

EARLY WARNING EARLY ACTION TRAINING MANUAL



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Executive Summary

Climate information is critical towards strengthening the decision making among different users interested in mitigating impacts of climate related disasters. However, there is need for the climate users to have basic knowledge on weather and climate concepts and to a larger extend, early warning early action (EWEA) system and approach. This manual presents an opportunity for the climate users including communities to acquire basic knowledge on Early Warning Early Action and this entails; understanding risk areas, existing early warning systems, communication of early warning information and enhancing disaster preparedness through translating early warning into early actions. The EWEA manual largely target the users in different sectors and communities. The execution of the EWEA manual is planned for 3 days and this does incorporate different methods such as; PowerPoint presentation, group work discussions as well as practical exercises.

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Acronyms

DRM: Disaster Risk Management

DRR: Disaster Risk Reduction

EWEA: Early Warning Early Action

GPRS: General Packet Radio Services

GOK: Government of Kenya

Introduction

1.1 EWEA Manual Overview

This manual guides training on Early Warning Early Action (EWEA) which addresses climate-related risks and minimizes loss of lives, livelihoods and property. It has been developed from practical experiences of Kenya Red Cross Society (KRCS) in the course of their implementation of programmes aimed at advancing EWEA. This manual helps build or strengthen capacity at community level to use early warning and implement early actions. It thus strengthens the available early warning systems.

The manual is customized as a workshop manual, targeting Training of Trainers and players in the Disaster Risk Management (DRM) cycle including practitioners, communities and observers that are taking an anticipatory approach to Disaster Risk Reduction (DRR). It is made for national scale early warning systems with specific examples from Kenyan context. Majority of the sample materials used are drawn from literature and the sample forecasts from Kenya Meteorological Department

The entire training components in this manual were tested under more than 4 programmes implemented between 2018 and 2022 in Kenya by KRCS and supported by national stakeholders within the DRM practice. Following the rampant occurrence of major floods and drought in close succession in the 2010s (see the situational analysis sub-section), major programmes were initiated at KRCS to build and/or strengthen EWEA in the country:

- i. Strengthening Early Response Capacity, funded by the European Civil Protection and Humanitarian Aid Operations between 2018 and 2021
- ii. Strengthening Disaster Risk Reduction and Emergency Response, funded by then the US-AID's Office of U.S. Foreign Disaster Assistance between 2019 and 2021
- iii. Enhancing Disaster Risk Reduction and Preparedness for Effective Response, funded by USAID's Bureau of Humanitarian Affairs between 2021 and 2022
- iv. Innovative Approaches to Response Preparedness, funded by IKEA foundation through Netherlands Red Cross and British Red Cross between 2018 and 2022

Through these programmes, the flood and drought Early warning systems were strengthened through capacity building of producers and the users. Majority of the users consisted of the local communities at the tail end of dissemination loop. They were trained on interpretation and use of early warning information to make decisions and implement actions in anticipation of the disasters. Community representatives involved in the EWEA trainings were equipped with necessary skills to replicate the thought process of translating a forecast to a foreseen potential risk of a disaster so as to do early actions. It is critical to note that this manual is for use as a guide and may require adaptation to other contexts.

1.2 The Situational Analysis of disaster occurrence in Kenya

Kenya is one of the most disaster-prone countries in the world. Between 2000 and 2009, averagely 94,526 Kenyans out of every one million were affected by natural disasters (Table 1). Of these, more than 70 per cent resulted from extreme climatic events (GOK, 2009).

Changes in the frequency as well as intensity of disaster occurrence have been noticeable. Before 2005, drought was experienced once in every 10 years. However, from 2005 onwards, drought cases are being experienced every 3-5 years. That led to the formation of the National Drought Management Authority in 2013 by then the Ministry of Devolution and Planning of the Government of Kenya. Floods events have equally been on a steadily rising trend such that flood records exist for the years 1961, 1997, 1998, 2006, 2012 and 2018 (Kilavi et al., 2018).

GLOBAL COMPARISON			REGIONAL COMPARISON		
1	Swaziland	156,115	1	Kenya	94,526
2	Mogolia	120,113	2	Djibouti	94,144
3	Tajikistan	100,709	3	Eritrea	87,758
4	Cuba	97,163	4	Zimbabwe	75,240
5	China	96,359	5	Malawi	70,315
6	Kenya	94,526	6	Somalia	67,697
			7	Ethiopia	37,289
			8	Sudan	20,408
			9	Uganda	10,899

Table 1: population affected by natural disasters (average per year, per million people) for 2000-2009. Natural disasters include "droughts, earthquakes, epidemics, extreme temperatures, flood, insect infestation, storms, volcanoes and wildfires (Source; UNDP, 20210, p.171)*

The recent increase in cases of floods and drought have been viewed as evidence that the climate over Kenya is changing as much as it is changing globally. Climate projections as shown in reports from the Inter-Governmental Panel on Climate Change (IPCC), indicate that climate change will continue into the latter years of the current century. This is anticipated to influence the occurrence of climate related disasters in terms of enhancing the intensity and frequency. For instance, Kenya is projected to experience increase in heavy precipitation with high certainty alongside an increase in the number of extreme wet days by the mid-21st century. Increase in rainfall extremes are likely to translate into greater flood and drought risks nationally affecting disaster management and local livelihoods.

In order to enhance preparedness, there is need to incorporate climate information in decision making geared towards mitigating the impacts of climate change. This can be achieved through approaches such as Early Warning Early Action. The approach focuses on translating early warnings into anticipatory actions to reduce disaster impacts. It focuses on consolidating available forecasting information and putting plans in place to make sure we act when a warning is at hand. To effectively achieve this, there is need to build capacity of stakeholders to understand, interpret and use climate information. Therefore, this manual presents an opportunity for climate users including communities to concept of end-to-end early warning early action. This ranges from understanding; what is climate change, causes and drivers of climate change, indicators of climate change and what it means to the humanitarian sector. Also, the manual will help to build capacity on available early warning information, what is weather and climate, drivers of seasonal climate, terciles and probability, communication and dissemination of early warning information and finally, the translation of early warning into early actions.

1.3 Objectives of the EWEA Manual

The Manual has been developed to train Trainers of Trainers (ToT) who will train communities, stakeholders and other trainers on Early Warning Early action as a strategy for minimizing the risk of flooding.

The execution of the manual will aim towards;

1. Increase climate user's capacity on understanding basic climate and weather information
2. Enhance streamlining of climate information into decision making among different stakeholders in disaster sectors
3. Enhance climate user-producer interaction

This manual guides training on Early Warning Early Action (EWEA) which addresses climate-related risks and minimizes loss of lives, livelihoods and property. It has been developed from practical experiences of Kenya Red Cross Society (KRCS) in the course of their implementation of programmes aimed at advancing EWEA. This manual helps build or strengthen capacity at com

1.4 Structure of the Manual

The Manual comprises of 4 modules as highlighted below:

- **Module 1:** Introduction to Early Warning Early Action
- **Module 2:** Climate Change
- **Module 3:** End to End Early Warning System
- **Module 4:** The bigger picture – policy and financing

Each module has sessions which consists of different sections which includes:

- Introduction
- Duration
- Session competences
- Methodology
- Materials needed
- Session Activity
- Facilitator's Notes
- Wrap up

1.5 Targeted users of the Manual

This manual will be used by:

1. Trainers of trainers on EWEA
2. Climate users in different sectors
3. Communities who focuses on addressing different climate related disasters

1.6 Duration of the Training

The execution of this EWEA Manual is planned for 3 days and this will incorporate different approaches/methods such as; PowerPoint presentation, group work discussions as well as practical exercises.

1.7 Methodology

a) Facilitated Discussions

The facilitator guides the activity by explaining important aspects of the concept and occasionally engaging participants by asking questions

b) Question and Answer

The facilitator engages participants by asking questions to prompt answers. This approach helps in assessing the participants' level of understanding certain aspects of the subject.

c) Energizers

They are used within a session and activities to lighten the mood. The facilitator also asks participants to elect one among them to share occasionally share light moments with the whole group and break monotony of one long activity.

d) Group Discussion

Participants work in smaller groups where the facilitator makes clarification of some discussion points and listens to a group leader chairing the discussion. Answers are recorded on flipchart paper for presentation to the larger group

e) Brainstorming

The facilitator clarifies a point for participants to reflect on and open the topic for discussion. Answers from participants are said loudly, or recorded on a flipchart for the entire group to see.

Module 1: Early Warning Early Action

2.1 Introduction

This module introduces the concept of early warning early action in terms of what it means and also why it is important. Further, the module gives examples of some of the areas that the EWEA concept has been implemented and also some of the successes and challenges around the implementation of EWEA.

The module comprises of 4 sessions:

Session 1.1: What is Early Warning Early Actions (EWEA?)

Session 1.2: Why is Early Warning Early Action Important?

Session 1.3: Examples of where EWEA is being implemented

Session 1.4: Successes and challenges of EWEA

2.2 Session 1.1 Defining Early Warning Early Actions (EWEA)

Introduction

Early Warning Early Action concept entails translating early warnings into anticipatory actions to reduce disaster impacts. It focuses on consolidating available forecasting information and putting plans in place to make sure we act when a warning is at hand.

In another angle, EWEA means taking humanitarian action before a disaster or health emergency happens, making full use of scientific, local and risk information on all timescales.

Materials needed

- Laptop/Computer
- Portable projector
- Portable speaker
- Wireless microphone

2.2.1 Duration

30 minutes

2.2.2 Session competences

The Participant defines Early Warning Early Action in the context of disaster risk reduction and health emergency

2.2.3 Methodology

- Power point presentation
- Group discussion
- Brainstorming
- Presentation remote
- Notebooks and pens

2.2.4 Session activity

Activity; Ask the participants what they understand by term Early Warning Early Actions

2.2.5 Facilitator's notes

What is Early Warning Early Actions (EWEA)?

Early Warning Early Action concept entails translating early warnings into anticipatory actions to reduce disaster impacts. It focuses on consolidating available forecasting information and putting plans in place to make sure we act when a warning is at hand.

In another angle, EWEA means taking humanitarian action before a disaster or health emergency happens, making full use of scientific, local and risk information on all timescales. Demonstrate the importance of EWEA by using the below graphics;

EWEA



Using available climate and weather information to take action before a disaster strikes, in order to reduce negative impacts.

Session Wrap up

- All stakeholders have a role to play in understanding, interpretation and use of climate and weather information to enhance disaster preparedness.
- It is important to use the available weather and climate information to make action before a disaster strikes in order to reduce the negative impacts.

2.3 Session 1.2 Importance of Early Warning Early Action

2.3.1 Introduction

This section helps the participants to further understand what is EWEA and why EWEA is important especially in the context of disaster risk reduction and management.

Here, we look what EWEA means in relation to disaster risk reduction and management;

Humanitarian finance is often available only when disaster strike and suffering is almost guaranteed:



**Anticipatory humanitarian system needed!
Our approach: Forecast-based financing!**

Opportunity: Many humanitarian actions could be implemented in the window between a forecast and a disaster:



2.3.2 Duration

30 minutes

2.3.3 Session competences

The Participant explains what EWEA means in relation to disaster risk reduction/management

2.3.4 Methodology

- Power point presentation
- Group discussion
- Brainstorming

2.3.5 Materials needed

- Laptop/Computer
- Portable projector
- Portable speaker
- Wireless microphone
- Presentation remote
- Notebooks and pens

2.3.6 Session activity:

Activity; Discuss with participants on why they think the EWEA is important.

2.3.7 Facilitator's notes

Why is Early Warning Early Action important?

Some of the importance of EWEA include;

- Anticipate, reduce and prepare for changing risks
- Effective early warning, enables effective early action
- Effective early action reduces human loss and suffering, and economic losses
- Effective early action can protect development gains

Session Wrap up

- Humanitarian finance should be available once a disaster warning has been issued.
- The humanitarian actions should be implemented in the period between a forecast issue and a disaster strike.

2.4 Session 1.3 Examples of where EWEA is being implemented

Introduction

This session illustrates to the participants some of the areas where EWEA has been implemented to enhance their understanding regarding practicality of the EWEA system.

2.4.1 Duration

30 minutes

2.4.2 Session competences

The Participant identifies and illustrates areas where EWEA has been implemented.

2.4.3 Methodology

- Power point presentation
- Facilitated Discussion

2.4.4 Materials needed

- Laptop/Computer

- Portable projector
- Portable speaker
- Wireless microphone
- Presentation remote
- Notebooks and pens

2.4.5 Session activity:

Activity; Share with the participants some of the areas where EWEA has been implemented.

2.4.6 Facilitator's notes

Some Examples of where EWEA is being or has been implemented

Kenya:

During 2016/2017 drought scenario, FAO implemented some early actions following released of early warning to targeted communities in Marsabit, Wajir, Kilifi and Kwale counties¹. The early actions were to cushion households against impacts of drought.

September 2016
 Vegetation indices
 FAO and Kenya's National Drought Management Authority established a DEMA system based on a range of indicators
 Livestock body conditions
 Rainfall forecast

October 2016
 Shortly after the DEMA system was set up it sounded the alarm about the onset of a major drought

December 2016

Early Actions:

- Target: 1493 households. Marsabit, Wajir, Kilifi and Kwale
- Budget: £400,000
- Livestock Feed: 140 tonnes of feed distributed
- Cattle: 158000 cattle received feed and veterinary care
- Smaller Livestock: 35400 smaller livestock received feed and veterinary care

What was the return on investment?
 USD 1 → USD 3.5
 For every USD 1 spent on feed interventions, households had a return of USD 3.5 when the sale of avoided livestock and including an initial USD 1000 investment.

"My cow has a calf now because of the fodder from FAO. Before some of my animals couldn't even stand up, they had so little to eat in this drought"
 Miriga Mwanjeri

Philippines:

With 3 to 5-day lead time, typhoon early warning is issued to the vulnerable communities. What followed was the strengthening of houses to mitigate against destruction when typhoon strikes as indicated below;

SIMULATION

TYPHOON EAP (5-3 DAYS LEAD TIME)

Distribution of Shelter Strengthening Kit + Cash for Work

Tested for 3 days, in Municipality of Marabut, Western Samar in 2 identified high risks barangays.

Date: October 23 – 26, 2018

- 1 household received 1 shelter strengthening kit
- In total, there were 40 households received shelter strengthening kit.

=

1. Impact of Early Warning Early Action: Protecting pastoralist livelihoods ahead of drought | Food Security Cluster (fscluster.org)

Session Wrap up

- For an Early warning Early Action system to be effective and efficient, it needs combined efforts from all stakeholders.
- Translating early warnings into early actions reduces the negative impacts brought about by any disaster.

2.5 Session 1.4 Successes and challenges of EWEA

Introduction

The session intends to help participants understand the various successes as well as challenges around the implementation of EWEA system based on areas that EWEA has been implemented.

2.5.1 Duration

30 minutes

2.5.2 Session competences

The Participant explains the challenges as well as the successes around the implementation of EWEA system.

2.5.3 Methodology

- Power point presentation
- Facilitated Discussion
- Group discussion
- Brainstorming

2.5.4 Materials needed

- Laptop/Computer
- Portable projector
- Portable speaker
- Wireless microphone
- Presentation remote
- Notebooks and pens

2.5.5 Session activity:

Activity; Ask participants some the challenges/barriers they foresee in regards to effective implementation of EWEA approach

2.5.6 Facilitator's notes

The various successes that have been recorded include;

In Kenya, the piloting of EWEA approach by FAO in the year 2016/2017 helped in cushioning the community members in Marsabit, Wajir, Kilifi and Kwale counties. Many families that were supported with livestock feeds and vaccination were able to record some improvement in their livestock during the drought period. See FAO's experiences here².

Highlight challenges that have been encountered during the implementation process of EWEA projects from KRCS's experiences include;

- Inadequate resources to implement early actions
- Lack of clear policy frameworks to support implementation anticipatory actions mainly translation to minimal support in coordination and financing by the government
- Rigidity from key stakeholders to shift from being more reactive to being proactive in terms of disaster

2. Impact of Early Warning Early Action: Protecting pastoralist livelihoods ahead of drought | Food Security Cluster (fscluster.org)

- Limited capacity in infrastructure and skill of climate producers to generate specific user needs for EWEA

2.5.7 Session Wrap up

- The successfulness of the already implemented EWEA systems improves confidence in the upcoming implementations of the EWEA systems.
- Emphasis should be made on the existing challenges facing the implementation of Early Warning Early Action system, for it to be effective and efficient in other areas where it is to be implemented.

Module 2: Climate Change

3.1 Introduction

This module aims to build the capacity of participants on understanding what climate change is and how it is influencing the need for EWEA. To achieve this, the participants need to be taken through; what is climate change, causes of climate change, effects and indicators of climate change and finally linking climate change to humanitarian work and early warning systems.

The module comprises of 4 sessions:

Session 2.1: What is climate change?

Session 2.2: The cause of climate change?

Session 2.3: Indicators and effects of climate change

Session 2.4: Linking climate change to humanitarian work and Early Warning System

3.2 Duration:

30 minutes

3.3 Session competences

The Participants explains the displayed pictures and their meaning in relation to climate change

3.4 Methodology

- Power point presentation
- Brainstorming
- Picture presentation
- Group discussion/exercise
- Facilitated discussion

3.5 Materials needed

- Laptop/Computer
- Portable projector
- Portable speaker
- Wireless microphone
- Presentation remote
- Notebooks and pens

3.6 Session activity:

Activity; Ask the participants what can they say about the pictures shown below; what does the pictures mean to them?

Facilitator's notes

What are the extreme events shown in the pictures below?

The participants can have a general overview of extreme climatic events.



(a)



(b)



(c)



(d)

Session Wrap up

Congratulate the participants for the well done exercise on interpreting the pictures.

3.7 Session 2.1 Defining climate change

3.7.1 Introduction

This session defines Climate Change and illustrates the trends in temperature across different continents to help participants in understanding climate change.

3.7.2 Duration

3.7.3 30 minutes

3.7.4 Session competences

The participant defines Climate Change.

3.7.5 Methodology

- Power point presentation
- Group discussion/exercise
- Brainstorming

3.7.6 Materials needed

- Laptop/Computer
- Portable projector
- Portable speaker
- Wireless microphone

- Presentation remote
- Notebooks and pens

3.7.7 Session activity

Activity; First, ask the participants what they understand by the term climate change
Note: participants can use their own experiences or examples to illustrate their understanding of climate change

3.7.8 Facilitator's notes

What is Climate Change?

Climate Change is a shift in the average weather conditions (e.g. temperature and rainfall) in a region over a long period of time (30 years)

This is well illustrated in figure 2 below showing the trends in temperature anomaly across different continents (black line shows fluctuation in temperature for the period 1900 to 2000)

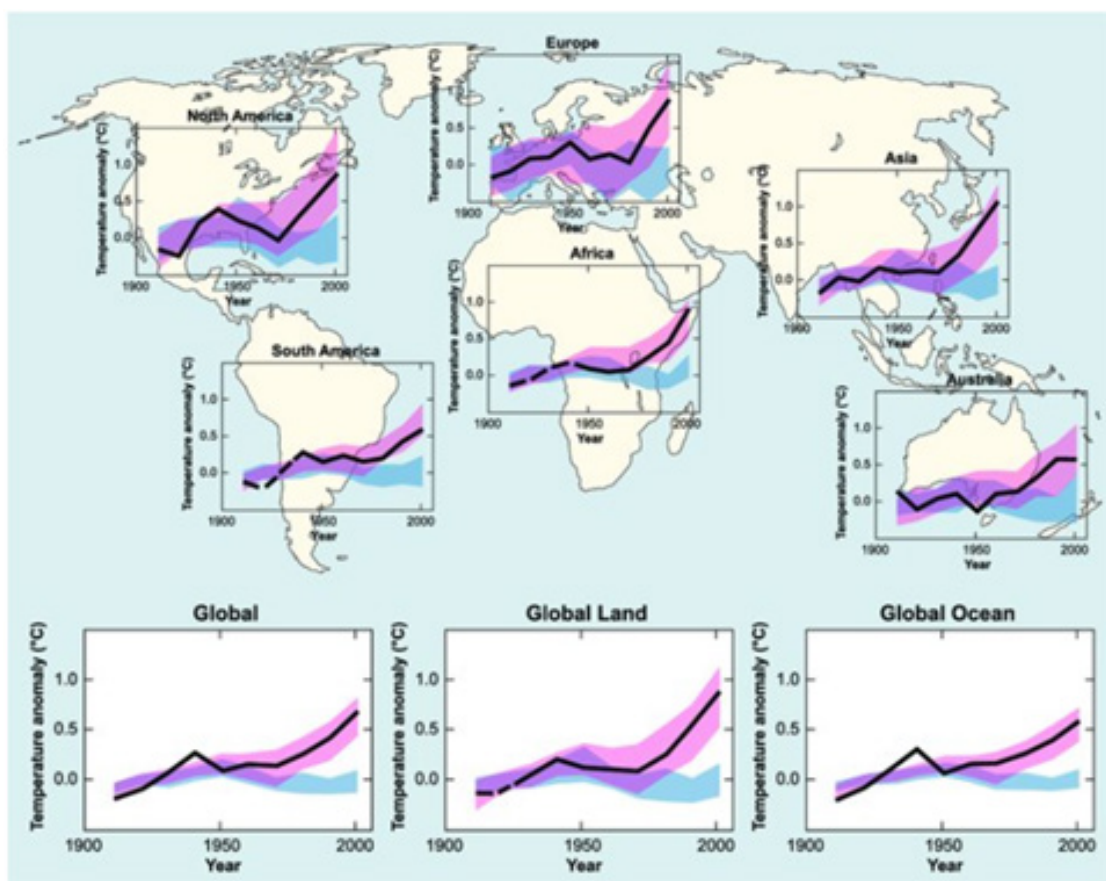


Figure 2: Global temperature anomaly

3.7.9 Session Wrap up

It is important for all stakeholders involved in disaster risk reduction and management to understand what Climate Change is for informative decision making.

3.8 Session 2.2 The cause of climate change?

3.8.1 Introduction

This session briefly explains the concept of global warming as a cause of climate change.

Climate change occur as a result of global warming and this is attributed to continuous emission of greenhouse gases into the atmosphere.

3.8.2 Duration

30 minutes

3.8.3 Session competences

The Participants defines global warming as the cause of climate change.

3.8.4 Methodology

- Power point presentation
- Facilitated Discussion
- Group discussion
- Practical session
- Brainstorming

3.8.5 Materials needed

- Laptop/Computer
- Portable projector
- Portable speaker
- Wireless microphone
- Presentation remote
- Notebooks and pens
- Warm water jar, bucket and towel

3.8.6 Session activity:

Activity; Demonstrating the concept of global warming

3.8.7 Facilitator's guide

Exercise 1: Demonstrating the concept of global warming

1. Get a bucket, jar full of warm water and towel (or something that can be used to cover a person)
2. Pour the hot/warm water in the bucket. Use the towel to cover one of the participant for about 1 minute
3. Ask the participant on what he/she felt.
4. Discuss with entire participants regarding the concept of global warming

3.8.8 Facilitator's notes

The rapid global warming of the past 100 years is caused mostly by human activity and this includes (Figure 3);

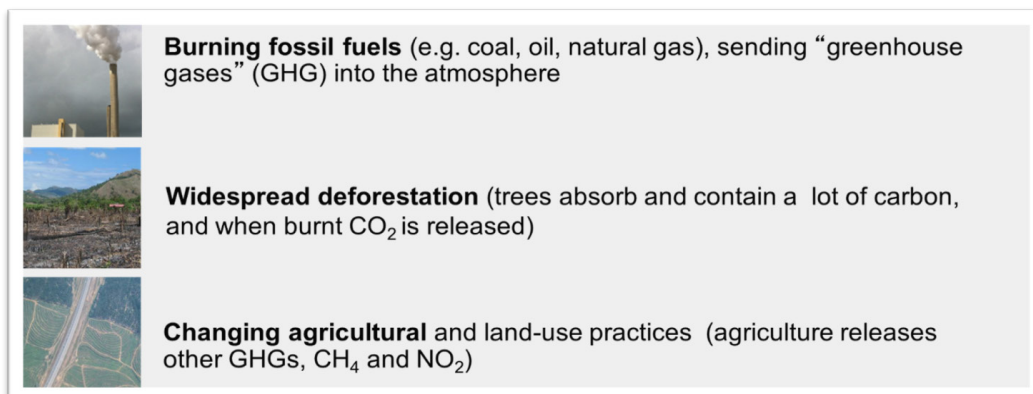


Figure 3: Causes of global warming

Understanding the concept of global warming

“The Greenhouse gases are acting as a blanket around the earth and hence, trapping excess energy emitted from the earth surface”. The trapped energy results into the warming of the globe (Figure 4).

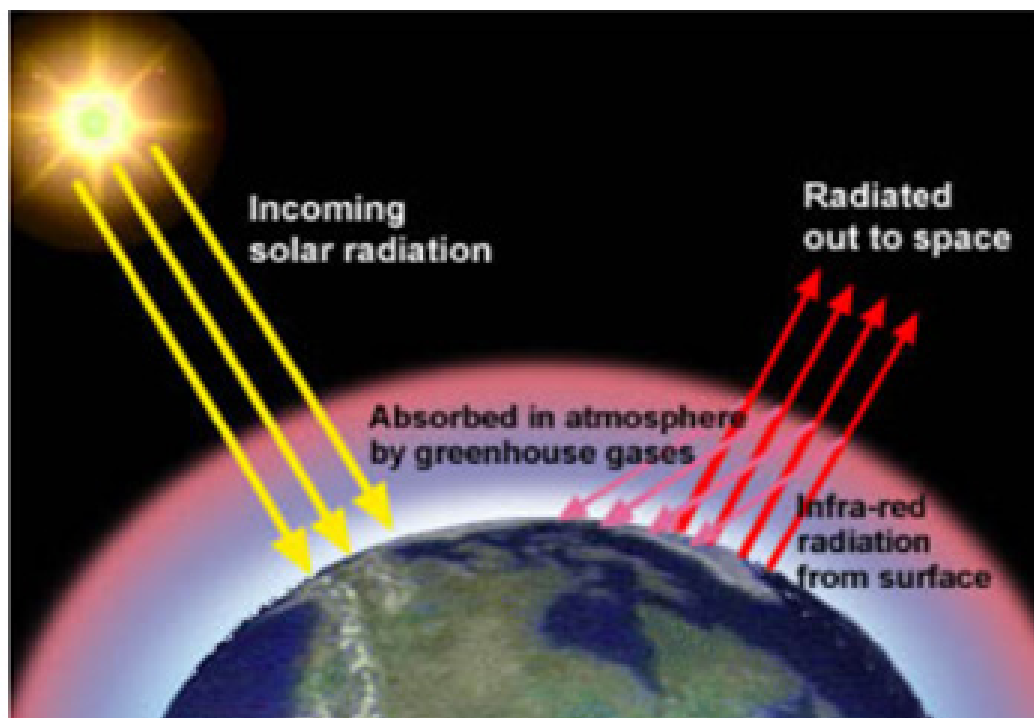


Figure 4: Solar Radiation Illustration

3.8.9 Session Wrap up

- Congratulate the participants for the active demonstration of global warming concept.
- All stakeholders have a role to play in the mitigation of climate change.

3.9 Session 2.3 Indicators and effects of climate change

3.9.1 Introduction

This session introduces some of the effects and indicators of climate change. Effects of climate change tend to be location base, for instance, the effects of climate change in ASAL regions could be different to those in highland regions.

3.9.2 Duration

30 minutes

3.9.3 Session competences

The participant:

1. Identifies some indication of a changing climate in their locality
2. Highlights some of the effects of climate change

3.9.4 Methodology

- Power point presentation
- Facilitated Discussion
- Group discussion
- Brainstorming

3.9.5 Materials needed

- Laptop/Computer
- Portable projector
- Portable speaker

- Wireless microphone
- Presentation remote
- Notebooks and pens

3.9.6 Activity:

Activity; Ask participants what they have seen in their locality that indicates the climate is changing

(Note: participants can be asked to share examples of what they think are impacts of climate change in their own surrounding)

3.9.7 Facilitator's notes

Climate change effects tend to be location base, for instance, the effects of climate change in ASAL regions could be different to those in highland region.

Some effects of climate change are already visible and are impacting both the ecosystems and humans. These effects may include; sea level rise, extreme weather events, desertification and land degradation.

(Figure 5) below presents some examples of climate change indicators

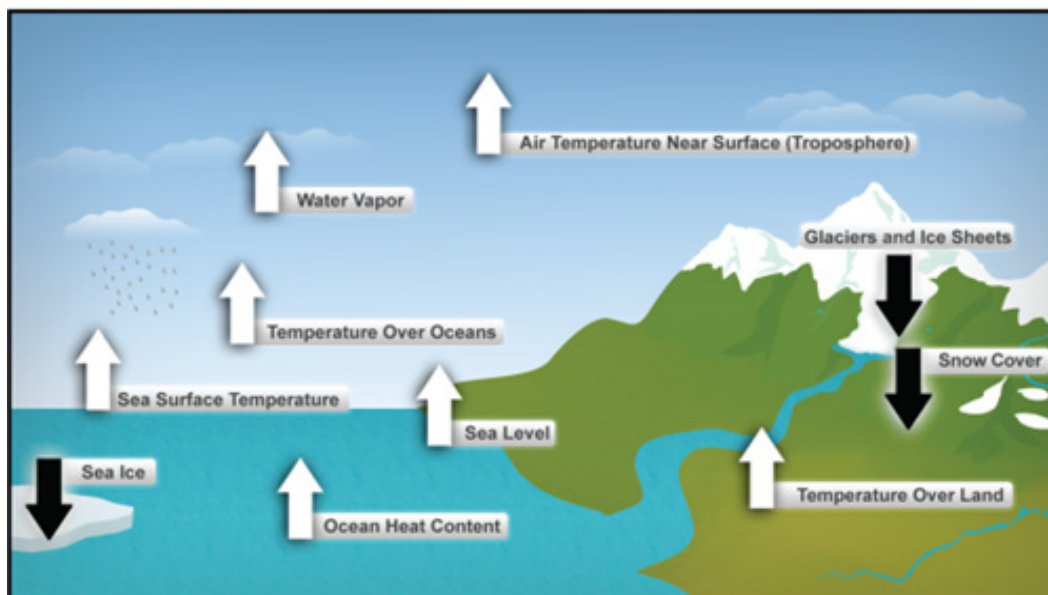


Figure 4: Solar Radiation Illustration

3.9.8 Session wrap up

- The new challenges for human and animals' survival are brought about by climate change.
- Climate change is worsening with extreme weather events becoming more frequent and severe.

3.10 Session 2.4 Linking climate change to humanitarian work and Early Warning System

3.10.1 Introduction

Participants should understand that as global warming is still on rise, climate change impacts will become more extreme and this will have great impacts on the humanitarian sector since more people will be affected and hence, will be in need of humanitarian assistance.

3.10.2 Duration

30 minutes

3.10.3 Session competences

Participant identifies the link between climate change, humanitarian work and Early warning system.

3.10.4 Methodology

- Power point presentation
- Facilitated Discussion

3.10.5 Materials needed

- Laptop/Computer
- Portable projector
- Portable speaker
- Wireless microphone
- Presentation remote
- Notebooks and pens

3.10.6 Activity

Activity; Discussing the linkage between climate change, humanitarian work and Early Warning system

3.10.7 Facilitator's notes

For instance, according to the 6th IPCC assessment report³, the rising rates and magnitudes of warming and other changes in the climate system, accompanied by ocean acidification, increase the risk of severe, pervasive, and in some cases, irreversible detrimental impacts. Future climate change will amplify existing climate-related risks and create new risks. In relation to the humanitarian sector, this will result into increased need for humanitarian relief and aid by the affected communities.

*“A changing climate leads to changes in the **frequency, intensity, spatial extent, duration, and timing** of extreme weather and climate events, and can result in **unprecedented** extreme weather and climate events.”*

Droughts will intensify in the 21st century in some seasons and areas (IPCC)

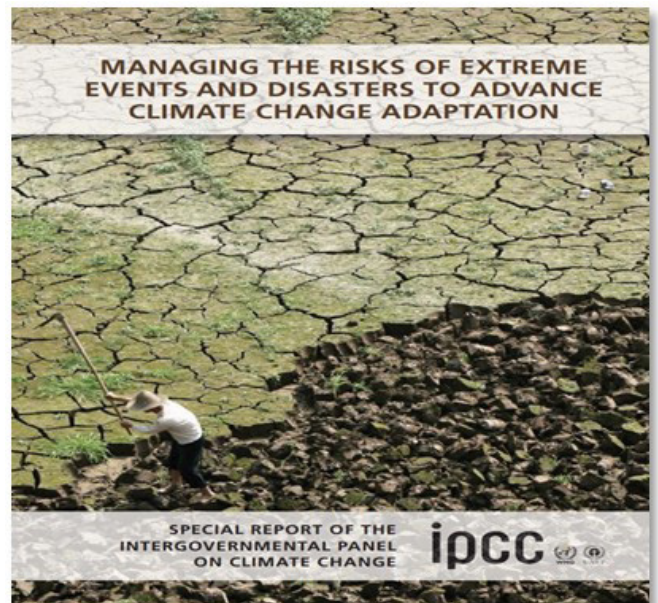


Figure 6: Indication of future impacts of climate change (IPCC, 2013)

IPCC assessment report stressed on the need to strengthen the existing and/or develop new early warning systems for purpose of mitigating risks associated with climate change.

Disaster risk management	Early warning systems; Hazard & vulnerability mapping; Diversifying water resources; Improved drainage; Flood & cyclone shelters; Building codes & practices; Storm & wastewater management; Transport & road infrastructure improvements.
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3.10.8 Session wrap up

- The changing climate can be solved by man but only if we are able and willing to act before it is too late.
- The consequences of climate change are increasing and they pose a risk to events of immeasurable intensity that humanitarian organizations do not have the capacity to respond to.
- The causes of climate change must be eliminated.

Module 3: End to End Early Warning System

4.1 Introduction

In this module, the participants need to understand that the end-to-end early warning systems focuses on four components in regards to implementing anticipatory early actions especially for a single hazard. The components include (Figure 7); 1). Knowledge of risk, 2). Early warning services 3). Dissemination and communication and 4). Preparedness and early response capacity – early actions.

However, with continuous rise in global warming, climate change has resulted into multiple impacts following multiple hazardous events. To address this, World Meteorological Organization has recommended a five component Multi-Hazard Early Warning System (MHEWS). The MHEWS has the ability to warn of one or more hazards increases the efficiency and consistency of warnings through coordinated and compatible mechanisms and capacities (Figure 7).

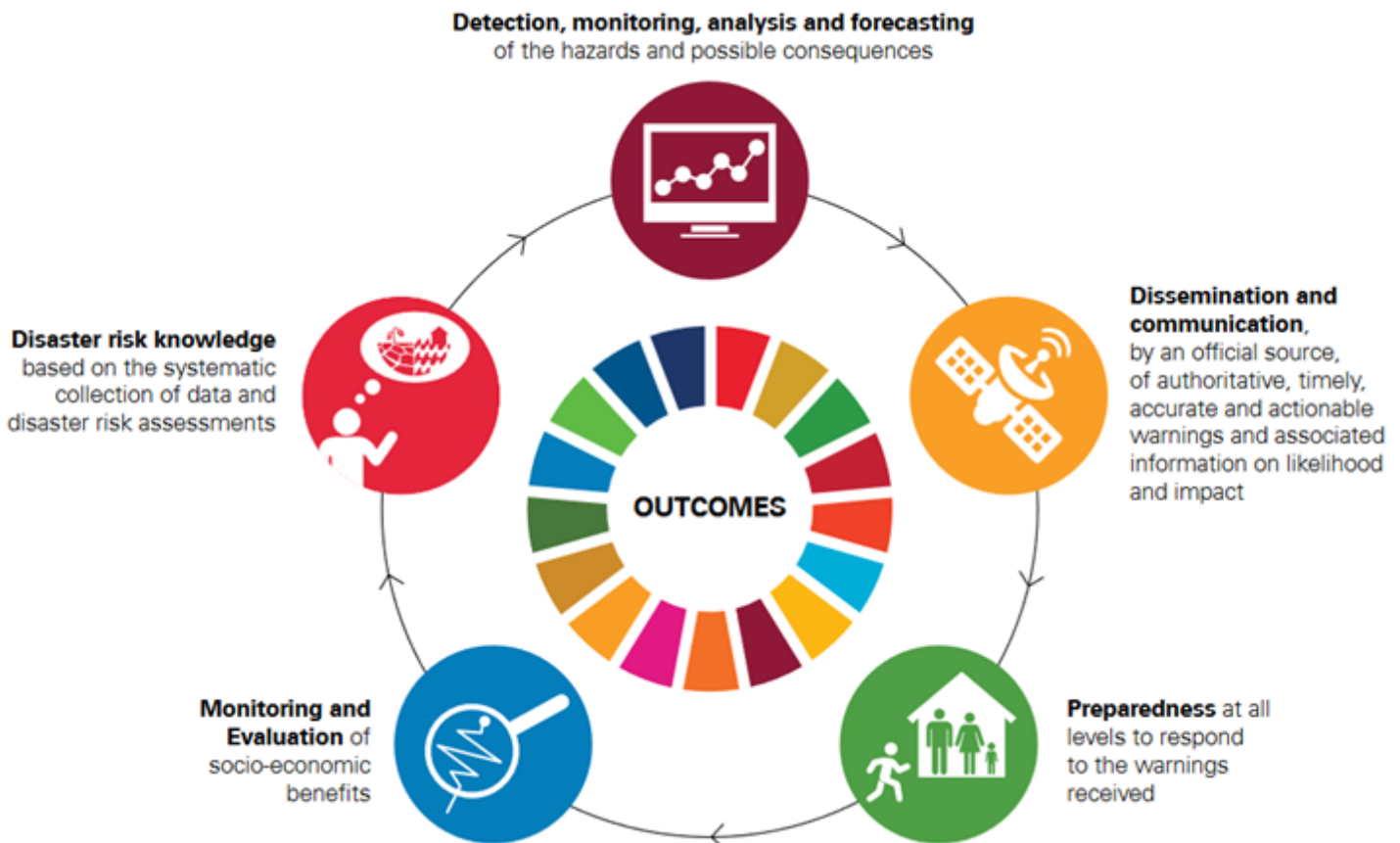


Figure 7: Five components of WMO recommended MHEWS

This module comprises of 1 session with the following sub-sessions:

4.2 Session 3.1 Components of Early Warning System

4.2.1 Introduction

This session involves diving deeper the components of EWEA and further what every component entails. Explain how components are connected starting from knowledge of risk, early warning services, dissemination and communication to preparedness and response capacity.

4.2.2 Duration

30 minutes

4.2.3 Session competences:

Participant understands the components of EWEA and how the components are connected

4.2.4 Methodology

- Power point presentation
- Facilitated Discussion

4.2.5 Materials needed

- Laptop/Computer
- Portable projector
- Portable speaker
- Wireless microphone
- Presentation remote
- Notebooks and pens

4.2.6 Session activity

Activity; Introducing the components of Early Warning Early Action and what every component entails.

4.2.7 Facilitator's notes

The components of EWEA, what every component entails and how the components are connected starting from knowledge of risk, early warning services, dissemination and communication to preparedness and response capacity.

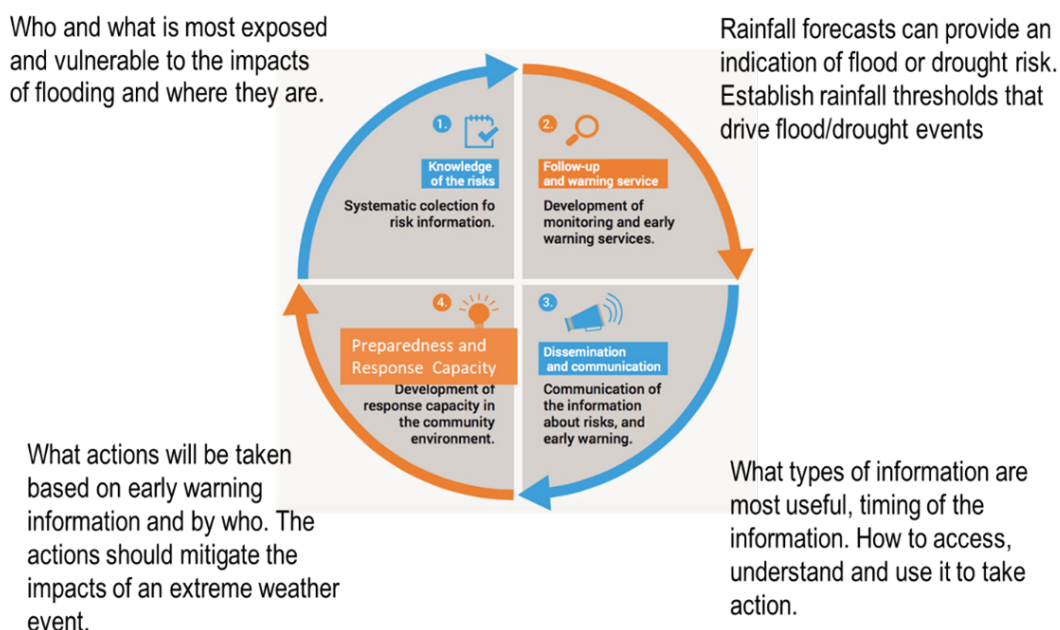


Figure 8: Components of Early Warning Early Action

Session wrap up

The components of Early Warning Early Action are connected in that, one component leads to the success of the next component.

4.3 Session 3.1.1 Understanding Risk – Knowledge of risk

4.3.1 Introduction

This section helps in explaining the importance of having the knowledge of risk of a given location with respect to disaster risk reduction.

Explain the importance of understanding risk of a given location; for instance, importance of mapping risk areas includes;

- Help to understand the historical and current disasters
- Understand Who and What is exposed and most vulnerable (e.g. to drought, floods, resource base conflicts)
- Understand where are they
- Review to understand new risk areas

4.3.2 Duration

30 minutes

4.3.3 Session competences

Participants understands the importance of having the knowledge of risk of a given location.

4.3.4 Methodology

- Power point presentation
- Facilitated Discussion
- Group discussion
- Brainstorming

4.3.5 Materials needed

- Flip charts
- Marker pens (different colors)
- GPRS (used when doing actual mapping on ground to take coordinates)

Exercise 2: Risk mapping

1. Using a flip chart and marker pen, draw the map your location or region
2. Draw/map critical features of your area on the map (e.g. roads, rivers, towns, school etc.)
3. Locate areas that are at risk to a given hazard (e.g. floods, droughts or conflict)

4.3.6 Session activity

Activity; Discuss some of the reasons why understanding risk is importance

4.3.7 Facilitator's guide

Undertaking risk mapping exercise;

- Before undertaking risk mapping, list down some of hazards in your areas/location

4.3.8 Facilitator's notes

Understanding or mapping risk areas requires a collaborative effort from different key stakeholders; why so?

- Every area is unique. While many places face the same kinds of challenges, no two areas are exactly the same. Each area has unique set of challenges and unique assets that can be leveraged to reduce vulnerability.
- It's important to identify hotspots together with those who know the area. The members you team up with are the people who know their surrounding the best.

- Collaboration is key to success. Joint mapping gives external teams the opportunity to collaborate with locals and provides an excellent opportunity for people to develop solutions that actually work.

4.3.9 Session wrap up

- Having the knowledge of risk of a particular location helps in disaster risk reduction.
- Understanding or mapping risk areas requires a collaborative effort from different key stakeholders.

4.4 Session 3.1.2 Early Warning Service

4.4.1 Introduction

The session focuses on building capacity on early warning services. Capacity will be built on improving understanding on weather systems driving our climate, forecast predictability and understanding terciles and probabilities.

The sub sessions to be discussed under this session include:

- Weather systems
- Systems influencing climate over East Africa
- Understanding terciles and probabilities

4.4.2 Duration

2 hours; 30 minutes per sub session.

4.4.3 Session competences

The participant;

- Defines and understands the difference between weather and climate.
- Understands the systems influencing climate over East Africa
- Understands terciles and probabilities and their application in forecasting

4.4.4 Methodology

- Power point presentation
- Facilitated Discussion
- Group discussion
- Brainstorming
- Practical sessions

4.4.5 Materials needed

- Laptop/Computer
- Portable projector
- Portable speaker
- Wireless microphone
- Presentation remote
- Notebooks and pens
- Red, yellow and blue tokens/chips

4.4.6 Session activities

Activity 1

Activity 5: To understand the difference between weather and climate

Ask participants whether these statements signify weather or climate

- Above normal rainfall is expected this season – Climate
- Today is sunny – Weather
- We are having shorter rainy seasons – Climate
- It will rain in two days' time – weather
- The winds are getting stronger generally – Climate
- It's hotter today – Weather

- The long rains this year were the heaviest on record - Climate
- We have received a lot of rain this week - Weather

4.4.7 Facilitator’s notes on activity 1

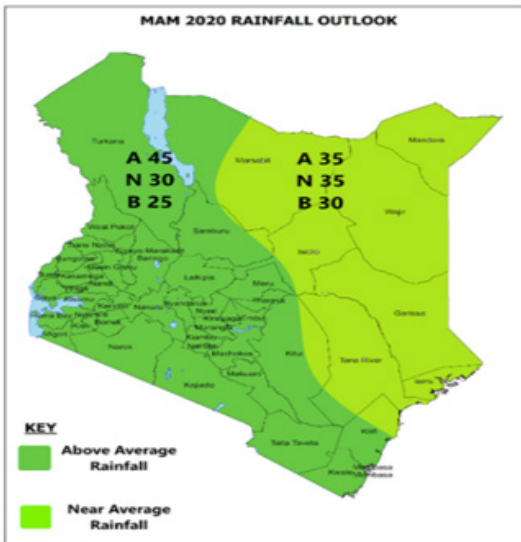
4.5 3.1.2.1 Weather Systems

This begins by understanding what is weather and climate;

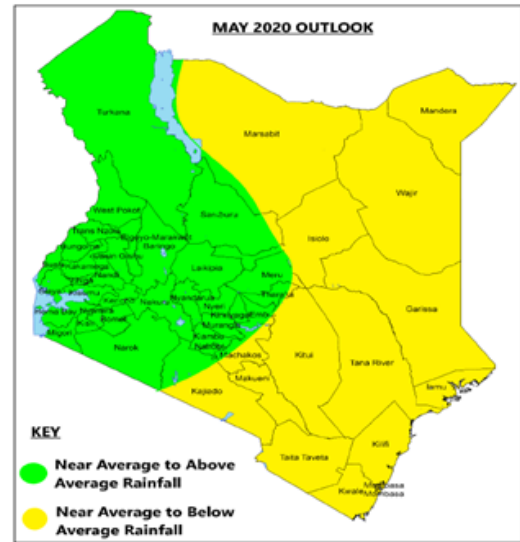
- a) Weather: is the short-term (minutes to weeks) state of the atmosphere
 - b) Climate: is the average state of the atmosphere for an extended period of time
- Climate and Weather Forecasts information

Participants should know that Kenya Meteorological Department (KMD) is the mandated institution for producing climate and weather forecast information. The forecast information includes (Figure 9);

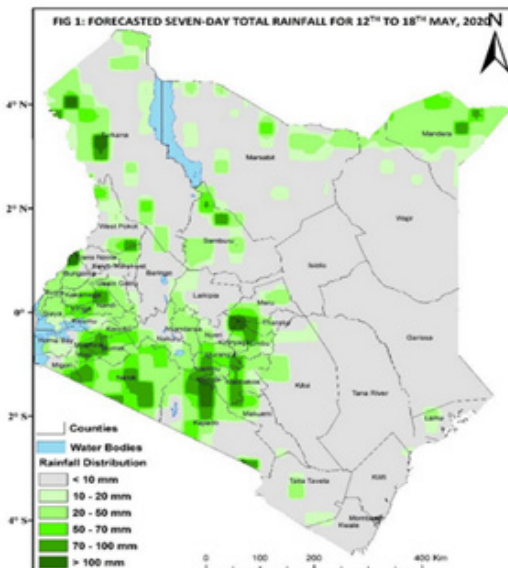
- Seasonal forecast
- Monthly forecast
- Seven-day forecast
- Five-day forecast
- Daily forecast
- Weather advisory



a). Seasonal Forecast



b). Monthly Forecast



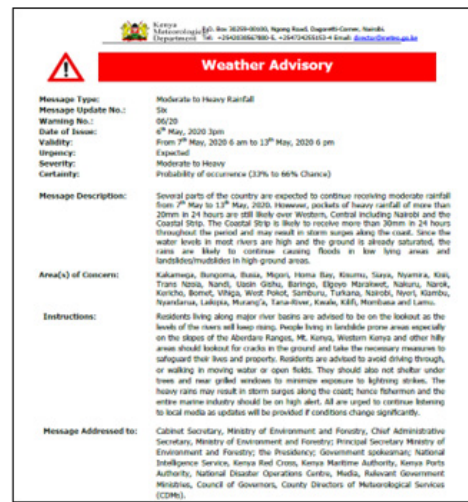
c). Seven-day forecast

REGION	Time and Temperature	DAY 1 (13 TH JUNE 2020)	DAY 2 (14 TH JUNE 2020)	DAY 3 (15 TH JUNE 2020)	DAY 4 (16 TH JUNE 2020)	DAY 5 (17 TH JUNE 2020)
The Lake Victoria Basin, Highlands West of the Rift Valley, Central and South Rift Valley (Siaya, Kisumu, Homabay, Migori, Kisii, Nyamira, Trans-Nzoia, Baringo, Uasin Gishu, Elgeyo-Marakwet, Nandi, Nakuru, Narok, Kericho, Bomet, Kakamega, Vihiga, Bungoma and Busia Counties)	Morning	Sunny intervals.	Sunny intervals.	A chance of rains over a few places.	Sunny intervals.	A chance of rains over a few places.
	Afternoon	Showers and thunderstorms over several places.	Showers and thunderstorms over several places.	Showers and thunderstorms over several places.	Showers and thunderstorms over several places.	Showers and thunderstorms over several places.
	Night	Showers over few places.	Showers over few places.	Showers over few places.	A chance of showers over a few places.	Partly cloudy.
	Temperatures	11-27°C	13-27°C	10-28°C	14-28°C	14-29°C

d). Five-day forecast



e). Daily forecast



f). Weather advisory

Figure 9: Examples of different forecast information from KMD (<https://www.meteo.go.ke/>)

Activity 2:

Activity; Understanding Systems influencing climate over East Africa

4.5.1 Facilitator’s notes on activity 2

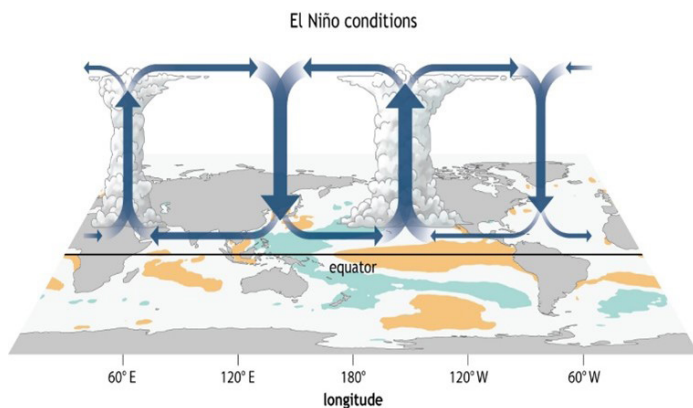
4.6 Systems influencing climate over East Africa

Here, participants will get to understand the different weather systems that influence the climate patterns/seasons experienced in East Africa.

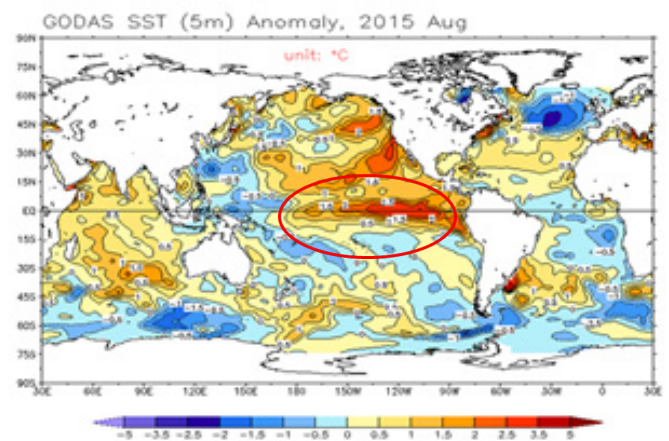
a. El Niño & La Niña

Are episodes in the Eastern Pacific when temperatures are different from normal, lasting several months. The unusual temperatures change the circulation of the winds.

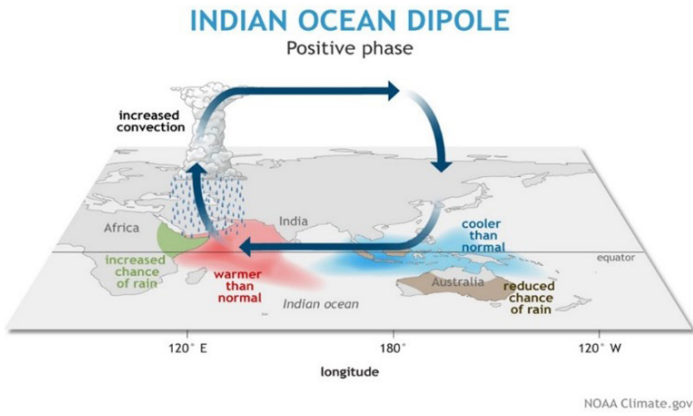
El Niño: Occurs when eastern Pacific Ocean is warmer leading to moist air rising and pushed toward the Eastern Africa. El Niño years are associated with typically wetter than usual seasons in East Africa



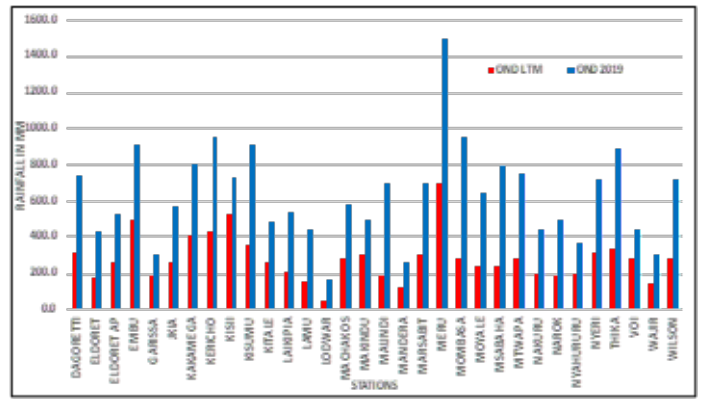
a) El Niño illustration



b) Example of El Niño 2015



a) Positive IOD



b) Effect over Kenya

Figure 2: Illustration of positive IOD

Negative IOD - this happens when the Indian Ocean water closer to the East Africa coastal is cooler and surface water closer to Australia is warmer. This give rise to sinking air which results into less precipitation (Figure 13). This phase is associated with depressed rainfall amount over the East Africa region – Kenya

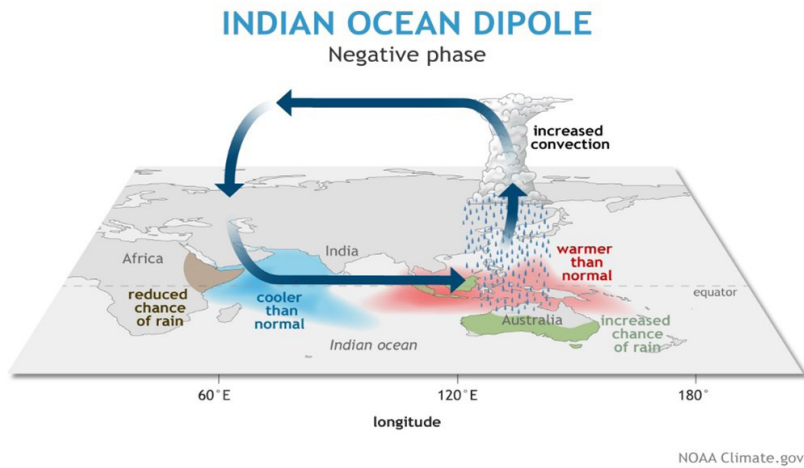


Figure 13: Illustration of negative IOD

Neutral IOD - this happens when the sea surface temperature is uniform across Indian Ocean water closer to the East Africa and Australian coastal. This phase doesn't much influence on rainfall over the East Africa region (Figure 14).

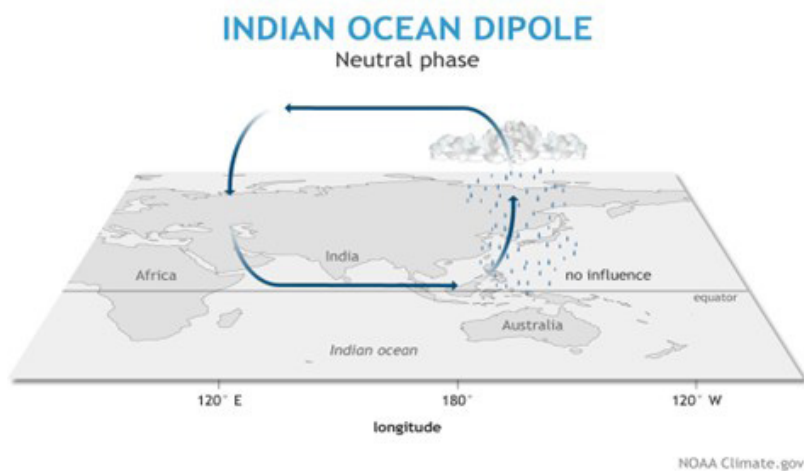


Figure 14: Illustration of neutral IOD

Activity 3:

Activity; Understanding Systems influencing climate over East Africa

4.6.1 Facilitator's notes on activity 3

Understanding terciles and probabilities

Terciles

- Terciles and probabilities are important in understanding the capacity of forecast information.
- Terciles helps in identifying the analogue years i.e. year in the past with similar forecast information to the current forecasted year

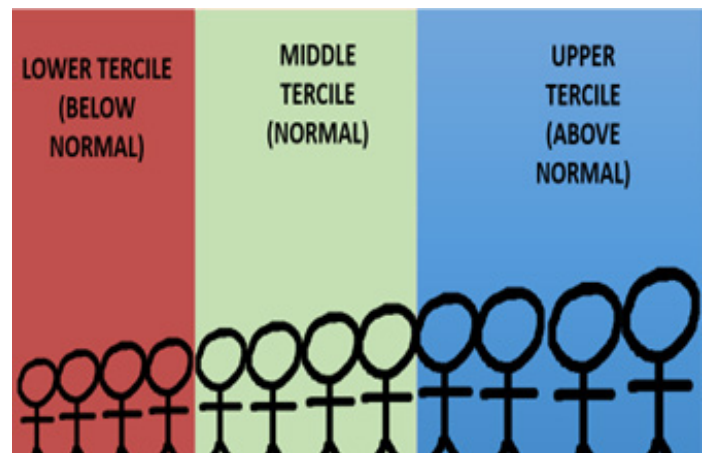
Exercise 2 will help in understanding terciles better

Exercise 2: Steps to understand tercile concept in forecasting

1. Have about 9 participants and assign each participant a year e.g. 2010, 2011....
2. Ask participant to line up in descending order based on the years. Here their different heights are equated to total annual rainfall and this can be used to explain inter-annual rainfall variability
3. Now ask participants to line up from shortest to tallest. Divide them into three groups, representing below normal for the short group and above normal for the tallest group (Figure 15a&b)



a



b

Figure 15: Tercile demonstration for understanding Above normal, normal and below normal

Discussion - Linking with exercise 2

Men and women heights are used to explain the difference of 'above normal' and 'below normal' for different geographical regions. For example, a 'below-normal' height man might not be the same height as a 'below-normal' height woman, in the same way that below-normal rainfall in one region might not count as below normal in another.

b). Probability

Probability help in understanding the likelihood/chances of getting above normal, normal or below normal forecast when looking at seasonal forecast. Exercise 3 demonstrate the probability concept in forecast.

Exercise 3: Steps to demonstrate the implication of probabilities presented in forecasts

1. Have a bag filled with equal numbers of red, yellow and blue tokens/chips. (The chips corresponded to below-normal, normal and above-normal rainfall respectively. With the chips being equal for all colors (categories) then probability of picking each color (category) was $1/3$.)
2. Ask the participants to line up and each to pick a chip randomly, moving to a different part of the room depending on the outcome. (The total number of people in each category indicated the actual outcomes - with some variability in the groups showing the effect of sampling variability.)
3. Repeat exercise after increasing the number of tokens/chips in the red/below normal to two thirds.
4. Discuss the outcome of the two exercise. What do participants notice when chips of certain color is increased?

Discussion - Linking with exercise 3

By increasing the number of chips for certain category e.g. “below-normal”/red, it results to having a large number of people with “below-normal”/red, and this is demonstrating the impact of a shift in the probability distribution. However, it is important to note that even with a large shift in probabilities, a low-probability outcome could still occur. That is, even if the chance of dry conditions has doubled, a wet season is still possible.

4.6.2 Session wrap up

Building capacity on early warning services improves the confidence in monitoring and development of early warning services.

4.7 Session 3.1.3 Communicating Early Warning information

4.7.1 Introduction

Effective Early Warning communication has to ensure that the intended information is relayed to the end-user without distortion, despite possible translation from one language to the other through various channels that may be deployed. This session focuses on effective and reliable channels for communicating early warning information. It will look at the current channels used by participant in receiving early warning information and their preferred channels going forward. The channels used in communicating early warning information should be easily accessible for every person so that no one is isolated from the communication loop.

Before identifying the current and preferred communication channels a game known as “Broken telephone” should be played to help understand the importance of communication in disaster context.

4.7.2 Duration

1 hour

4.7.3 Session competences

The participant:

1. Identifies the preferred channels for communicating early warning information.
2. Understands the importance of communication in disaster context.

4.7.4 Methodology

- Facilitated Discussion
- Brainstorming
- Practical sessions/game

4.7.5 Materials needed

- Sticky notes
- Flip charts
- Pen/marker pen

Exercise 4:

1. Ask the participants to write down on sticky notes all the channels they use currently to access any early warning/forecast information and stick on the flip chart labelled “Current Communication Channels” – 1 sticky note for 1 channel
2. Write down your preferred communication channels going forward and stick on flip chart labeled “Preferred Communication Channels”
3. Discuss the outcome with the participants; what do they notice

4.7.6 Session activity:

Activity; Identifying the current and preferred communication channels

4.7.7 Facilitator’s guide

Rules of the game:

- You only pass information to the next participant/neighbor ones. No repeating whether they got it or not
- Whisper while passing information to the next person. DO NOT SHOUT

Game 1: Broken Telephone

1. Arrange the participant in straight line or circle. They should be 1 meter apart
2. As a facilitator identify information you want to pass. Share the information by whispering to the 1st person
3. Let the participants pass information up to the last person
4. Ask the last person to share the information he got
5. Ask randomly the participants what they got in order to know where information was distorted
6. Discuss the lesson learnt from the game

4.7.8 Facilitator’s notes

Discuss lessons learnt from the game

4.7.9 Session wrap up

- All stakeholders should be aware of the official source of early warning information which should be timely and accurate.
- The early warning information should be useful in making actionable warnings.
- Through capacity building on early warning information, every person should be able to access, understand and use the information to take actions.

4.8 Session 3.1.4 Preparedness/Early Action based Early Warning lead times

4.8.1 Introduction

This session focuses on building the capacity of participants in transforming early warning information into early actions. This follows participant’s capacity building understanding on knowledge of risk, early warning services as well as communication of early warning information.

In order to effectively undertake early actions, participants should first map out some of the impacts associated with a given climate related disaster such as flood/drought. The map

With the development of impact table, participant should start thinking of when it is possible to undertake early actions and which early actions can be implemented by a) community members and b) County government and NGOs

4.8.2 Duration:

1 hour

4.8.3 Session competences

- The Participant maps out some of the impacts associated with a given climate related disaster such as flood/drought.
- Participants understand when it is possible to undertake early actions and which early actions can be implemented by community members and County government and NGOs.

4.8.4 Methodology

- Facilitated Discussion
- Brainstorming
- Practical exercises

4.8.5 Materials needed

- Marker pen
- flip charts

Exercise 5: Developing flood and drought impact table

1. Consider the rainfall season (e.g. OND 2019) and a). Indicate the different types of early warning information received and when were they received and b). map out the flood impacts encountered following early warning information and when they were encountered
2. Consider the 2016/2017 drought period and a). Indicate the different types of early warning information received and when were they received and b). map out the drought impacts you observed/encountered following early warning information and when they were observed/encountered

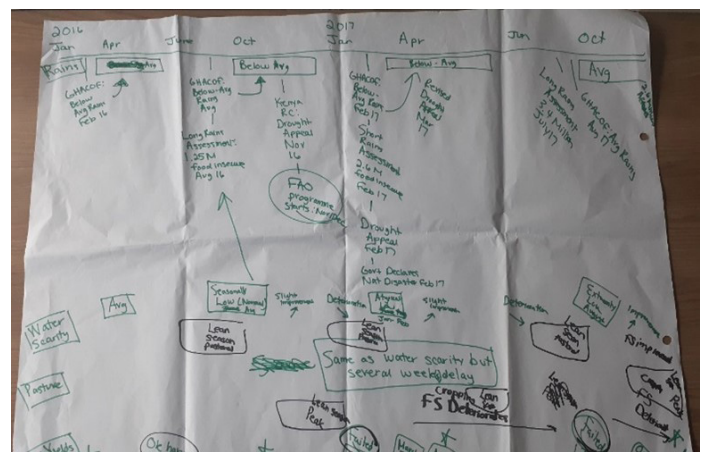
4.7.6 Session activity: Activity 1

Activity; Developing flood and drought impact table

4.8.7 Facilitator's notes on activity 1

FORCAST RECEIVED	IMPACT MAPPING					
	JAN	FEB	MAR	APR	MAY	JUN
RAINFALL RECEIVED	Weather forecast updates (MAM)	"	long rains onset of rains fall seasons	"	"	"
RIVER/DAMS WATER LEVEL	Flooding	"	It was above normal in Tana delta & depressed in upper tana	"	"	"
IMPACTS	Road cut off Crops washed Families displaced Water borne diseases Live stock Pastures in plenty Water pans in plenty in the	"	Conflicts over lands due to displacement Hunger	"	"	Migrations by pastoralists towards the delta

Flood impact table (rapid onset)



Drought impact table (slow onset)

Figure 16: Examples of flood and drought impact tables

Activity 2

Activity; First, discuss with the participants what they understand by slow onset disasters

4.8.7 Facilitator's notes on activity 2

Slow onset disaster

N/B: Are disasters with slow beginning and in most occasions, one can only notice once the impacts start happening e.g. drought

4.8.9 Materials

- Marker pen
- flip charts

Exercise 6: Identifying drought early actions

1. Assume you are community members; what early actions can you start implementing when given seasonal forecast indicating below rainfall is expected in your region
2. Assume you are county government; what early actions can you start implementing when given seasonal forecast indicating below rainfall is expected in your region

Activity 3

Activity; First, discuss with the participants what they understand by rapid onset disasters

4.8.10 Facilitator's note on activity 3

Rapid onset disaster

N/B: Are disasters with fast beginning and in most occasions, it happens very fast and tend to find people unaware or unprepared e.g. floods

Exercise 7: Identifying flood early actions

1. Assume you are community members; list down what early actions can you start implementing when given a). seasonal forecast indicating above rainfall b) Monthly rainfall forecast indicating above rainfall and c) 1-week weather advisory indicating heavy rainfall is expected in your region
2. Assume you are community members; list down what early actions can you start implementing when given a). seasonal forecast indicating above rainfall b) Monthly rainfall forecast indicating above rainfall and c) 1-week weather advisory indicating heavy rainfall is expected in your region

4.8.11 Session wrap up

- The development of the impact tables helps in prioritizing which early action to be implemented first.
- It is crucial for all actors in disaster risk management to have an understanding on the knowledge of risk, early warning services as well as communication of early warning information to be in a position to translate early warning information into early actions.

Module 4: The bigger picture; Policy and financing

5.1 Introduction

This session focuses on sensitizing the participants on the need to mainstream disaster risk management (DRM) and disaster preparedness into legislation, policy, planning and decision making in order to create enabling environment for EWEA.

The module comprises of 2 sessions:

Session 4.1: Understanding the Disaster Risk Management

Session 4.2: Financing EWEA through the DRM bills and policies

5.2 Duration

1 hour

5.3 Session competences

- Participants building consensus around allocating resources for preparedness as opposed to disaster response, satisfying the need for a proactive at expense of responsive approaches in order to save more lives, properties and even resources
- Participants understand provisions that need to be in place to ensure effective and efficient DRM

5.4 Methodology

- Brainstorming
- Practical exercises
- Plenary Discussion

5.5 Materials needed

- Flip chart/ chalkboard
- Notebooks and pens

5.6 Session 4.1: Understanding the Disaster Risk Management

5.6.1 Activity 1

Activity; Disaster Profile in a region

5.6.1.1 Facilitator's Reference Notes

Participants need to reflect on the disaster setting in their region of residence (e.g. a county, region, province, district). They should ideally be taken through a brainstorming session where no one judges or place a value on an answer someone else gives.

5.6.1.2 Facilitator's Guide

- Each answer is simply recorded on flipchart paper or a chalkboard for the entire group to see.
- The facilitator should encourage them to reflect on and record historical disasters as well as emerging ones.

Exercise 6: Brainstorming on Disaster occurrence in the area

1. Which disasters are common in this region/county?
2. Which ones are climate driven?
3. Which climate-related disaster events were most severe with regards to their intensity and exposed population

5.6.2 Activity 2

Activity; Concept Definition

5.6.2.1 Facilitator's Reference Notes

The facilitator needs to have an understanding of the participants' level of understanding of the concepts commonly used in the DRM field. To facilitate this, participants should be taken through disaster risk reduction (DRR) terminologies developed by the United Nations

International Strategy for Disaster Reduction (UNISDR) and assess their understanding of terms therein. To make this activity interactive, this should essentially be done through an exercise where participants match the terms with their valid definitions. The activity can be approached as group exercise then follow up with facilitator guiding discussion where groups make their presentation on terms vis-à-vis their definition and all participants make their reactions.

5.6.2.2 Facilitator's Guide

- Ensure you have a pool of leaflets for common terminologies and another pool of their definitions from 7817_UNISDRTerminologyEnglish.pdf
- Form about 3 groups
- Issue the leaflets to the groups

Exercise 7: Concept definition

- As a participant, you are issued with mixed leaflets of commonly used terminologies in Disaster Risk Management and another pool of leaflets of definitions. Match DRM terminologies with their respective definitions.

5.6.2 Activity 3

Activity; Understanding the Disaster Management Cycle

5.6.3.1 Facilitator's Reference Notes

The cycle consists of four phases: Prevention/Mitigation and Preparedness in the pre-disaster stage, and, Response and Rehabilitation/Reconstruction in the post-disaster stage.

5.6.3.2 Facilitator's Guide

- Facilitator guides that to do mitigation and Prevention, actors have to rely on forecasts/prediction and early warning information and implement efforts such as mapping out of household in flood prone areas, identifying the vulnerable households and relocating to safer grounds. In order to implement such activities and measures the legal environment has to accommodate the actions such as emergency drills and public awareness, to promote those early actions.

- Response includes such activities as rescue efforts, first aid, firefighting and evacuation, which are better coordinated through established structures of the government



Figure 17: Disaster Management Cycle

Session 4.2: Financing EWEA through the DRM bills and policies

Activity

Activity; GLOBAL, REGIONAL AND NATIONAL FRAMEWORKS ON DRM Financing EWEA through the DRM bills and policies

5.7.1.1 Facilitator's Reference Notes

In order to create an understanding on the need to have the legal environment for EWEA. Having understood concept of DRM, participants should be sensitized on the global, regional and national agenda on DRM. The participants need to know about the Sendai Framework for DRR (SFDRR) which emphasizes on disaster risk management as opposed to disaster management. As one of its 7 global targets to assess countries' progress in implementing the framework SFDRR encourages countries to substantially increase the utilization of multi-hazard early warning systems and disaster risk information and assessments to people by 2030

Countries that have adopted the SFDRR must have national and sub-national legislation on DRM, coherent to the agenda in the SFDRR. Therefore, participants should start thinking how in event of floods, need for Preparedness, Forecasts in weather related disasters, Resources to fund the entire DRM cycle, Cross-border assistance agreements, Inclusion of climate change provisions.

5.7.1.2 Facilitator's Guide

- Facilitator must practice first
- Assume that players are humanitarian workers
- Teams are "countries"
- Up to 36 players in teams of 3
- Facilitator will guide participants through a flood simulation exercise to demonstrate interplay between components that enable effective DRM, making reference to the elaborate manual developed by Climate Center [here](#)
- Facilitator will guide note down take home points as the participants build consensus on what needs to be in place from the exercise

Exercise 8: Paying for predictions

In this participatory activity, players become humanitarian workers, who are facing changing risks. They must make individual and collective decisions, with consequences.

As a participant, you will be guided so that you play several rounds (up to 10) rolling a dice. Each time you make a decision or play, you are either paying for Early Actions and saving on resources or losing to a disaster and losing resources.

5.8 Session wrap up

- An effective and efficient DRM must be anchored within the legal frameworks at global, national and sub-national levels since DRM is a shared responsibility
- Funding mechanism is required to implement DRM. Therefore, there has to be a strategy to resource mobilize in order to sustain the undertaking of EWEA.

Further resources

- Community Early Warning Systems (CEWS) Training Toolkit⁴
- Early Warning Early Action Climate Training Kit Module⁵
- Linking early warning with early action⁶
- Promising Resilience Practices⁷

1. 1275000-Community-Early-Warning-Systems-Toolkit-EN.pdf (ifrc.org)

2. Early Warning Early Action Climate Training Kit Module (slidetodoc.com)

3. Linking early warning with early action: Closing the gaps for stronger resilience - Anticipation Hub (anticipation-hub.org)

4. Promising-Practice-Kenya-Early-Warning-Early-Action.pdf (igad.int)

About the International Center for Humanitarian Affairs (ICHA)

ICHA is an independent center for research, learning and advocacy based at the Kenya Red Cross Society. ICHA seeks to facilitate learning and knowledge management in the humanitarian sector, through evidence generation, policy dialogue and trainings with a view to supporting humanitarian action and improving community resilience.

About Kenya Red Cross Society

The Kenya Red Cross Society (KRCS) is the largest volunteer-based humanitarian organization in Kenya. As an auxiliary to the national and county governments, KRCS works with communities, volunteers and partners to ensure that we are not only prepared but also respond to humanitarian and development needs. KRCS focuses on collections capabilities and resources to alleviate human suffering and save lives.



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