Early Warning Systems: A Risk Reduction Strategy for Local Communities

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UNFCCC expert meeting on a range of approaches to address loss and damage associated with the adverse effects of climate change, including impacts related to extreme weather and slow onset events

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Introduction

- Climate change adaptation is currently at the forefront of development discourse for the developing world, especially within the African continent
- The IPCC fourth assessment report indicates that Africa is particularly vulnerable to the negative impacts of the current climate variability and future climate changes
  - Subsistence rain-fed agriculture is the mainstay of most African economies contributing Gross Domestic Products (GDPs) that range from 10% to 70%.
  - Already agricultural production is vulnerable to the current climatic variability
  - Subsistence farming is prone to high risks because of the erratic seasonal distribution and the highly variable nature of rainfall in space and time

Introduction Cont. …

- It is expected that climate change will increase the variability and hence further negatively impact on productivity
- It is well-known that the poor will be disproportionately more vulnerable and bear the greatest impacts as climate change will ultimately affect the sustainability of community livelihoods and lives
- Reduction of this vulnerability of the poor communities needs efficient and realistic adaptation strategies, especially at the community level

Strategies

- These strategies should:
  - reduce the vulnerability of environment
  - strengthen society livelihoods and economic systems
  - help cope with the consequences of current extreme climate variability in order to adapt to future climate change

One of the strategies would be to strengthen early warning systems

- There is need to cope with the current climate variability
  - Improve the early warning systems (seasonal forecasting)
  - Improve communication of the information to the users
  - Mainstream climate risk management into development
    - Government policies
    - Users

Early Warning Systems (EWS)

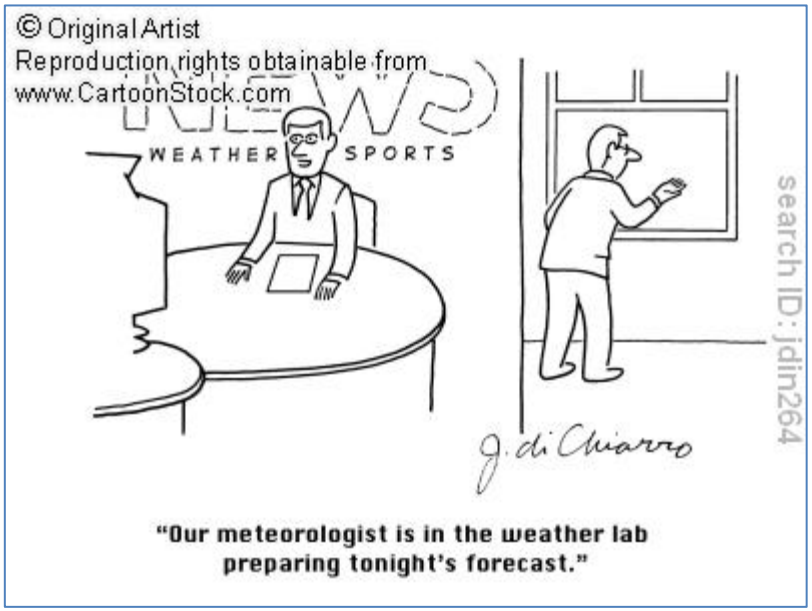
- Definition (ISDR, 2005)
  - The provision of timely and effective information, through identified institutions, that allows individuals exposed to a hazard to take action to avoid or reduce their risk and prepare for effective response
- It refers to a comprehensive monitoring framework for early detection and response to environmental threats
- It is more than just a prediction

Elements of an EWS

- Risk knowledge: prior knowledge of the risks faced by communities
- Warning service: technical monitoring and prediction service for these risks
- Dissemination: dissemination of understandable warnings to those at risk
- Response capability: Knowledge and preparedness to act by those threatened

Major barriers to the effective use of climate information

- Credibility

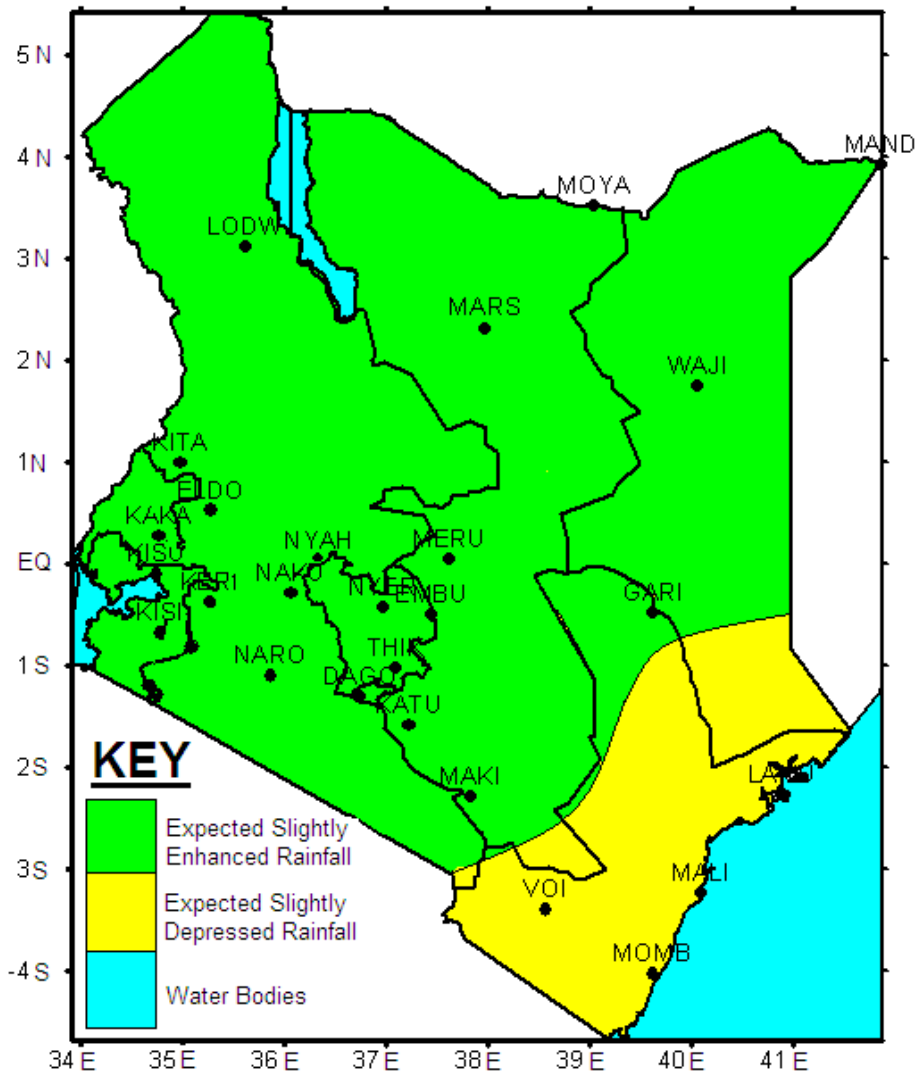


Interpretation

- Interpretation is the ability of users to successfully extract relevant and accurate information from the climate information products
- Too Technical

– Generally formats are deemed to be too technical
– For example, most seasonal forecasts are presented in terciles format (three evenly divided categories)
    – Provide the probability of above normal, near normal, or below normal rainfall, relative to historical averages

Packaging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NAKU
EMBU
GARI
NARO
THIK
DAGO
KATU
MAKI
VOI
MALI
MOMB
KEY
Expected Slightly Enhanced Rainfall
Expected Slightly Depressed Rainfall
Water Bodies

- Accessibility
  - Dissemination avenues may not be suitable for the end-users (small-scale farmers)
- Translation
  - forecasts are difficult to translate to impacts
  - Probably need relevant climatological context (i.e. comparison to past events) for the forecasts to help users to evaluate the level of risk they will face over the upcoming season
  - There is limited temporal and geographic specificity of current climate information
  - Need downscaled forecasts that could support more localized decision-making
- Utilization:
  - Seasonal forecasts can most effectively be used for strategic decision-making and planning
  - Requires capacity on the part of the user

- The EWS should be targeted for decision-making at the community level where adaptation decisions should be taken
- Requires a revision in the way NHMSs offer their climate services to the users (particularly, the local communities) to ensure that relevant products reach the intended users in easily understandable formats
  - Community-based climate risk reduction system

Definition *(Binas, 2010)*

- Community Climate Risk Reduction (CCRR) may be defined as *a process of bringing people together within the same community to enable them to collectively address common climate risks, and pursue common climate risk reduction measures*
- *It is a process that mobilizes a group of people in a systematic way towards achieving a safe and resilient community*
- *It envisions a dynamic community that is cohesive in making decisions, deals with conflicts, resolves issues, manages collective and individual tasks, respects the rights of each individual, demands their rights and addresses and bounces back from hazard events*

Essential Parts

- Some of the essential parts of facilitating CCRR are:
  - Participatory Climate Risk Assessment and Analysis
  - Development of Climate Risk Reduction measures (a development plan and a contingency plan)

Core Requirements

- Better spatial resolution of observation network
- Attitude change
  - Involves making significant changes in attitude and the established ways of working of the communities and the organizations/governments that serve them
- Collaboration and involvement of all stakeholders
  - Building links between all stakeholders is important

- Recognize and use local/indigenous knowledge and skills
  - To make a lasting positive change, there is need to consider indigenous and local knowledge systems
  - Expert knowledge is good, but it should build on what people already have
  - This way, experts will take knowledge to the people and they will own it and sustainability will be assured
  - Also enhances social acceptance hence making it more cost-effective and more readily replicable

Case studies

- Case study 1
  - Climate Change Adaptation in Kenya: Increasing Community Resilience to Drought in Makueni District
  - Southeastern lowlands of Kenya
  - Semi-arid region
- Objectives
  - Increase food security by enhancing drought resilience of local agricultural practices
  - Reduce poverty through diversification of livelihoods
  - Facilitate integration of adaptation to climate change into Kenya's sustainable development plans & policies

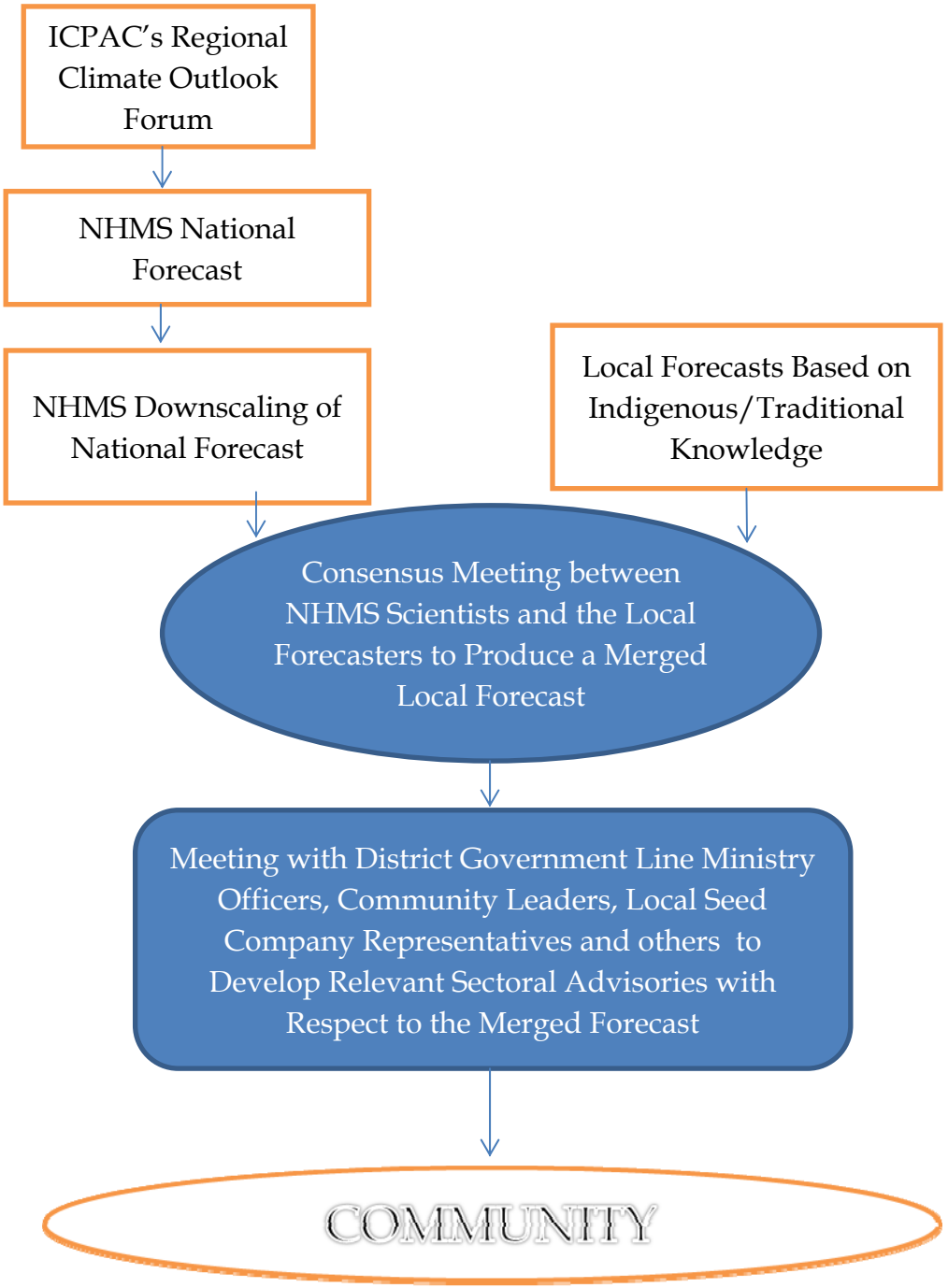
- Downscaling climate forecasts to guide choice of crops planted and the timing of agricultural activities
- Improving agronomic practices by providing access to fast maturing and drought-resistant crop varieties
- Building sand dams, shallow boreholes and drip irrigation systems to improve access to water for use in crop production
- Increasing local self-help groups' access to income-diversification activities


ARID LANDS RESOURCE MANAGEMENT PROJECT (ALRMP)
CENTRE FOR SCIENCE TECHNOLOGY AND INNO (CSTI)
BUSINESS PLAN TRAINING
Certificate of participation
This is certify that
Thelesia Muspoka
of
Wendo wa Kathamba Self Help Group
Satisfactorily completed the Writing of Business Plan
Training programme conducted on 2nd May 2008
at Muaani Catholic Church in Sakai Village
James Oduor
ALRMP
Rosemary Hala
Programme Facilitator
S. O. Wandiga
Director
CSTI

- Case study 2
  - Integrating indigenous knowledge in Climate Risk Management in support of Community Based Adaptation
  - Western Kenya, high potential area
  - Strong indigenous knowledge base
- The general objective
  - To enhance the resilience of vulnerable communities to the negative impacts of climate variability and adapt to climate change through integration of indigenous knowledge (IK) and western climate risk management science

- Demystification of the forecasts
- Development of merged forecasts

- Interpretation of forecasts
  - Incorporating govt officers from different sectors, and other users we were able to deliver the message in practical, usable terms – not so much meteorological terms! (advisories)
- Dissemination – taped into the local dissemination system in addition to the conventional methods
- Capacity building


ICPAC's Regional Climate Outlook Forum
NHMS National Forecast
NHMS Downscaling of National Forecast
Local Forecasts Based on Indigenous/Traditional Knowledge
Consensus Meeting between NHMS Scientists and the Local Forecasters to Produce a Merged Local Forecast
Meeting with District Government Line Ministry Officers, Community Leaders, Local Seed Company Representatives and others to Develop Relevant Sectoral Advisories with Respect to the Merged Forecast
COMMUNITY

Conclusions/Recommendations

- An effective community based early warning system has the potential of enhancing the resilience of the community (right choices, diversification, etc.) hence minimizing infrastructural, farm-input, etc. losses
  - Types of losses and damages to be considered should therefore be community specific
- Incorporating the local community (getting their buy-in) and building on what is already on the ground makes this a relatively cost-effective option

- The initial cost is high but worth it in the long run
  - Better spatial resolution of observation network
  - Attitude change (lots of capacity building)
  - Building links between all stakeholders
  - Documenting and validating local/indigenous knowledge
  - However, this is an integrated approach – pooling of resources
- Key lesson – integration of the community and their knowledge is crucial

THANK YOU