WISER

UKaid
from the British people

KENYA METEOROLOGICAL DEPARTMENT

In partnership with Met Office

CLIMATE SERVICE AND COMMUNICATION ON DISASTER RISK REDUCTION

KASSA FEKADU
MELKAMU DIRIBA
ROSE NJERU
JONAH KAZORA

Institute for Meteorological Training and Research (IMTR)

The Aim of the Topic

- Introduction to Disaster Risk Reduction(DRR)
- Describe the various climate change impacts of DRR for the region and case studies
- Describe how to implement GFCS for DRR

Outline

Introduction

Climate Risk

Suitable Climate Services

Conclusion

UKaid
from the British people

KENYA
METEOROLOGICAL
DEPARTMENT

In partnership with Met Office

Introduction

Introduction

Disaster risk reduction: is the concept and practice of analyzing and reducing the causal factors of disasters by decreasing exposure to hazards, lessening vulnerability of people and property, improving management of land and the environment, and enhancing preparedness for adverse events. (WMO, GFCS)

Disaster risk reduction is primarily concerned with hazards of natural origin – such as earthquakes, floods, droughts and cyclones – and related technological threats. These hazards arise from a variety of geological, meteorological, hydrological, oceanic, biological, and technological sources, sometimes acting in combination (UNISDR 2009b).

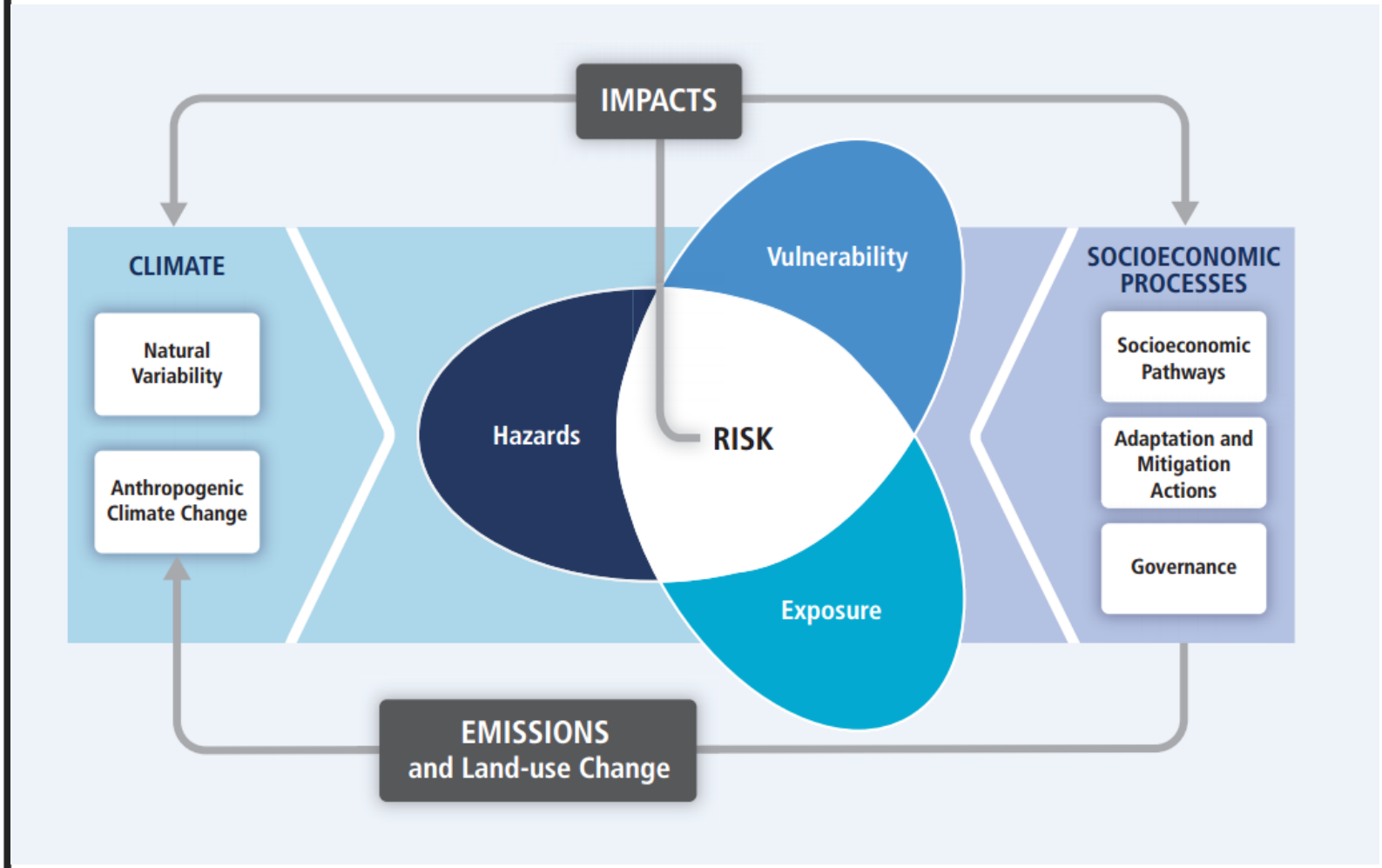


Illustration of the core concepts of the WGII AR5.Risk of climate-related impacts results from the interaction of climate-related hazards (including hazardous events and trends) with the vulnerability and exposure of human and natural systems. Changes in both the climate system (left) and socioeconomic processes including adaptation and mitigation (right) are drivers of hazards, exposure, and vulnerability.

Introduction cont.…

Hazard:

is a natural or man-made event that has the potential to harm life, property, livelihood or infrastructure. (IPCC WGII)

Risk:

depends on the probability of occurrence and magnitude of hazards (IPCC WGII)

Introduction cont.…

Disaster:

is a major problem worldwide and is serious threat to sustainable development. Disaster is usually defined as an event that overwhelms society's capacity to cope. (IPCC WGII)

Exposure:

This is the degree of climate stress upon a particular unit analysis; it may be represented as either long-term changes in climate conditions, or by changes in climate variability, including the magnitude and frequency of extreme events. (IPCC WGII)

Introduction cont.…

Vulnerability

the degree to which a system is susceptible to, and unable to cope with, adverse effects of climate variability/change including extremes.

IPCC

considers Vulnerability as a function of the **risks, hazards, exposure** and **adaptation options** and **coping responses.**

Risk (R) = Hazard (H) x Vulnerability (V)

Capacity (C)

KENYA METEOROLOGICAL DEPARTMENT

In partnership with Met Office

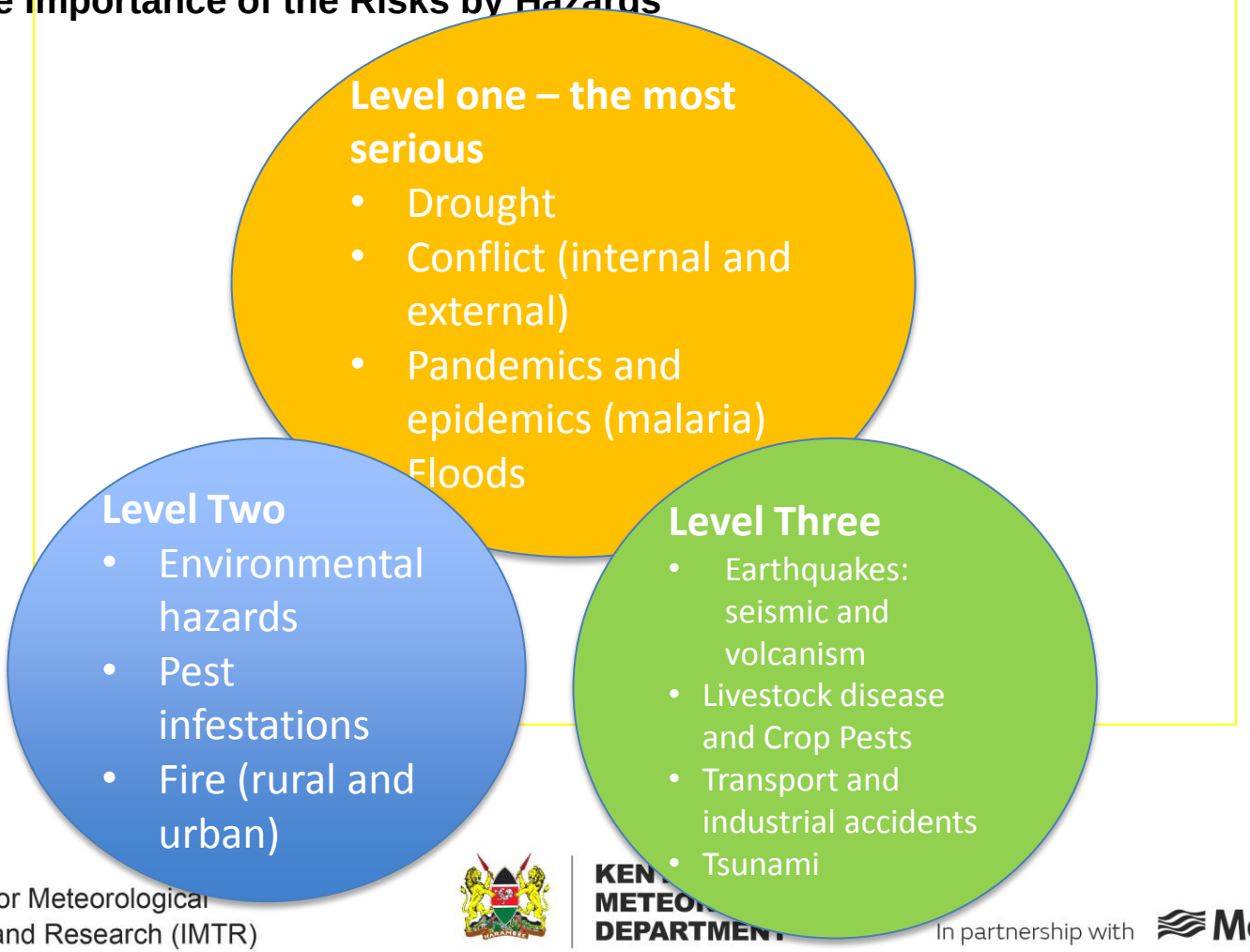
UKaid from the British people

Climate Risk

Disaster Risks

The IGAD member states are exposed to risks from a variety of hazards that can cause disasters in suitable circumstances. These hazards were discussed with expert representatives from each member states as to determine their commonality and then classified into three levels reflecting their current importance in the risks they pose.

Relative Importance of the Risks by Hazards



Climate-related Risks

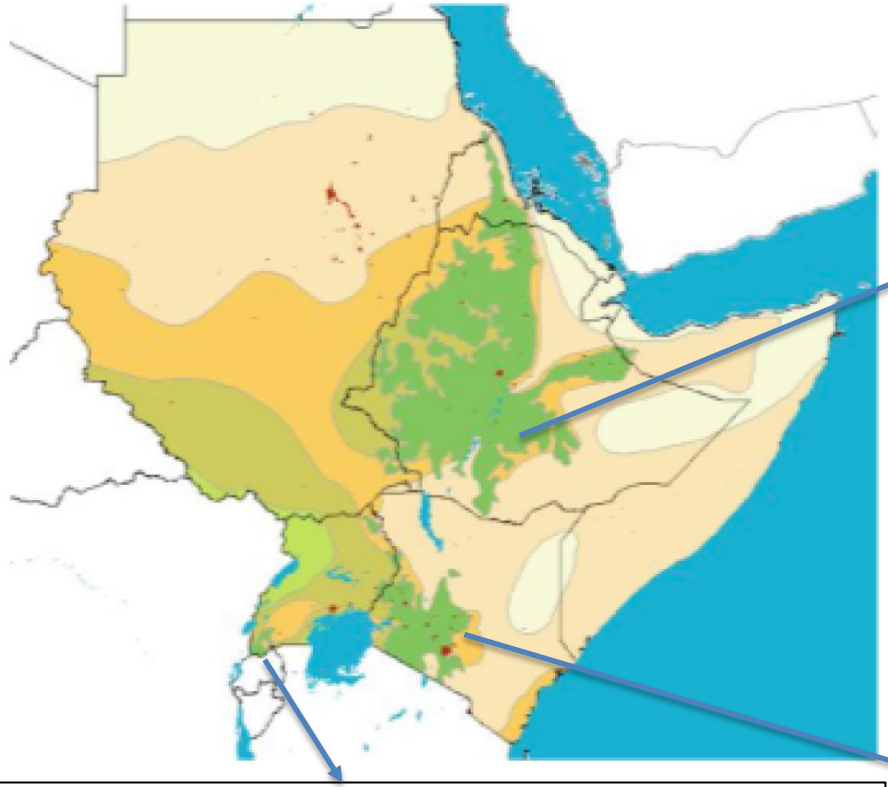
UKaid
from the British people

Institute for Meteorological
Training and Research (IMTR)

KENYA
METEOROLOGICAL
DEPARTMENT

In partnership with Met Office

Case Study:



Flood risks also increased, as water ran off the hills. In 2006 flash floods nearby killed 17 people and ruined crops and farmland.

In December 2011, River Nzoia broke its dykes and flooded the Budalangi flood plain, leaving massive destruction in its wake. Crops washed Loss and damage from flooding in Kenya 7 away, livestock drowned, and houses and property were destroyed.

Landslides and floods hit several parts of Rwanda between 07 and 08 May 2016 after a period of heavy rainfall. Government officials say that at least 49 deaths have been recorded so far. Some of the victims drowned in flood water, others died after houses collapsed under the heavy rain or landslide.

Climate change on DRR

KENYA METEOROLOGICAL DEPARTMENT

In partnership with Met Office

UKaid from the British people

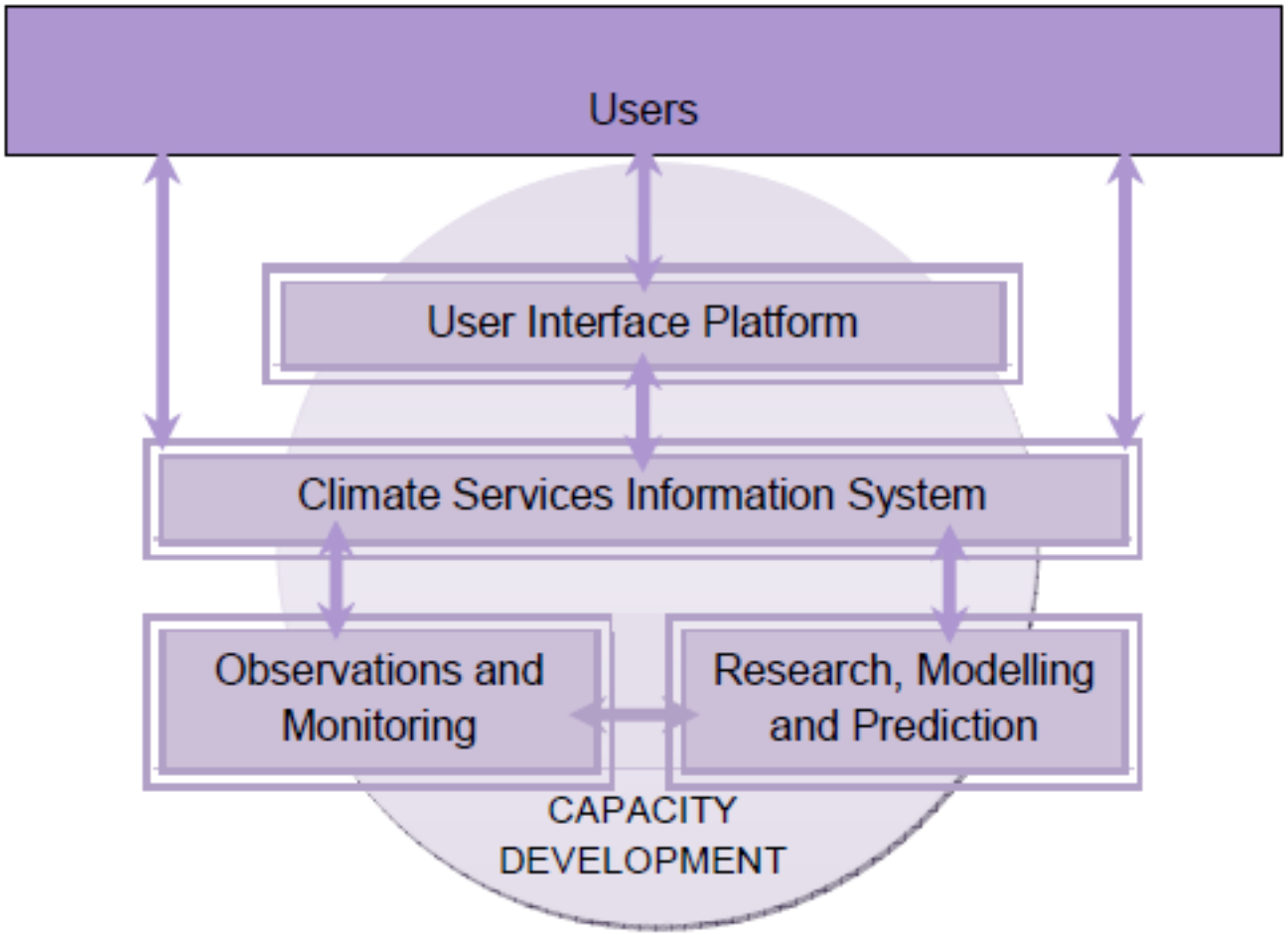
Suitable Climate Services

GFCS
How Climate and Weather Services Interact

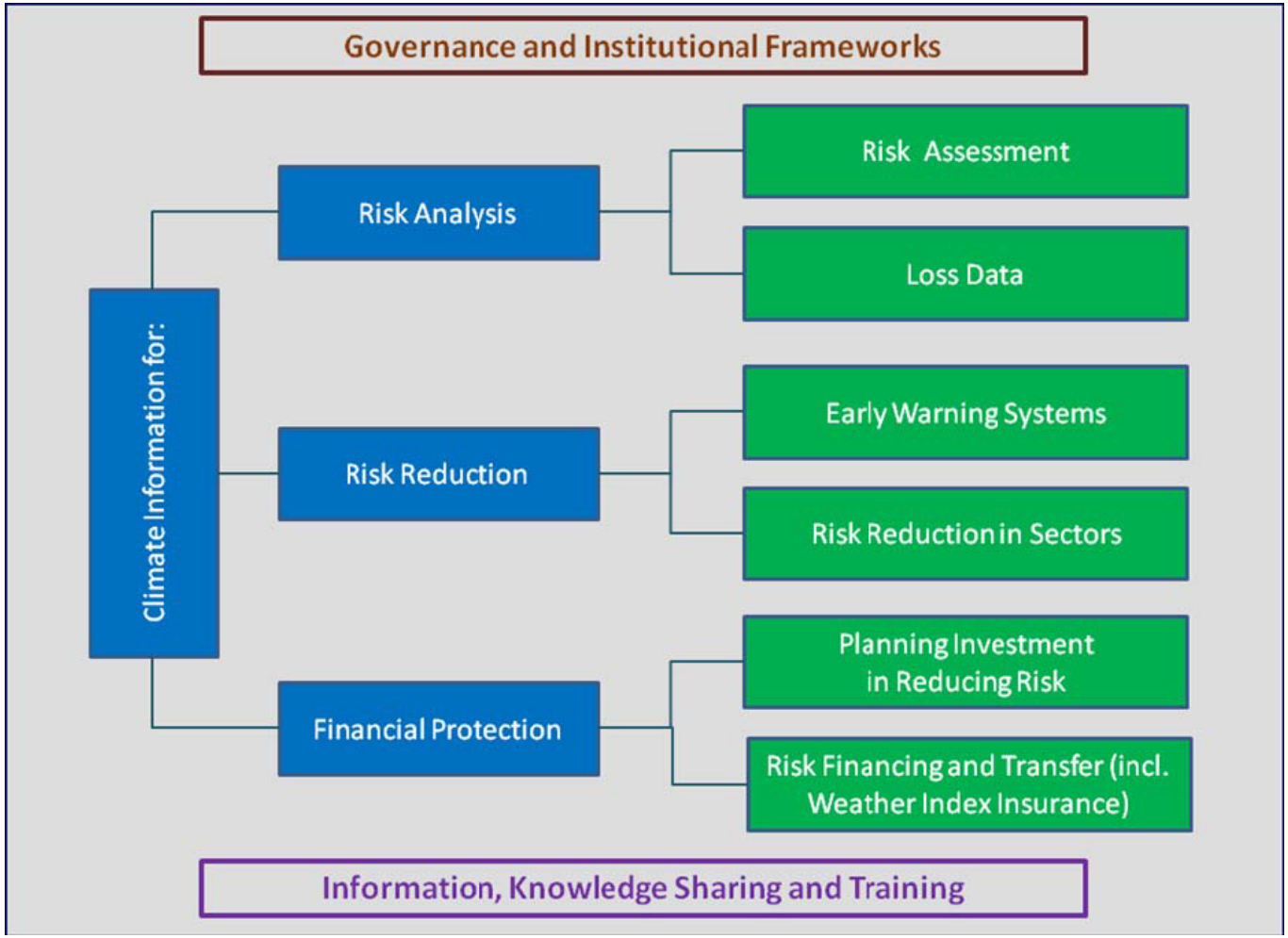
- In GFCS, climate services complement the role of weather services in disaster risk reduction. Effective climate services will facilitate climate-informed decisions that will, with implementation of this Exemplar, reduce loss and damage in climate-related disasters. (WMO, GFCS DRR)

- Climate services providers can provide advance warning of future potential risks (as well as potential opportunities) several weeks, months, years and decades ahead, depending on the nature of the risk. (WMO, GFCS DRR)

Five pillars of the Framework and their links to various user communities.

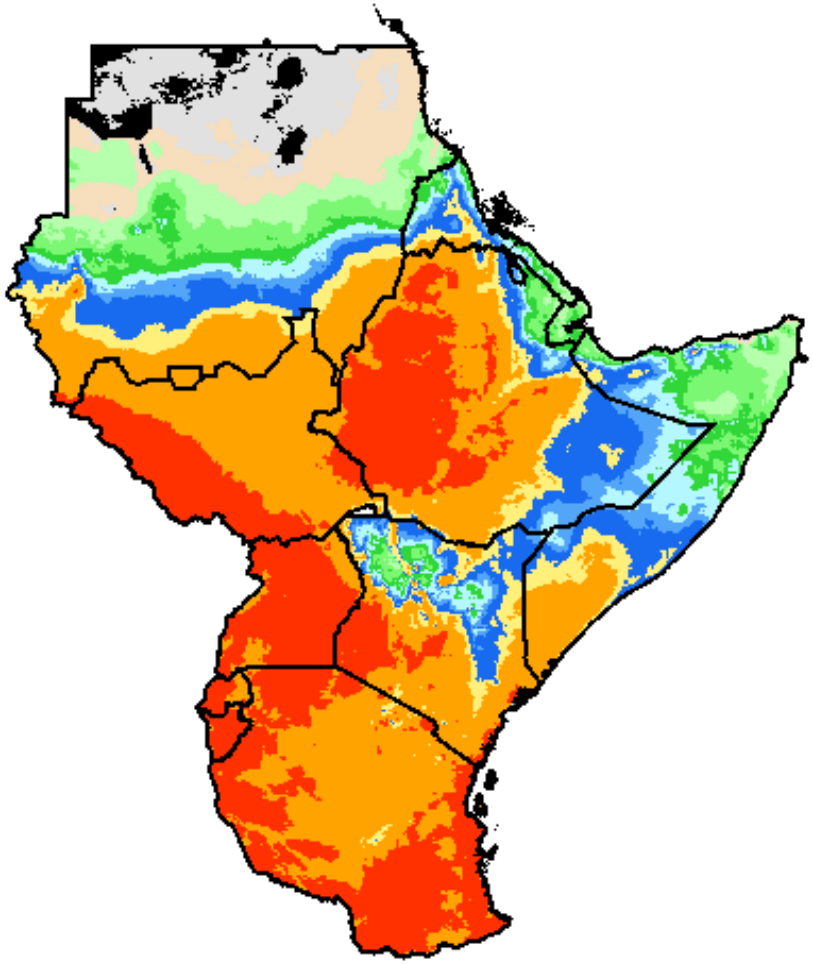


Priority categories of activity for GFCS implementation (in green).



Annual Rainfall (mm) Climatology 1961-1990

UKaid
from the British people

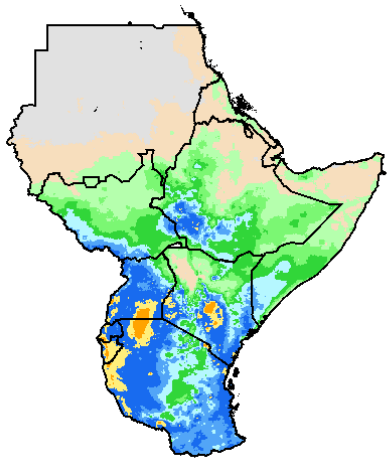


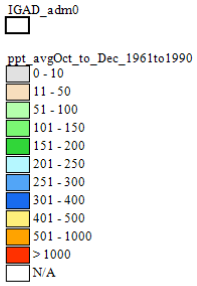
Institute for Meteorological Training and Research (IMTR)

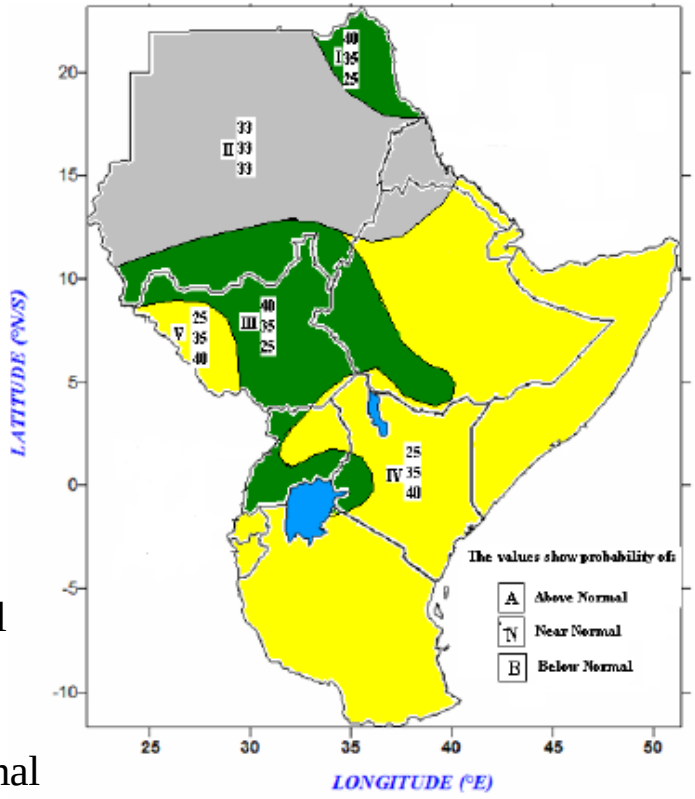
KENYA METEOROLOGICAL DEPARTMENT

In partnership with Met Office

Greater Horn of Africa Consensus rainfall Outlook for the October to December 2016 rainfall season



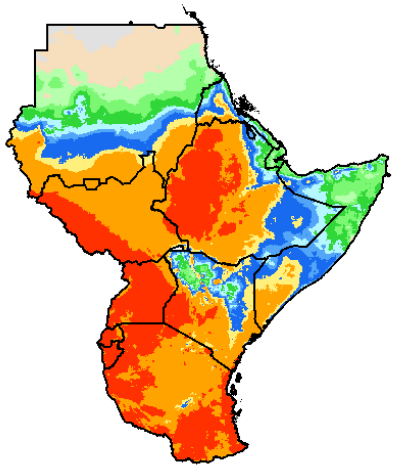




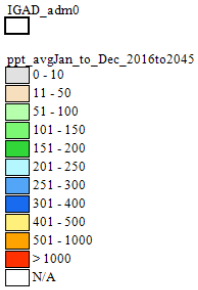
Zone I: Increased likelihood of above normal rainfall
Zone II: Usually dry
Zone III: Increased likelihood of above normal rainfall
Zone IV: Increased likelihood of below normal rainfall - 3 -

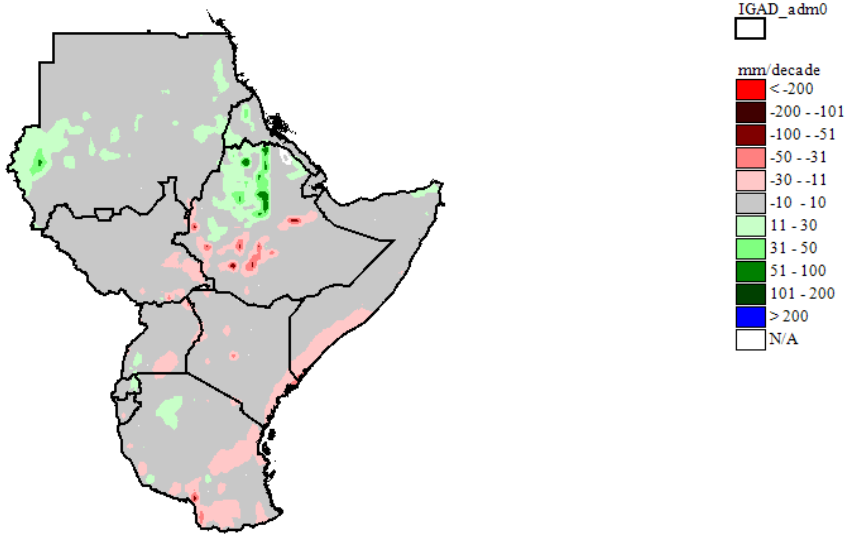
Zone V: Increased likelihood of below normal rainfall

Scenario RCP 2.6



1916-1945





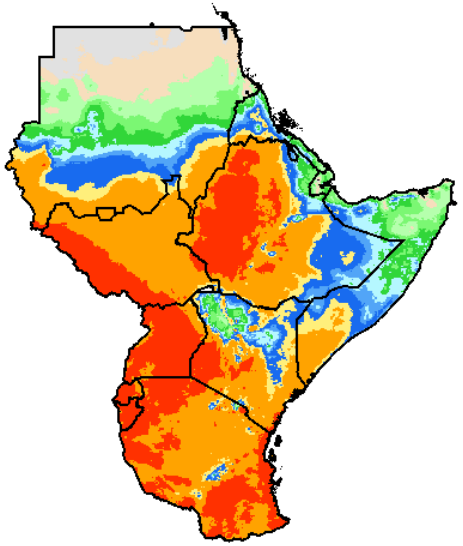
Change in average Rainfall over the Jan_to_Dec season, comparing average for 2016-2045 minus 1961-1990

Institute for Meteorological Training and Research (IMTR)

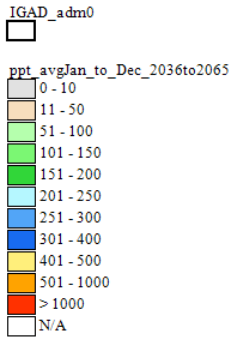
KENYA METEOROLOGICAL DEPARTMENT

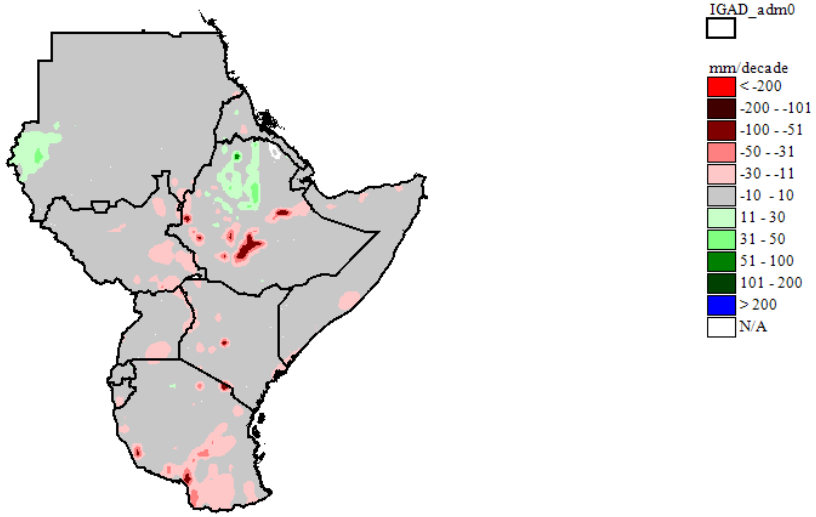
In partnership with Met Office

Scenario RCP 4.5



1936-1965





Change in average Rainfall over the Jan_to_Dec season, comparing average for 2036-2065 minus 1961-1990

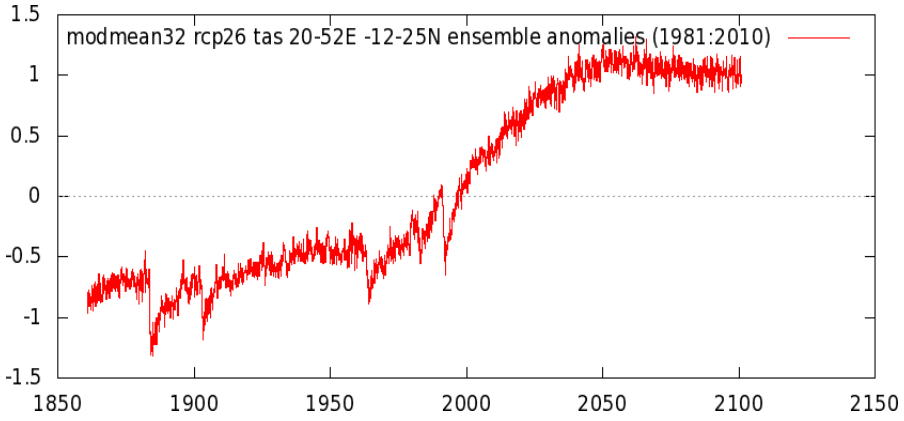
Institute for Meteorological Training and Research (IMTR)

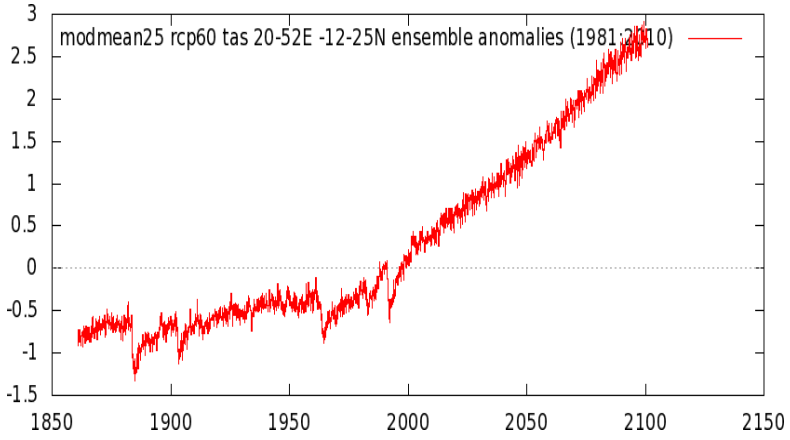
KENYA METEOROLOGICAL DEPARTMENT

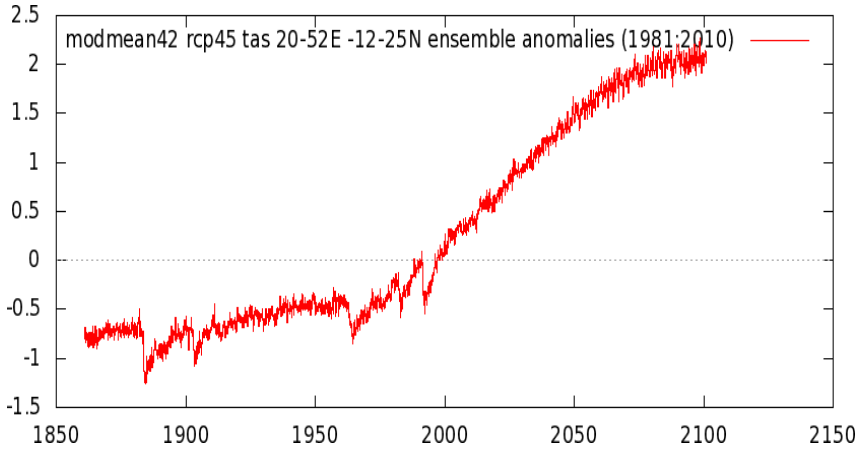
In partnership with Met Office

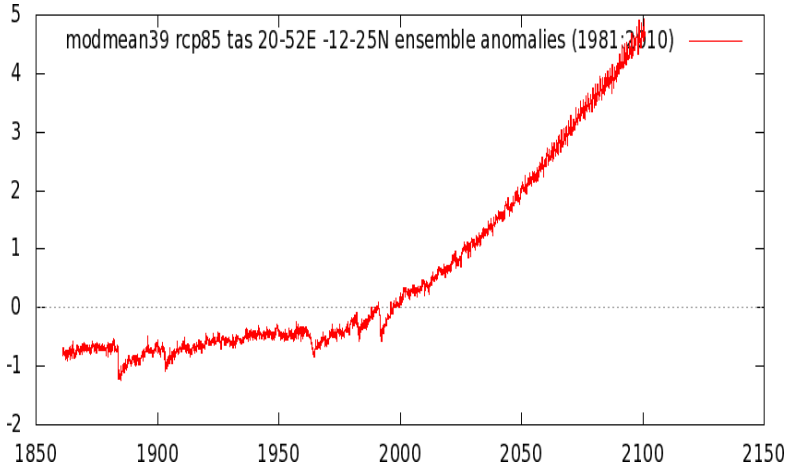
UKaid from the British people

Scenario CHIMP5 Temperature









KNMI Climate explorer

Institute for Meteorological Training and Research (IMTR)

KENYA METEOROLOGICAL DEPARTMENT

In partnership with Met Office

Mitigation and Adaptation for flood DRR

UKaid
from the British people

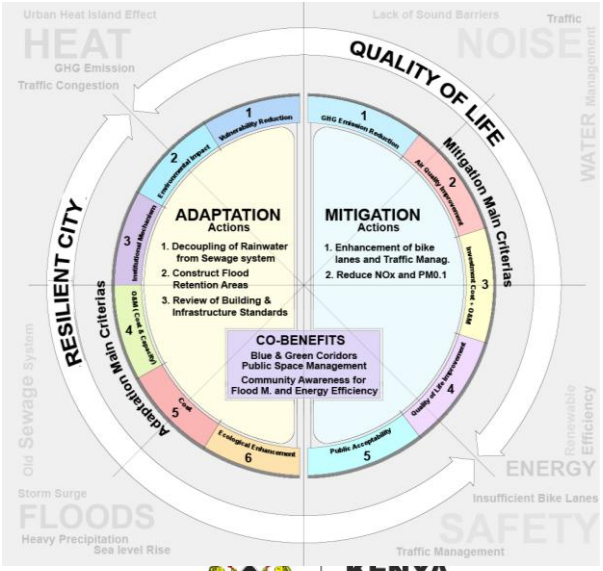
Mitigation Measures

- Expansion of drainage system
- Afforestation for carbon sink

Adaptation Measures

- Decoupling of sewage from heavy rain
- Flood retention ponds
- Review of standards

INTEGRATING **ACTIONS** INTO **CLIMATE CHANGE PLAN**



Institute for Meteorological Training and Research (IMTR)

KENYA METEOROLOGICAL DEPARTMENT

In partnership with Met Office

KENYA METEOROLOGICAL DEPARTMENT

In partnership with Met Office

UKaid from the British people

Conclusion

Conclusion

- An increasing number of countries are taking steps at national to local levels to reduce risks associated with natural hazards. Among issues hampering these efforts is a lack of data concerning a country's past climate to quantify hazard characteristics (e.g., frequency, severity and location) of local climatic extremes in the future.

- DRR is therefore one of the high priorities for the development of the Global Framework for Climate Services (GFCS), to meet both the growing needs and opportunities to increase disaster resilience.

- With appropriate use of meteorological, hydrological and climate information as part of a comprehensive multi-sector, multi-hazard, and multi-level (local to global) approach, considerable achievements can be realized.

CONCLUSION CONT…..

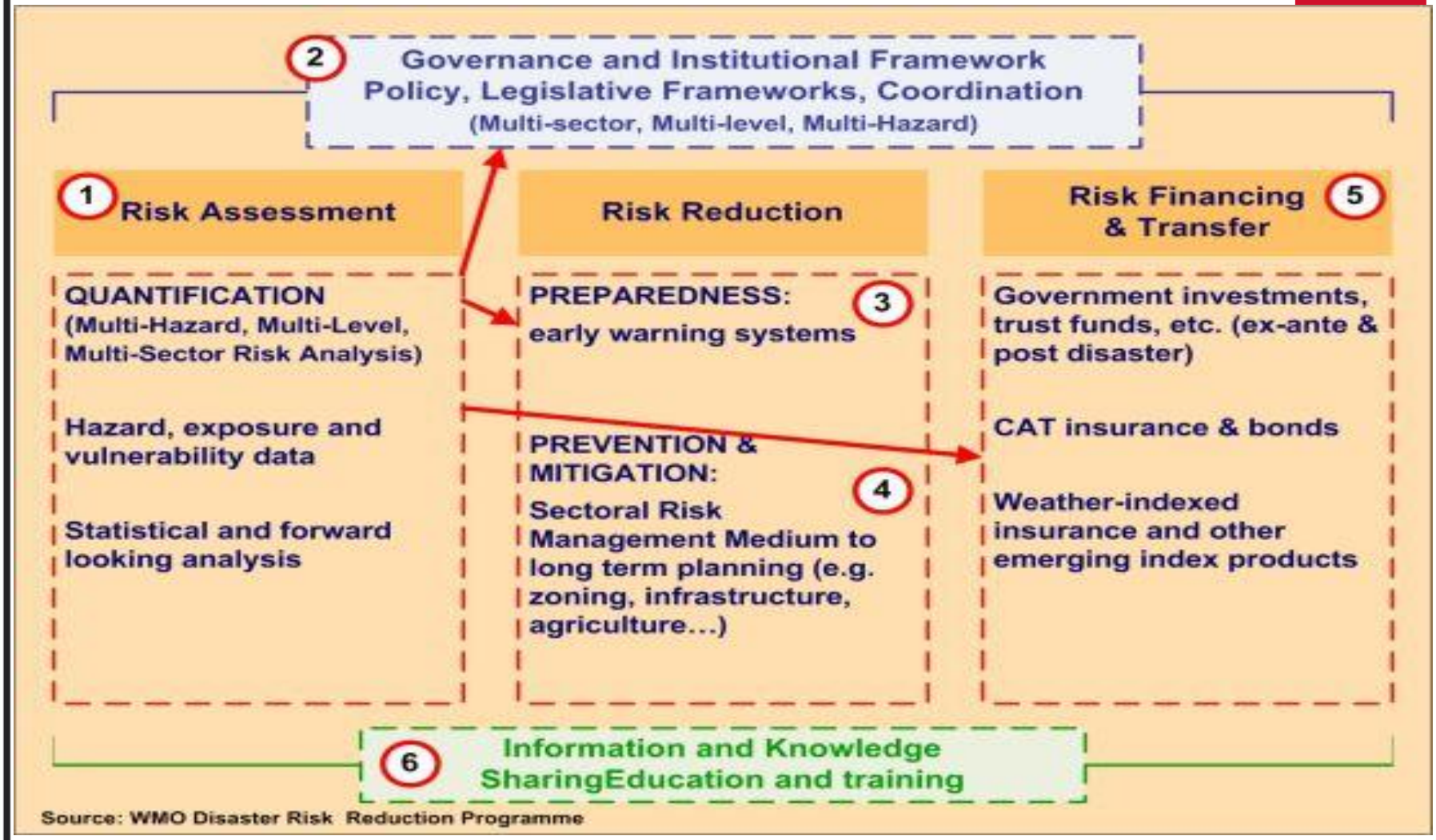


Figure : Elements of a comprehensive DRR Framework based on the Hyogo Framework

REFFERENCES

•Disaster risk reduction John Twigg 2015

https://www.unisdr.org/who-we-are/what-is-drr

•Global Framework For Climate services(gfcs-climate.org/disaster_ risk_reduction)

IPPC_2014_WGIIAR5-PartA_Adaptation_Impacts_Vulnerbility

•Loss and damage from flooding in Budalangi District, Western Kenya Denis Opiyo Opondo December 2013

•National Disaster Risk Management Plan (Rwanda September,2013)

•Disaster Risk Reduction, Climate Change Adaption and Human Security ::: Report 2008:3

•World Meteorology Organization-Global Framework for Climate services (WMO GFCS)

KNMI Climate Explorer

•IGAD- Climate Prediction and Application center (ICPAC)

•**http://www.wmo.int/pages/index_en.html**

•**https://www.youtube.com/watch?v=y16aMLeh91Q**

KENYA METEOROLOGICAL DEPARTMENT

In partnership with Met Office

UKaid from the British people

ASANTE SANA
AMSEGNALHU
MURAKOZE