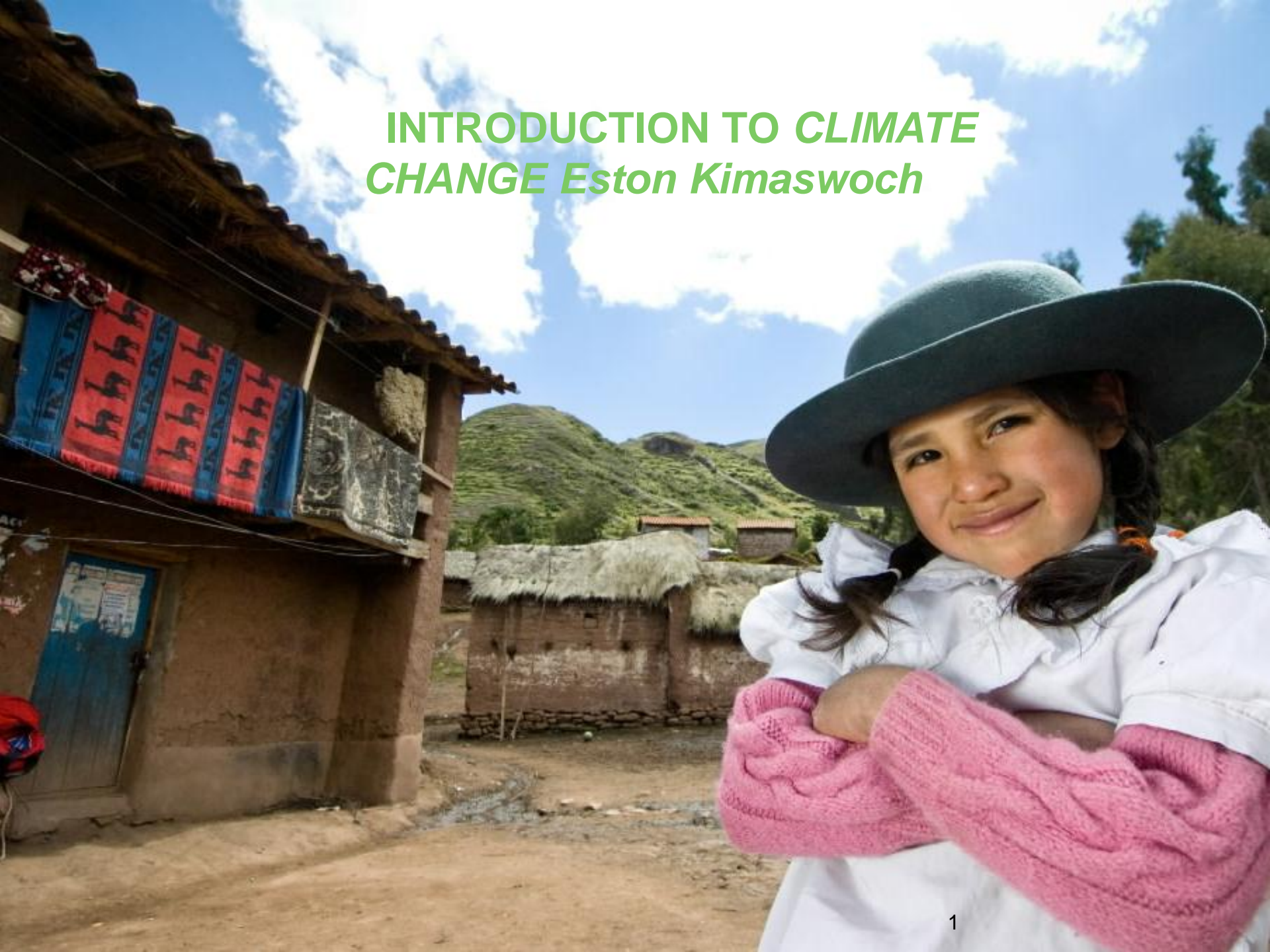


INTRODUCTION TO *CLIMATE CHANGE* *Eston Kimaswoch*



# What is climate change? Is it a myth, curse, signs of end times?

- Background – we all attest to the following
  - Abnormal weather events such as recurrent droughts, floods, windstorms
  - Unpredictable erratic rainfall patterns
  - The sun seem ‘closer’ than before
  - Crop failure and loss of livestock
  - Death of children and adults due to hunger and malnutrition



# What is Climate Change?

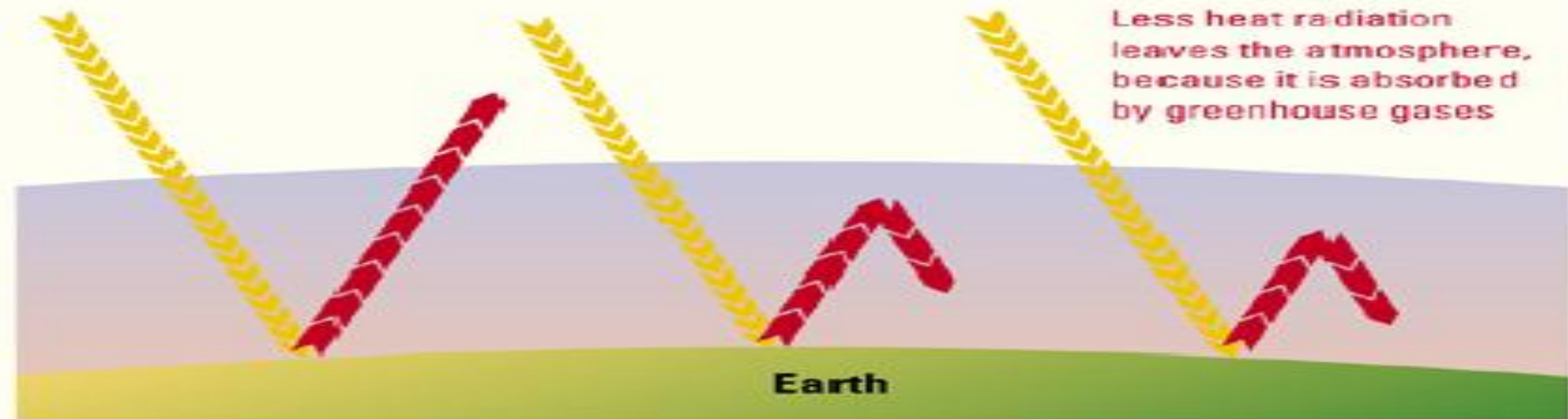
*Refers to any change in climate over time, whether due to natural variability or as a result of human activity' (IPCC, 2001)*

- ❑ Climate change is rooted in the natural greenhouse effect which is an essential component of the planet's climate process
- ❑ Naturally occurring Green House Gases prevent part of the heat radiated by the earth's surface from escaping to space; warming the lower part of the atmosphere and permitting life on earth.
- ❑ Absence of these GHGs: the earth's temperature would be too cold to support life

# Green house gas effect



**Normal greenhouse gas concentration in the atmosphere**

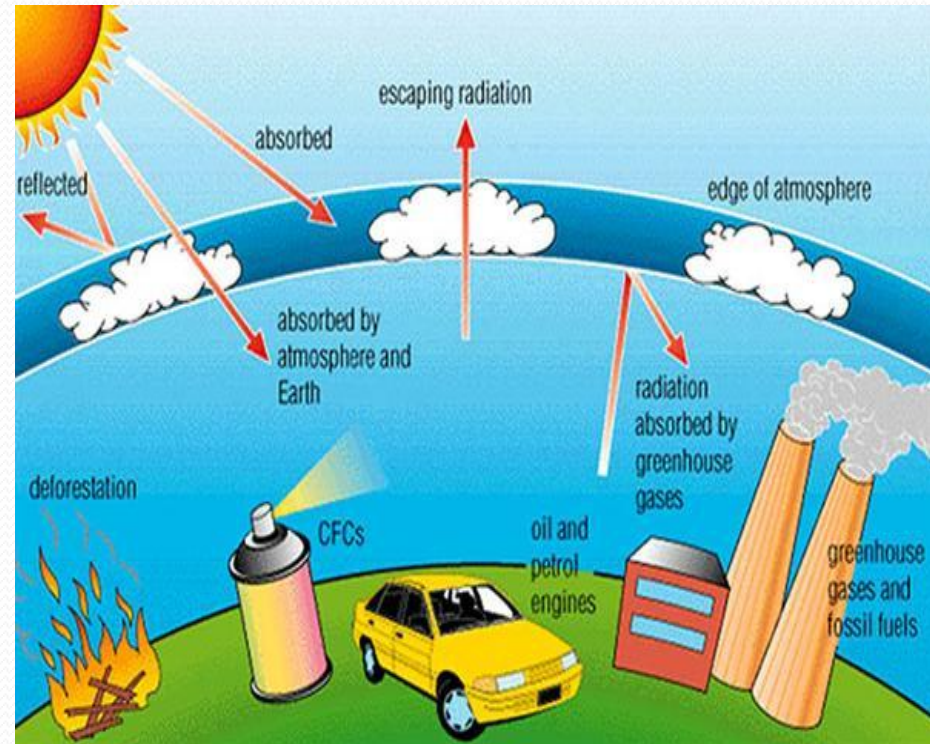


**Increased greenhouse gas concentration in the atmosphere**

*(Source: Eichhorst, 2009)*

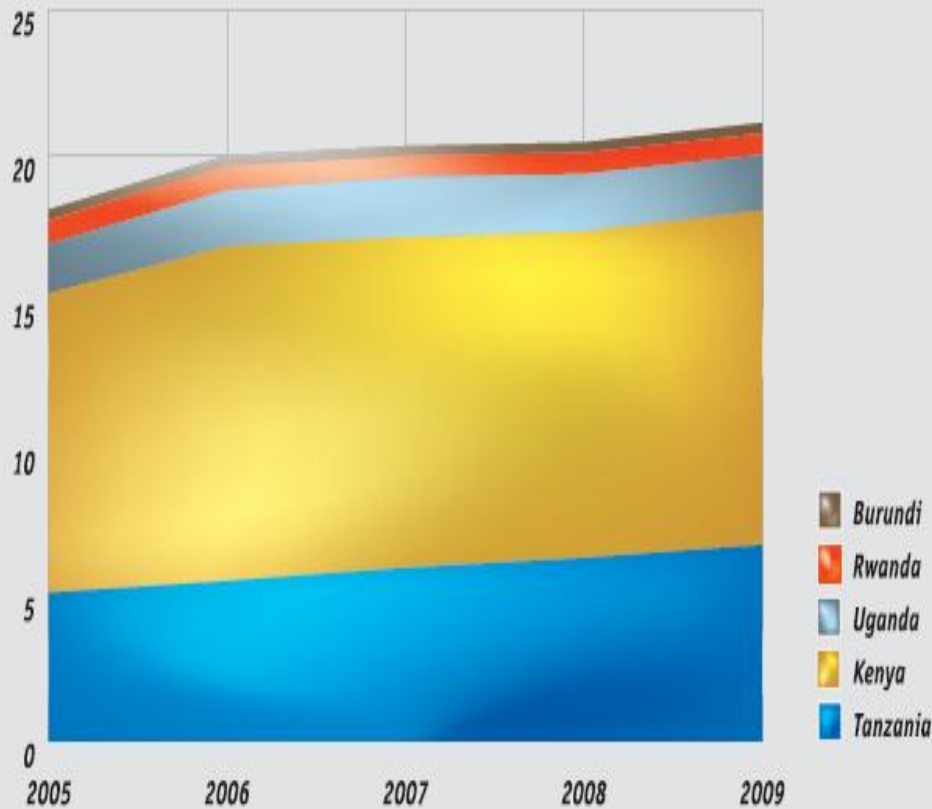
## What is the explanation of all these changes?

- **Climate change is real in Kenya**—long rains seasons decreasing, short rains season increasing; rise in day temps along the northern strip and decrease in min. temp along the northern coastal strip.
- What is climate change?
  - A long-term change in the earth's climate esp increase in atmospheric temperatures
  - Attributed **directly or indirectly to human activity** or **naturally** (volcanoes, ocean currents, the earth's tilt etc)
- The warming of the earth is caused by a layer of Greenhouse Gases (water vapor, CO<sub>2</sub>, Methane) which absorb the heat and act as a blanket increasing the temperature on the earth surface



# EAC Region and Climate Change

Africa, EAC Region in particular, has contributed little to global GHG emissions, given that fossil fuel consumption is still low



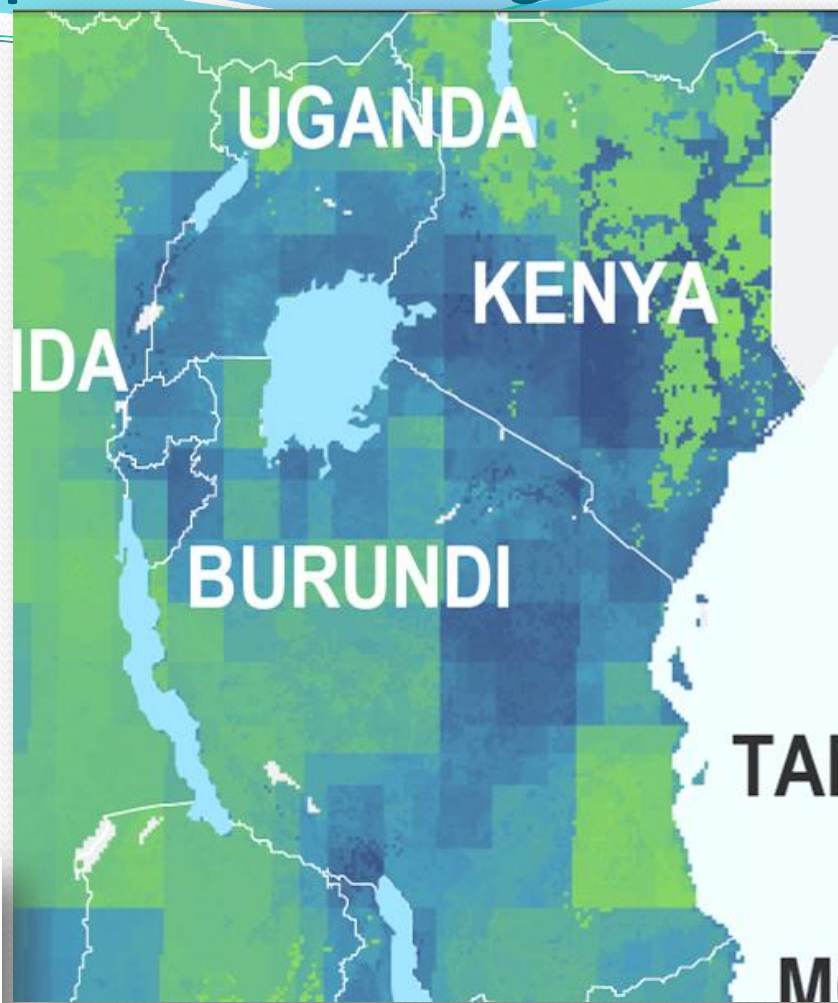
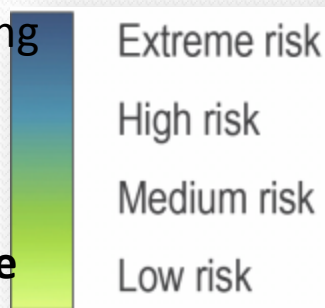
This accounts for only 0.01% of total world emissions.

Source: Energy Information Administration, US Department of Energy

## ...Yet implications and expected impact of CC is a big shift

- More floods and droughts
- Increased sea levels leading to changed ecology of coastal areas
- Altered eco-systems of lakes leading to less fish catches
- Less supportive conditions for the production of current staple food crops
- Less agricultural and food production, leading to higher prices
- Changes in patterns of production, including in fisheries, and changing patterns of trade

**Some specific studies indicate that the impact of CC may be positive and negative depending on the crops.**



**CLIMATE CHANGE VULNERABILITY INDEX  
2011** Source: Maplecroft

## EAC - Climate Change Projections

- East Africa indicate that the median near-surface temperature in the 2080 to 2099 period will increase by 3°C to 4°C compared to the 1980 to 1999 period. About 1.5 times the projected global mean response (IPCC, 2007).
- Changes in precipitation patterns are less uncertain. However, parts of equatorial East Africa is likely to experience a 5-20% increase in rainfall during the December-February (DJF) season and 5-10% decrease in rainfall during the June-August (JJA) season by 2050 (WWF, 2006).

## Evidence/Impacts of climate change

- **Health** - People suffering from malnutrition (decreased immune systems leading to proliferation of disease), feeding on poisonous roots and berries to sustain themselves (e.g.; In Lamu, Turkana, Baringo etc)
- **Infrastructure** - washing away roads, bridges, and houses, especially in flood prone areas (El Niño 1997/8)
- **Conflicts** - Acute water shortages leading to water-rights conflicts; wildlife migration from parks in search of water and forage causing human-wildlife conflict, envtl migration from the ASALs due to increasing aridity leading to insecurity and conflicts



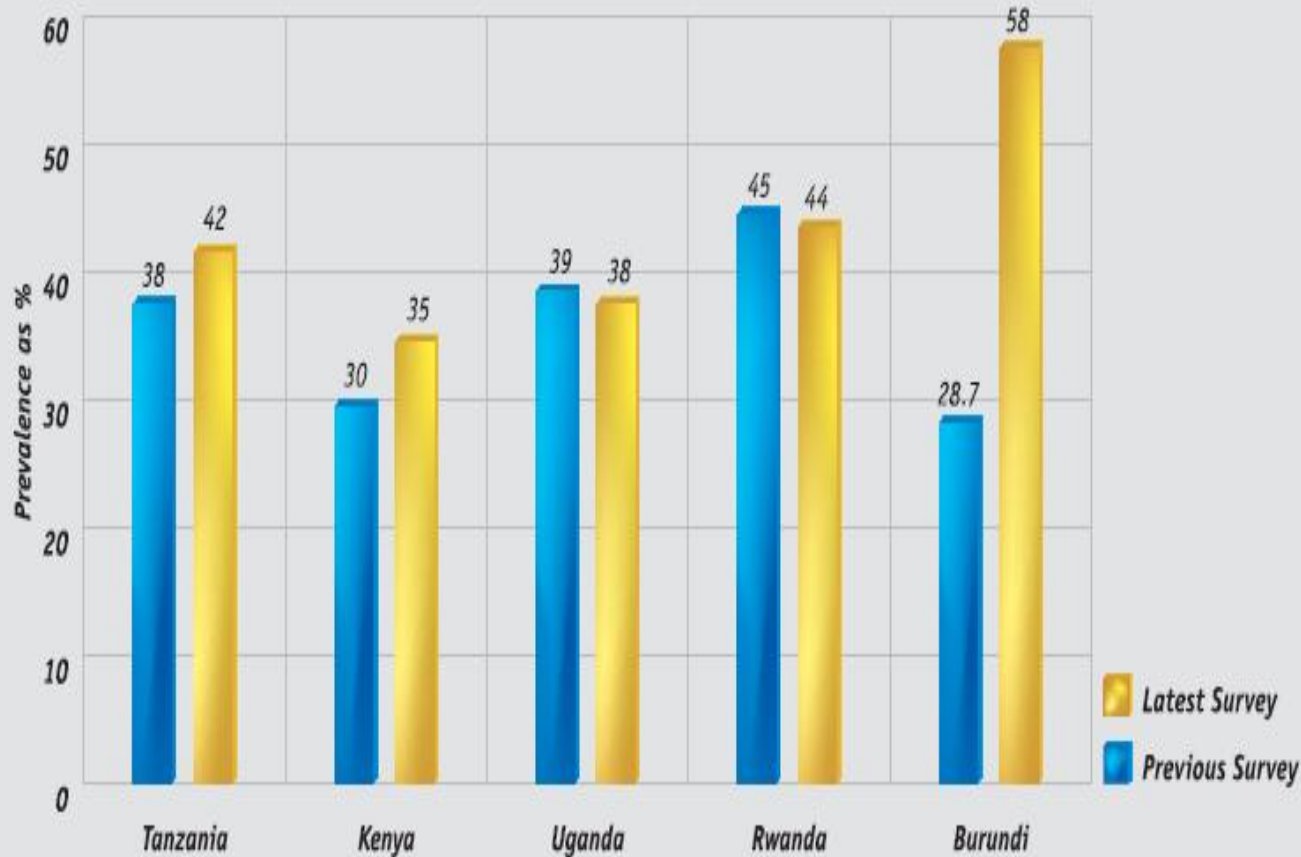
## Evidence/Impacts of climate change

- **Agriculture and livestock production** - Most cropping systems in Kenya are rain fed, hence food crops - maize, wheat, rice, pulses, etc. are all vulnerable. Crop growing conditions/seasons are becoming less predictable, increased livestock pests and diseases
- **Water** - CC will alter the spatial and temporal availability of water -
  - Quantity* - Drying up of water sources (rivers, lakes, boreholes)
  - Quality* - higher turbidity, siltation, sedimentation, and salinization of water.
  - Distribution* – pipelines, water conflicts



# Trends in Children Under –five Stunting Prevalence ( 2005- 2010)

Source: *The State of East Africa 2012*

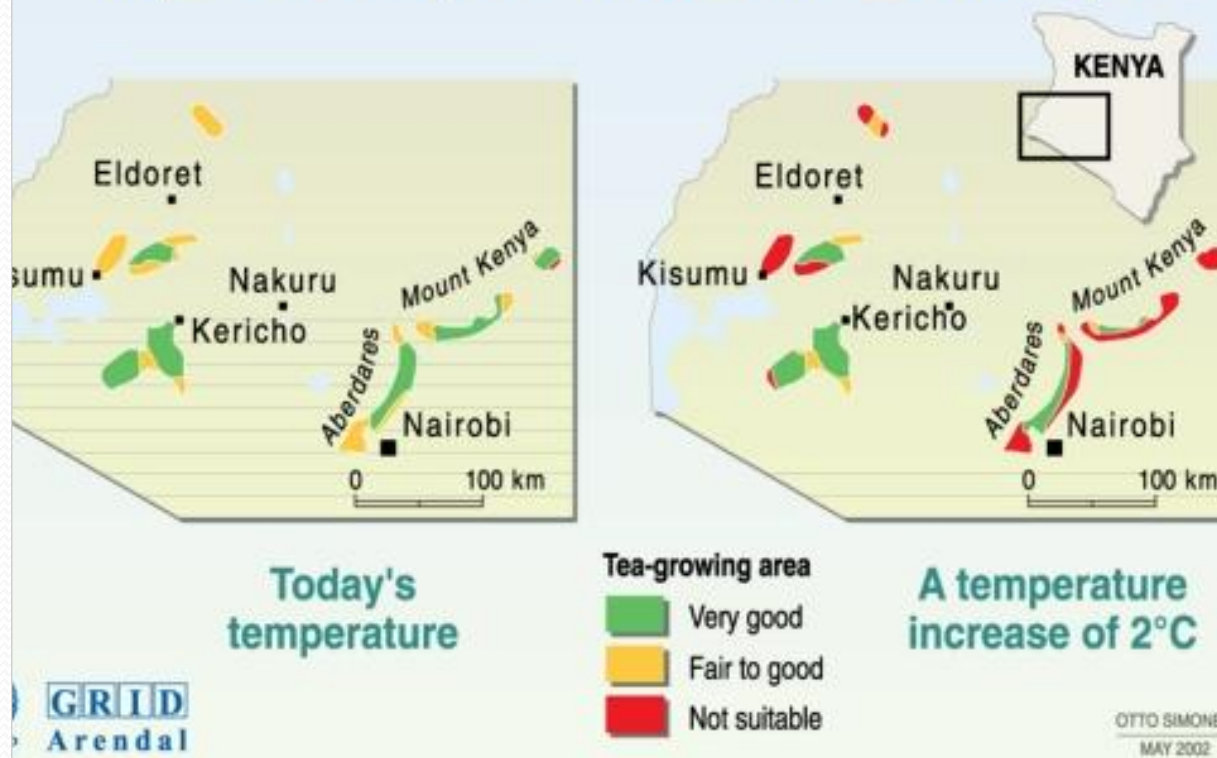


**Climate Change  
may worsen the  
situation!**

**Children most  
Vulnerable!**

Source: *Demographic and health surveys for individual countries*<sup>10</sup>

# Impact of temperature rise on tea in Kenya



Otto Simonett, *Potential impacts of global warming*, GRID-Geneva, case studies on climate change. Geneva

Fig 1: Projected reduction of tea production areas in case of a 2°C temperature rise. Major impacts on food production will come from changes in temperature, moisture levels, ultraviolet (UV) radiation, CO<sub>2</sub> levels, and pests and diseases.

# Global and National Interventions

- It is universally accepted that CC is a threat to Sustainable Development
- As a result, world governments gathered to tackle the threat of Global Warming, through and international agreement, the **Kyoto Protocol** (KP) of the United Nations Framework **Convention** on Climate Change (UNFCCC)
- The **Convention** encourages industrialized countries (including developing countries but not mandated) to reduce their GHG emissions, while the **Protocol** commits them to do so.
- **1997** – at the 3<sup>rd</sup> COP – 180 parties met in Kyoto Japan and adopted the Kyoto Protocol
- **2005** – the KP took effect. At present, all countries in the world including Kenya (except the USA) have ratified the KP



## Global and National Interventions cont'd

- Kenya has been in the forefront in tackling CC issues in the country, with the MEMR being the Focal Point for CC activities in Kenya. Some of the notable actions with regard to CC are as follows:
  - **National Climate Change Response Strategy** – is a key policy document that addresses measures for CC **Adaptation** and **Mitigation** in the country;
  - **Action Plan** for the implementation of the NCCRS – to identify priority immediate, medium and long-term adaptation and mitigation actions
  - **Climate Change Bill/Authority (2010)** – the Bill will guide the implementation of the NCCRS, through the proposed CC Authority, which will advise the National and County gvts on NCCRS implementation. The Bill has since been signed by the AG and sent to Government Printers in preparation for first printing.
  - **Regional CC policies/Strategies** - Kenya is also a party to other regional CC policies/strategies including the EACCMP, COMESA CC Initiative, COMESA-EAC-SADC tripartite work programme.

# Why Adaptive Capacity Matters?

- ❑ Communities are considered to have high adaptive capacity when they are able to anticipate, deal with, and respond to changing climate and development pressures, while maintaining (or even improving) their wellbeing. Jones et al., 2010.
- ❑ Change is a constant in the lives of rural people particularly in Africa
  - shocks (war, displacement, rain failures, food price spikes)
  - stresses (population pressure, water stress, terms of trade, land degradation)
- ❑ Climate change is another pressure - and interacts/magnifies other shocks and stresses
- ❑ Climate change cannot be addressed in isolation

# Conclusion

*Given its wide array of impacts on and interactions with wider development, climate change will inevitably have considerable implications for humanitarian and development interventions. Accordingly, there is a need to consider how humanitarian and development approaches can, in many instances, help enhance communities' capacity to adapt to a changing climate.*

*Confronting climate change is our shared challenge. Dealing with it could be our shared opportunity. Tackling it must be our shared achievement.”* ***Douglas Alexander, Secretary of State for International Development***