to determine:

- › Which networks have the best population coverage
- › Which networks have the best geographic coverage
- › Which areas of the county do not have any mobile telecoms coverage

Assess the **level of internet access** of the main stakeholder groups in the county through desk research and meetings with community groups and County Administration.

To find out the channels through which to best reach key livelihood and social groups, including the most marginalised, Step 3.3 includes questions specifically relating to the reach of the principal media channels and trusted social networks, including religious, livelihood and community leaders and groups.

Findings from Steps 3.3 and 3.4 enable the development of a communications plan to support the County CIS Plan. Box 8, below, provides a summary of the channels of communication prioritised within the Makueni and Trans Nzoia County CIS Plans.

Box 8: Findings on preferred channels for communication from the assessment of users' climate information needs in Makueni and Trans Nzoia Counties (Makueni County CIS Plan, 2017, draft and Trans Nzoia County CIS Plan (2017) draft)

Amongst the key findings from the assessment of users' climate information needs that KMD undertook in Makueni County was the need to establish a Makueni County Climate Information Centre at Wote town to act as a one-stop shop for stakeholders who may wish to make weather related interventions. The Count CIS Plan communication strategy employs a wide range of channels including electronic media, print media, ICT, intermediaries, county climate outlook fora/workshops (CCOF), concerts, dances, songs, barazas as well as the development of an English/Kikamba dictionary of meteorological terms to strengthen the use of accessible language in communicating climate information.

Beyond employing a similar range of mass, print and electronic media, participants in the Trans Nzoia County Climate Outlook Forum (CCOF) recommended the establishment of 'multi-sectoral calling centres where someone can call and get weather information advisories in a few minutes'. These centres are reported to have 'greatly increased the development of and access to relevant climate information'.



Module 4

Drafting the County CIS Plan

Toolkit - Climate Information Services
Kenya Meteorological Department

5.0 Module 4: Drafting the County CIS Plan

Using the information and input gathered in Modules 1-3, the CMO can, together with key stakeholders, draft a County CIS Plan, agreeing the County-specific aims of the plan and the required infrastructure, services and communications plan required to achieve these aims.

To build buy in to the overall County CIS Plan, it is important to identify opportunities for informal input as well as more formal review from across the range of stakeholders identified in Module 3. CMOs will need to remain mindful of their existing capacities and resources to ensure that the County CIS Plan is realistic. Rather than risk disappointing stakeholders, the County CIS Plan can provide a phased range of activities, bringing in additional services in an achievable timeframe.

5.1 Establishing County-specific goals, objectives and principles and ensuring alignment with both key County policies and national, regional and international policies, processes and programmes

The aim is for the CMO to develop aims and objectives which are relevant to the County context and align with national and international policies, standards and principles.

To complete County CIS Plan Sections 1.3 and 2.1-2.2, the CMO will need to review:

- › the principles of developing decision relevant CIS (Step 1.2);
- › key international, national, county/local government and KMD/NHMHS policies plans and how they address climate risks and opportunities (Steps 1.3 and 3.2);
- › consultation with County Administration and key livelihood and social groups (Step 3.3);
- › The scoping of preferred media and social networks (Step 3.4).

5.2 Planning the required Observation network

Information for this section can draw on Module 2 and is required to complete County CIS Plan Sections 3.2 to 3.5.

The planning of a county observation network should be based on the principle of mapping different atmospheric processes across time and horizontal scales¹⁶ with coverage sufficient to support required services, such as severe weather warnings or agro- or hydrometeorological forecasts¹⁷. In this regard, the observation network has to ensure sufficient 'representativeness', for example, microscale observations are required for agrometeorology¹⁸.

This section should also include a plan on how to ensure maintenance of meteorological equipment, both that managed by KMD and that owned by non-KMD entities. See the County Directors' Operation Manual, Section 4.4.2 Developing an Observations Network Maintenance Plan.

¹⁶ County Directors' Operation Manual, Section 4.3.1 Planning a County Observation Network, p59.

¹⁷ County Directors' Operation Manual, Section 4.2, Principals and Standards, p21.

¹⁸ County Directors' Operation Manual, Section 4.2.1, Requirements for Observations and Data Management, Representatives, p21.

5.3 Planning the proposed County-specific climate information services

Steps 2.3, 3.2 and 3.3 will have provided information on the types of climate information key stakeholders require, as well as their prioritisation as to which of these are the most important to inform specific types of decision making.

The CMO then has to consider how it can best address these needs. CMOs will need to consider how they can work with colleagues from across key County Government ministries and relevant research institutes and sources of expertise to source the technical input required to develop advisories which can accompany the forecasts across timescales. The County Climate Outlook Forum (CCOF)¹⁹ provides a forum in which colleagues from across key ministries and livelihood group together review the seasonal forecast and develop advisories for the principal livelihood decisions in each ward. The CMO will need to establish how to engage similar levels of technical advice to accompany monthly, weekly, and daily forecasts as well as warnings of extreme weather events.

5.4 Planning the communications strategy and reviewing this with key stakeholders

Steps 2.3, 3.3 and 3.4 will have established an understanding of the most effective ways of ensuring that climate information reaches key stakeholders. It will be important to ensure that the approaches developed are sustainable and support regular feedback. Wherever possible they should link with existing channels and networks and secure the engagement of trusted members of the community.

5.5 Developing a budget for the County CIS Plan

Section 6 of the County CIS Plan covers Planning and Budgeting.

Based on the assessment for strengthening the observation network (Step 4.2), the proposed climate products (Step 4.3) and communications strategy (Step 4.4), CMOs can use the KMD 2016 Implementation Matrix for developing decentralised climate services to draft budgets for 1-3 and 5 years. While a summary of the principal budget lines is included in Box 9, the full matrix, with a breakdown of individual items within each budget line, is included in Section 6 of the CIS template.

¹⁹ Also known as the Participatory Scenario Planning (PSP) process.

Box 9: Summary of 5-year budget developed through employing the KMD Implementation Matrix.

Thematic Area	County					Total
	Financial Year (in Kshs. 221.38M)					
	2018/19	2019/20	2020/21	2021/22	2022/23	
Establish county level weather and climate services infrastructure						
Data collection and exchange infrastructure						
Processing, Product development and archival infrastructure						
uptake of product and services infrastructure						
Total						

Remember to include sufficient resources to enable regular communication, including:

- › CCOF in advance of each principal rainy season (dependent on the County climate);
- › ongoing monitoring and review, including regular consultation with the principal media channels and social networks supporting communication of climate information, and regular review with County Administration and key livelihood groups after each principal rainy season (Steps 4.6 and 5.2).

5.6 Developing a framework for monitoring, evaluation and continuous improvement of County CIS services

Production of decision-relevant climate information is a process requiring ongoing dialogue (feedback and feedforward) between climate information providers and decision makers, as outlined in Section 1.2. Feedback from decision makers – within County Government and across the principal livelihood groups - is essential for KMD to be able to demonstrate the benefits of investing in strengthened decentralized services. As such, each CMO is seeking to monitor benefits and challenges in the (1) provision, (2) access to, (3) understanding and (4) use of climate information services. Box 10 summarises potential methodologies for baselining and monitoring each step in the process of developing decision-relevant climate information services²⁰.

²⁰ Visman et al (2016) Developing a Monitoring, Evaluation and Learning framework which can support the creation of decentralised Climate Information Services: Learning from the WISER Western project in the Lake Victoria region of Kenya, WISER Western project, p16

Through Steps 2 and 3, the CMO will have collated the data required to develop a baseline. One of the annexes to the KMD County CIS Plan template is a framework for monitoring provision of climate information services across a range of communication channels, together with feedback on use and application. Completed with data on the situation at the start of the County CIS Plan and repeated monthly, this serves as a basis from which to track progress in efforts to strengthen regular seasonal and sub-seasonal CIS provision.

Box 10: Summary of methodologies for baselining and monitoring the process of developing decision-relevant climate information services ²¹

Steps in the Process	Methodologies for baselining	Methodologies for ongoing monitoring, evaluation and continuous improvement
Establishing a MEL framework	Agreeing on methodologies, roles and responsibilities	Identify training requirements
Production	An assessment of the County's observation network (Step 2.1) and datasets relevant to the County (Step 2.2) An assessment of existing climate services provided for the County (Step 2.3)	Technical review after each principal rainy season or for each key County planning or policy-making process to assess the relevance and skill of the forecasts and potential improvements to better meet decision makers' needs, as identified through user feedback channels.
Access Understanding Use + Benefits	Reviewing how County plans and programmes mainstream climate and align with national and international climate and development policies and programmes. (Step 3.2) Scoping the access, use and understanding of climate information amongst livelihood groups and County Administrations through: a review of secondary data, a survey, focus groups and key informant interviews (Step 3.3) A communications assessment for each county, mapping the reach of principal media and mobile providers. (Step 3.4)	Monthly CDMS reporting, including on stakeholder engagement, development and communication of County CIS products across channels. Seasonal pre-CCOF and CCOF meetings and surveys to review the previous season and the access, use and benefits of the forecast, with County Administration and key community and livelihood representatives (where relevant, CMOs can draw on Annexes 2 and 3, which include an example survey and sets of questions related to access, understanding, use and benefits). Annual review of County Plans, programmes, budgets to identify developments in climate mainstreaming and identify future climate information requirements.

²¹ Visman et al (2016) Developing a Monitoring, Evaluation and Learning framework which can support the creation of decentralised Climate Information Services: Learning from the WISER Western project in the Lake Victoria region of Kenya, WISER Western project, p16

With partners, the CMO will also undertake regular post-seasonal reviews, both at community level and within the County Climate Outlook Forum, to assess progress and make the revisions required to develop accessible, timely decision-relevant County CIS. Equally, the CMO will liaise with KMD headquarters in undertaking regular technical reviews to ensure that forecast development and improvements remain responsive to user needs.

The CMO will also work with County Government to support review and strengthening of climate mainstreaming within County planning and investments, to meet the reporting requirements of the 2016 Climate Act and related agencies (see further Box 12 and below).

While the framework for monitoring, evaluation and continuous improvement of CIS is still under review, several counties have produced useful frameworks. Box 11 has combined emerging learning to provide a working draft template to support monitoring and evaluation of decentralised climate services in other counties or local administrations. This will need to be contextualised with County stakeholders to meet localised needs.

As noted earlier, Annex 2 also includes a survey employed within the County Climate Outlook Fora, within the WISER Western project, to baseline and monitor access to, understanding and use of decentralised climate services. Annex 3 includes a sample score-card for collating data on access to, understanding and use of decentralised climate information to support County Government and principal livelihoods.

5.7 Linkage with County Government climate mainstreaming reporting requirements

In terms of identifying indicators to measure the mainstreaming of climate change into development planning for inclusion in the County CIS Plan, it is particularly worth noting that the Climate Change Act 2016 requires counties to report on the percentage of County funds allocated for climate resilient development at the grass roots (as included in the Makueni County CIS Plan, p61). In reviewing the County Adaptation indicators included within Kenya's National Adaptation Plan (see Box 12, below), most depend on effective County climate information services. For examples, one of the indicators proposed to track the effectiveness of national initiatives to build institutional adaptive capacity at the county level is the 'number of households with timely access to climate information'.²² Both these indicators (percentage of County funds allocate for climate resilient development and number of households with timely access to climate information) are included in the working draft monitoring and evaluation template (Box 11).

In undertaking Module 3.2, reviewing key County policies and programmes, including the CIDP, to assess how these align with international, national and regional policies and programmes, CMOs will be able to identify areas where monitoring of the County CIS Plan can be mainstreamed and aligned with complementary County systems. For instance, through assessing the climate-resilience of the draft 2018-2022 Siaya CIDP, the CMO was able to propose clearly defined

²² This was changed from the gendered indicator included in the 2013 National Climate Change Action Plan, p135, namely 'percentage of population by gender in areas subject to flooding and/ or drought in the county who have access to KMD information on rainfall forecasts'.

indicators for each sector. In reference to public service and governance, the CMO proposed the following indicators to support the meeting of the Climate Change Act's reporting requirements:

- › Number of laws and regulations implemented
- › Number of climate change and disaster risk reduction specialist staff
- › Number of training activities conducted to the County Assembly and staff
- › Number of sectoral departments staff trained in climate risk reduction and disaster responses
- › Legal and policy framework on establishment of sub county climate change and climate disaster risk management

Box 11: County CIS Monitoring and Evaluation Plan drawing on the plans developed for Wajir and Makueni County CIS plans²³

RESULT	INDICATORS	HOW WILL THIS BE MEASURED	TIMEFRAME	RESPONSIBILITY
IMPACT				
What will show that the increased use of weather and climate information and mainstreaming into development and sector policies, plans and programmes support sustainable development in the County?	% of households with improved resilience through use of CIS	Dependent on the indicators of resilience identified by the households under consideration ²⁴ , this could also draw on the NDMA's Drought Early Warning System, and other nutrition surveys ²⁵ and household economy analysis, assessments of changes in household livelihood diversification, and other relevant quantitative and qualitative assessments	Every 5 years	County Government, decentralised agencies, development partners, research institutions, and other stakeholders
	Number of County policies and plans informed through climate issues	Policy analysis, review and development of next CIDP and other County policies	Every 5 years	County Government, development partners, research institutions
OUTCOME				
What is a good measure of increased use of reliable and accessible weather and climate services information services in the County?	No of projects or initiatives for development with CIS mainstreamed	Review of county-related policies	Annually	County Government and CMO/KMD
	Number of households and institutions using CIS for planning and decision making	Survey reports	Annually	County Government and CMO/KMD

²³ Wajir County CIS Plan, pages 45-48 and Makueni CIS Plan pages 35-49.

²⁴ The Ada Consortium's Resilience Assessment Toolkit <http://www.adaconsortium.org/index.php/component/k2/item/329-resilience-assessment-toolkit> includes the wellbeing analysis and resilience spectrum approaches to identify contextually-relevant resilience indicators.

²⁵ For example there may be potential to draw on the Integrated Food Security Phase Classification (<http://www.ipcinfo.org/>).

Output 1				
How do we know there is an enabling environment for the generation, uptake and use of weather and climate services to support development?	Number of appropriate policies that support CIS at county level	Review of County-related policies	Annually	County Government, development partners and other stakeholders
	Strength of functional met infrastructure and partners supporting the County Meteorological office	Field reports on facilities, Stakeholder lists/ maps, progress reports	Annually	KMD, County Government, other development partners
	Engagement of CMO within relevant County and sub-County consultation and decision-making bodies and fora	CMO Quarterly reports, reports of meetings	Quarterly	CMO
	Resourcing and capacity building of County Government administration and services in climate mainstreaming (increased levels of confidence in using climate information to support both long- and short-term planning.	Reports of training, annual budget reviews	Annual	County Government, KMD, stakeholders
	Strengthened climate-related legislation and policies approved by the County Assembly and County Government ministries	Policy review	Annual	County Government, KMD
OUTPUT 2				
How do we measure strengthened partnerships and networks engaging County Government, decentralised agencies, development partners and/or others, that a) support the generation,	Number of collaborative initiatives at the county and grassroots related to strengthening the generation, uptake and use of climate information	County M+E visits	Quarterly	KMD, County Government, development partners
	Number of participatory methodologies and approaches for CIS generation, uptake and communication	Workshop report, minutes	Annually	

uptake and use of weather and climate services and (b) build sustained leadership in climate information services in the County?	Number of initiatives the leadership is taking to support uptake and use of CIS at grass roots level such as funding regular County Climate Outlook Fora, supporting climate-related radio shows, promoting climate-related discussion within the County Assembly	Reports	Annually	
	Number of partners supporting communication of CIS	Partners' reports	Quarterly	
OUTPUT 3				
How do we measure improvements in data collection, processing and climate information products and services in the County?	Number of functional observatories, distributed to meet stakeholders' and sectoral CIS requirements, that are remitting information on a regular basis		Annually	
	Existence of data processing mechanisms and capacity at the County level			
	Existence of community weather observation system			
	Stakeholders' satisfaction with the relevance and timelines of climate services and products developed	User feedback and survey	Annually	KMD and M+E team from stakeholders

OUTPUT 4				
How do we measure improved access to weather and climate information at County, Sub-County and Ward as well as amongst communities?	Number of households, organisations and government departments a) with timely access to, and b) using, CIS for planning and decision-making	Surveys	Annually	KMD, County Government, partners
	Number of institutions communicating CIS	M&E report Departmental reports Surveys	Quarterly	KMS and M&E Team(from stakeholders)
	Number and type of feedback from stakeholders using CIS	M&E report Departmental reports	Quarterly	
	Range of channels (media, social networks and platforms) through which CIS are shared	Departmental reports	Quarterly	KMD
OUTPUT 5:				
What evidence would suggest that there has been learning from effective use of CIS in the County?	% increase in demand for and use of CIS among communities, county government and other development partners	Reviews	Annually	KMD, County Government and partners
	Number of climate resilient investments at grass roots	Reviews	Annually	
	Mainstreaming of climate into development planning: % of County funds allocated for climate resilient development at the grass roots, as required by Climate Change Act 2016	Budget and policy review	Continuous	
	No of case studies/ success stories documented	Review	Annual	
	No of research and policy papers published on CIS	Review	Annual	

Box 12: Adaptation Indicators, Ministry of Environment and Natural Resources (2016) Kenya National Adaptation Plan 2015-2030, p49. Most, if not all, the County-level Adaptation Indicators are dependent on effective County Climate Services

**Box 12: Adaptation Indicators, Ministry of Environment and Natural Resources (2016)
Kenya National Adaptation Plan 2015-2030**

Adaptation Indicators		
National	Sector	Country
<ul style="list-style-type: none"> > Human Development index > Percentage of climate related national loss and damage in the public and private sector > Population living below the poverty line > National vulnerability index 	<ul style="list-style-type: none"> > Number of sectors planning, budgeting, and implementing climate change adaptations > National and county performance contracting systems integrated climate change adaptation targets > Amount of loss and damage from climate hazards per sector > Amount of private sector financing for adaptation 	<ul style="list-style-type: none"> > Number of counties that have integrated climate change adaptation in their CIDPs > Number of counties budgeting and implementing adaptation programs > Number of National and county level programmes/projects incorporating ecosystem-based adaptation and community-based adaptation approaches > Number of households with timely access to climate information > Number of infrastructure development/case application using climate smart designs (energy, ICT, transport etc) > Number of people reached through climate change adaptation awareness campaigns > Number of public servants trained on climate change adaptation > Number of functional climate change coordination structures > Percentage of population requiring humanitarian assistance



Module 5

Reviewing and Validating the County CIS plan

Toolkit - Climate Information Services
Kenya Meteorological Department

6.0 Module 5: Reviewing and Validating the County CIS plan

Module 5 highlights the vital importance of ensuring ownership of the County CIS Plan. Operationalisation of the Plan depends on active support and engagement from across a wide range of stakeholders within County Government and its key livelihood and social groups, together with sufficient support from national institutions. Validation of the County CIS Plan allows endorsement by those who have contributed to its development. Regular review is essential to demonstrate the benefits provided through strengthening decentralised climate services, ensure commitment to continuous service improvement and the budgeting of resources required to sustain and further develop these.

6.1 Reviewing and finalising the County CIS Plan with key stakeholders

It is important to hold one or more meeting(s) with representation from key County Administration ministries and devolved agencies, social and livelihood groups, and particularly those people who were consulted with Step 3.3. This will allow the CMO to feedback on how the County CIS Plan has sought to address the issues raised within the initial consultation.

This process allows formal review and validation of the draft County CIS Plan and builds support and demand for climate services. With high level representation and engagement from the County Administration, the review can also support a request for a formal endorsement by the County Government and contribution of a foreword for the County CIS Plan.

It is very important to revise the County CIS Plan after the review meeting(s) to ensure that participants can see that their comments and feedback have been integrated within the plan.

The CMO will also need a foreword to the County CIS Plan from KMD Headquarters.

6.2 Planning and agreeing with both key County stakeholders and KMD head office the implementation, monitoring, evaluation and regular review of the County CIS Plan

Prior to the 2016 Climate Change Act, there was no previous requirement for the Government of Kenya to assess climate change impacts on policies and programmes or to coordinate approaches to address climate change²⁶. However, the Act s.19(5) requires that each County Government submits a report to the County Assembly on progress in mainstreaming implementation of the climate change action plan in CIDPs and County sectoral plans at the end of every financial year.²⁷

As noted in Module 4.6, a key part of the review of the draft County CIS Plan will be developing a methodology and timeframe for regular monitoring, review and updating of climate services for the County. Wherever possible, this should be integrated within existing policy and service review processes. The process will need to enable monitoring and review at all levels, including village/ward, sub-County and County levels.

Ideally monitoring will occur after each of the County's principal seasons. It will be extremely important to identify mechanisms for integrating formal review within the County's annual planning and budgeting schedule, as well as ensuring the meeting of KMD reporting requirements.

²⁶ Ministry of Environment and Natural Resources, Climate Change Act, 2016: Regulatory Impact Assessment, Confidential Report, February 2017, p17.

²⁷ Ministry of Environment and Natural Resources, Climate Change Act, 2016, Implementation Plan: Short-term and Medium-Term Actions, Draft Working Document, May 2017, p12.



Module 6

Implementing the plan

Isiolo County - Climate Information Services Plan
Kenya Meteorological Department

7.0 Module 6: Implementing the plan

Module 6 highlights that the County CIS plan should include more immediate, as well as longer-term areas, for strengthening provision of decentralised climate services. There are significant benefits in drawing from emerging learning across other Counties and regions about those activities and approaches that have effectively developed and strengthened climate services tailored to meet local needs.

It is recommended that the County CIS Plan should include a number of 'quick wins' - high impact, low intensity activities - to enable stakeholders to quickly see the additional benefits of strengthened County CIS. Such activities might for example include the *development of regular daily, weekly and monthly forecasts downscaled for the County and accompanied by guidance for key livelihood groups*. Some CMOs have also developed localised national-level drought and flood alerts, contextualising these for specific sub-counties. Such activities include development of risk maps.

Other proposed activities included in the County CIS Plan may be much more resource-intensive. Across the Counties where CIS Plans have been developed, a range of activities have been developed. Review of these - including learning about what worked, where there were challenges and how these were addressed - may support the development of plans in other Counties. Activities identified and developed through developing decentralised services within specific Counties include:

7.1 The use of CIS in informing adaptation, development and resilience-building investments:

In a number of Counties, CMOs have supported climate mainstreaming within the process of developing CIDPs for 2018-2022 (as noted in Module 3, above). Climate information has also informed key decisions on the operationalisation of the investments in the County Climate Change Funds (CCCF). The Adaptation Consortium has supported the establishment of County Adaptation Funds in five counties, where resources are channeled to support community-prioritised public good investments. CMOs have strengthened understanding of the potential impacts of climate variability and change for the County and the proposed investments.²⁸

7.2 The development of local language dictionaries of key meteorological terms:

To serve the populations in Kitui, Makueni and Machakos, the Adaptation Consortium supported the development of a dictionary (English/Kikamba) of meteorological terms to support improved understanding of climate information. A counterpart English/Kiswahili dictionary of meteorological terms has also been developed.

7.3 The development of a County Climate Information SMS systems

In Makueni and Kitui Counties the Adaptation Consortium supported CMOs to develop an SMS system providing climate information through a system of intermediaries, enabling extensive reach and feedback across each County.²⁹

²⁸ <http://www.adaconsortium.org/index.php/component/k2/item/314-climate-adaptation-fund>

²⁹ <http://www.adaconsortium.org/index.php/component/k2/item/344-reference-guide-for-climate-information-services-cis-intermediaries-in-makueni-and-kitui-counties>

7.4 Climate monitors

In implementing this plan, Community climate monitors play a key role in complementing collection of meteorological data. However, KMD needs to recruit, train and support climate monitors to ensure high quality data.

Where new climate services are developed, it is often advisable to run a pilot for a short period or within one section of the County to enable review and improvement prior to rolling out the proposed approach to the entire County. Ensuring monitoring and review of the pilot also ensures stakeholder engagement and buy in of the services being created.

Developing climate products and services tailored to meeting each County's specific requirements greatly supports the mainstreaming of climate issues within decision making. However, to be effective, it is essential that decision makers understand and appreciate the probabilistic nature of climate information. CMOs will need to ensure that decision makers are confident in key meteorological and climate terms, the levels of certainty and confidence in the forecasts and climate projections, and how this information can be appropriately used to support sound decisions at both long and short timeframes.

7.5 Partnership and Collaboration

The CMO is encouraged to county administration and other stakeholders to facilitate the implementation of CIS. The Director of Meteorological Services should engage with the relevant committee of the council of governors responsible for environment to elicit their support for County Climate Outlook Forums (CCOF).

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Nairobi



This research was funded by the
Embassy of Sweden in Nairobi and
the UKaid from the UK Government,
however the views expressed do not
necessarily reflect their views.