

# CLIMATE CHANGE AND THE GLTFCA

Communities and their Livelihoods,  
Biodiversity and Ecosystem Services,  
Health and Disease.

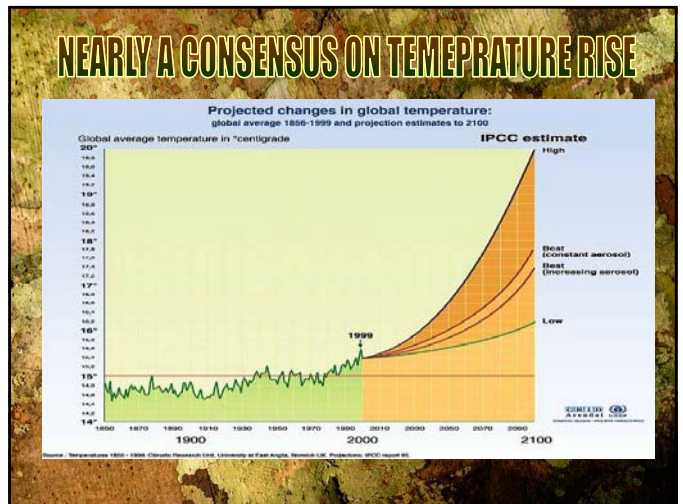
WILDCARE CONSERVATION SOCIETY SATUSA ResourceAfrica AHEAD

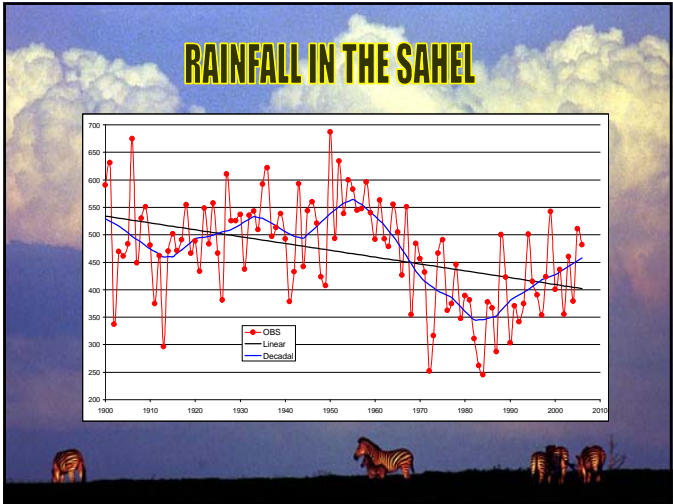
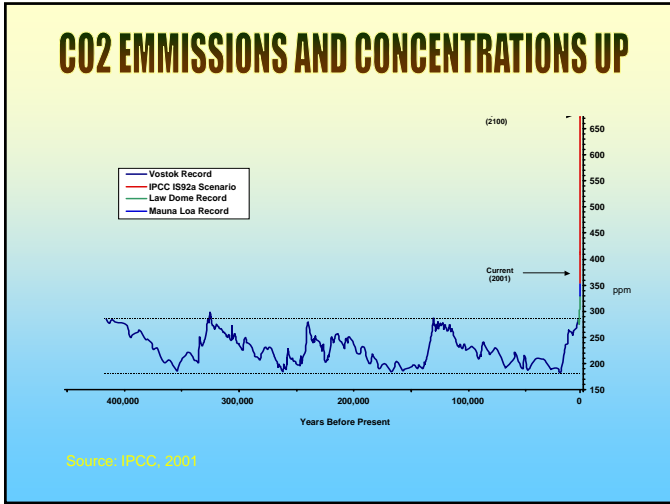
# HELPING COMMUNITIES ADAPT TO CRISIS AND CHANGE IN THE GLTFCA

**Outline**

- Climate Change – a short Overview
- Why consider Climate Change at all?
- Examining Climate Change from a Health Perspective
  - Climate Change and Infectious Diseases (IDs)
  - Sensitive indicators of change
- Trans-boundary conservation initiatives
- Poverty, Sustainable Development and CC

Climate change is going to effect the health and livelihoods of people in Southern Africa, most especially the poor and, therefore, we need to be working more closely with our communities to create adaptive strategies that mitigate negative consequences, maintaining ecosystem services, livelihoods and health.



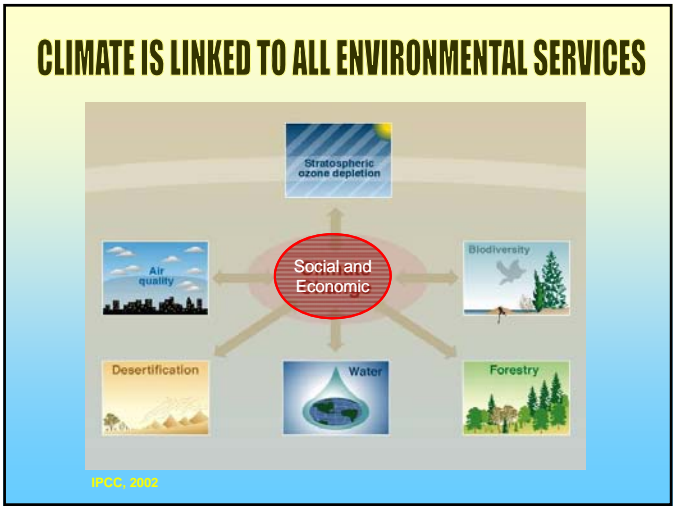


## CLIMATE CHANGE

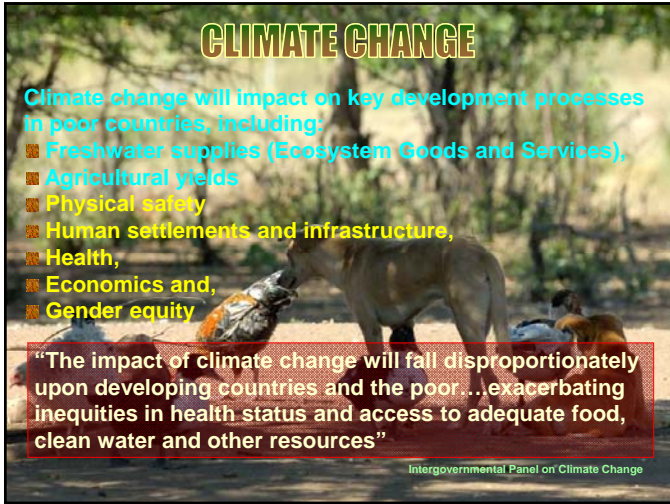
**FLOODS**  
**DROUGHT**  
**HEAT**

**Key drivers related to Health**

Global climate change could alter patterns of infectious diseases, affect food production and the availability of fresh water, cause people displacement with attendant problems.







## CLIMATE CHANGE

Climate change will impact on key development processes in poor countries, including:

- Freshwater supplies (Ecosystem Goods and Services),
- Agricultural yields
- Physical safety
- Human settlements and infrastructure,
- Health,
- Economics and,
- Gender equity

“The impact of climate change will fall disproportionately upon developing countries and the poor...exacerbating inequities in health status and access to adequate food, clean water and other resources”

Intergovernmental Panel on Climate Change



## CLIMATE CHANGE AND HEALTH

Climate is a key determinant of health

## HOW DO WE DEFINE HEALTH?

### Human, animal and ecosystem

**Health** *n* fitness, constitution, form, shape, trim, fettle, condition, tone, state, healthiness, good condition, wellbeing, welfare, soundness, robustness, strength, vigour.

Antonym(s): illness, infirmity

From: Chambers Super-Mini Thesaurus, 1999



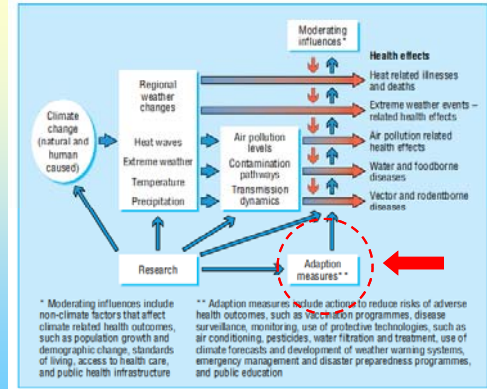
## AS DEFINED BY THE WORLD HEALTH ORGANISATION

“State of complete physical, mental, and social well-being and not just the absence of disease and infirmity”

# IS CLIMATE CHANGE HARMFUL TO (THE HEALTH OF) HUMANS, ANIMALS AND ECOSYSTEMS?



## Potential health effects of climate variability and change



From: Hotspots in climate change and human health (Patz, JA and R. Sari Kovats, BMJ, 2002, 325)

## Examples of Diseases linked to Climate Change

A long term warming trend is encouraging the geographic expansion of several important infections, while extreme weather events are spawning 'clusters' of disease outbreaks and sparking a series of 'surprises'.

### Examples of Human diseases linked to CC:

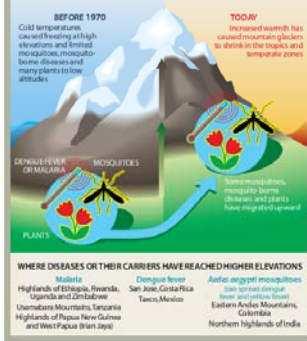
- Malaria,
- Cholera.

### Examples of Animal diseases linked to CC:

- Bovine Tuberculosis,
- Blue Tongue Virus.

## Changes Are Already Under Way

Computer models have predicted that global warming would produce several changes in the highlands: summit glaciers (like North Polar sea ice) would begin to melt, and plants, mosquitoes and mosquito-borne diseases would migrate upward into regions formerly too cold for them (diagram). All these predictions are coming true. This convergence strongly suggests that the upward expansion of mosquitoes and mosquito-borne diseases documented in the past 15 years (list at bottom) has stemmed, at least in part, from rising temperatures.



Anthropogenic major changes in arthropod-borne mosquito vectors to explain the South American and 1990s

Excessive heat range, warmer and biting activity within them. / days to incubate

likely to cause an increase in incidence of dengue in the 1980s

their survivable reproduction of protozoa take 26 in 13 days.



# MALARIA

**Impact of a warming climate**

Today, one-half of the world's population is exposed to malaria on **Impact of a warming climate** million people - roughly twice the present population of the U.S., compared to 1975.

**PREDICTED CHANGE IN RISK OF MALARIA TRANSMISSION**

AMOUNT THE RISK WILL MULTIPLY	Color
1.7 TO 2.0	Dark Red
1.4 TO 1.7	Red
1.1 TO 1.4	Orange
NO CHANGE	Yellow
DECREASE	Light Green
NO SIGNIFICANT RISK	White

**RISK OF MALARIA TRANSMISSION** will have risen in many parts of the world by 2020 (relative to the average risk in the years 1961 to 1990), according to projections assuming a temperature increase of about two degrees Fahrenheit. The analysis was based solely on temperature threshold and did not assess other factors that could influence malaria's spread.

45% of the world's population to 60%.

# MALARIA WILL EXPAND INTO CNRM AREAS

D. FCS 61-90 New et al. (2002)      E. FCS 2030 HadCM3 A2 av.      F. Difference (E - D)

Population at malaria risk in Africa 2005, 2015 and 2030  
Dr. Simon I. Hay, Dr. Andrew J. Tatem, Dr. Carlos A. Guerra, Professor Robert W. Snow, Centre for Geographic Medicine, KEMRI/Wellcome Trust Collaborative Programme

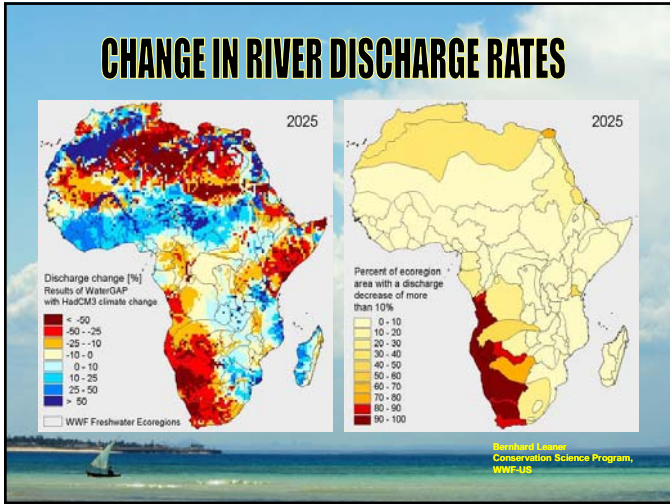
**CNRM=Community Natural Resource Management**

## WATER IS A KEY DRIVER WITH CLIMATE CHANGE AND IS ESSENTIAL FOR GOOD HEALTH

Floods flush pathogens, nutrients and pollutants into waterways, precipitating water-borne diseases (such as **Cryptosporidium infection**). Runoff from flooding can also trigger harmful algal blooms along coastlines that

- Can be toxic to birds, mammals, fish and humans,
- Generate hypoxic 'dead zones', and
- Harbor pathogens, like Cholera.

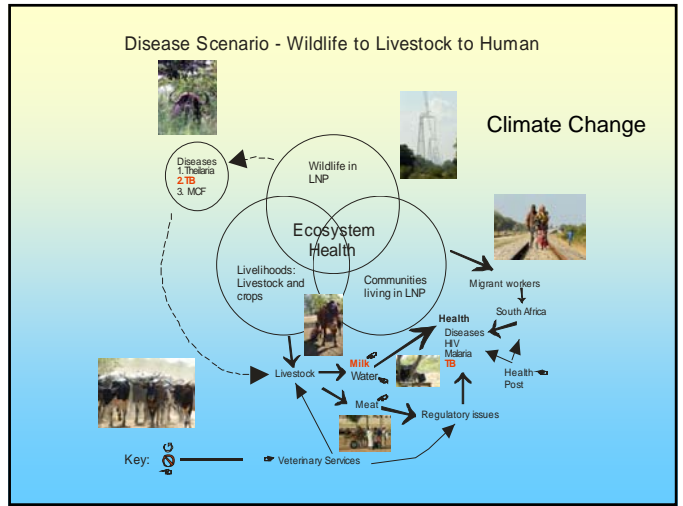
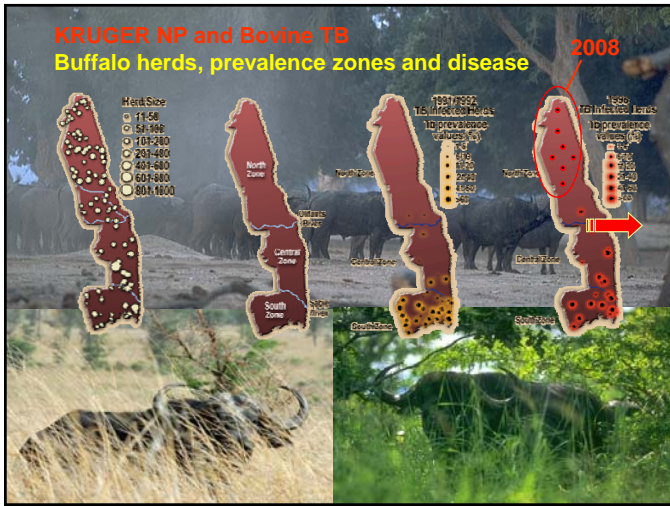
## Water: Essential to Life!



## CHOLERA

The largest and most intense outbreak of cholera ever recorded occurred in Rwanda in 1994, killing over 40,000 people in the space of weeks, in a nation already ravaged by civil war and ethnic strife. The tragedy of cholera in Rwanda is a reminder of the impacts of conflict and political instability on public health and biological security--just as epidemics may, in turn, contribute to political and economic stability.

Drenching rains brought by a warmed Indian Ocean to the Horn of Africa in 1997 and 1998 offer an example of how people will be affected as global warming spawns added flooding. The downpours set off epidemics of cholera as well as two mosquito-borne infections: malaria and Rift Valley fever.





# Bluetongue Virus in livestock

BTV Serotypes 8 and 9,  
Sub-Saharan origin,  
Culicoides species midges.

2006 →

Netherlands  
Germany,  
Belgium,  
France  
Luxemborg

2007 →

France  
Denmark,  
UK  
Switzerland  
Czech Republic

2008 →

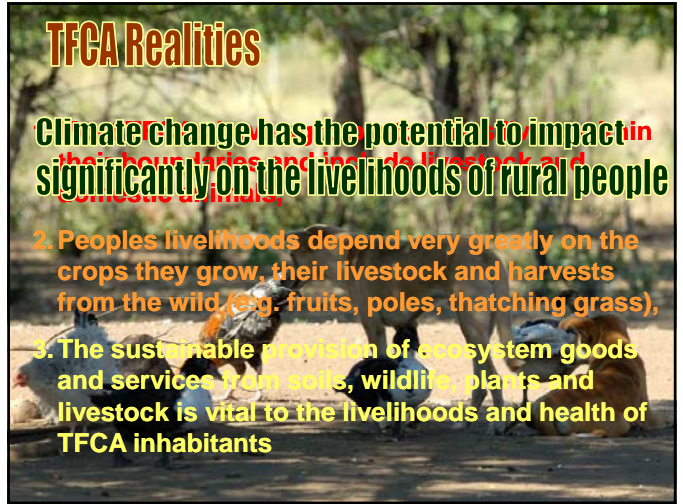
Norway



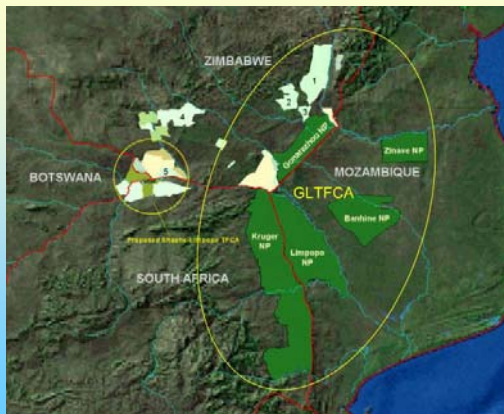
# TFCA Realities

Climate change has the potential to impact in their boundaries and the livelihoods of rural people significantly on the livelihoods of rural people

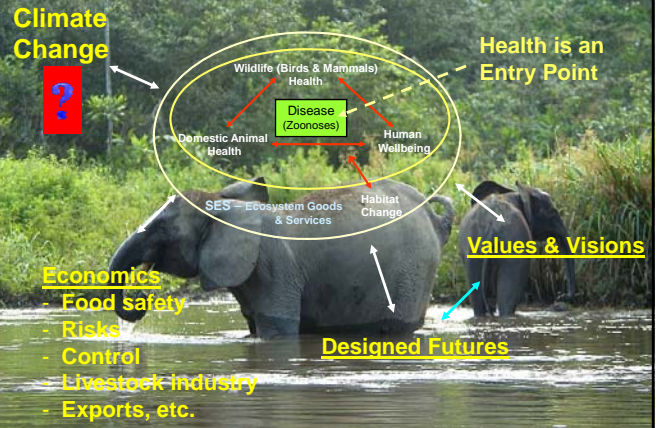
2. Peoples livelihoods depend very greatly on the crops they grow, their livestock and harvests from the wild (e.g. fruits, poles, thatching grass),
3. The sustainable provision of ecosystem goods and services from soils, wildlife, plants and livestock is vital to the livelihoods and health of TFCA inhabitants



# Greater Limpopo TFCA



# "System Boundaries"

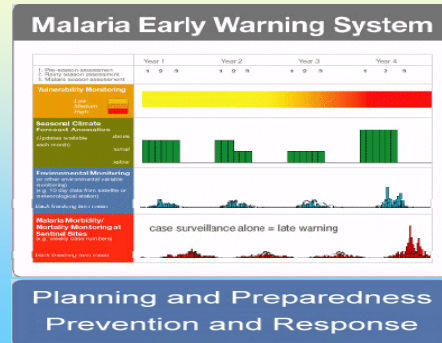


## WHAT CAN BE DONE ON THE HEALTH SIDE?

1. Improved surveillance and response capacity for the Health Sector,
2. Integration of health surveillance as an element of environmental monitoring – develop early warning systems (EWS),
3. Evaluation of environmental and energy policies in the context of their impacts on human health and well being, and animal and ecosystem health.

## DEMAND FOR AN INTEGRATED EARLY WARNING SYSTEM

Integrated MEWS gathering cumulative evidence for early and focused epidemic preparedness and response (WHO 2004)



## KEY POINTS:

- The poorest countries and the poorest people are those most vulnerable to the effects of climate change,
- Changes in the climate also impact biological diversity and thereby an ecosystem's ability to deliver goods and services for human well-being,
- Ecosystem services play a central role in both adaptation to and mitigation of climate change,
- So we are talking from a ECOSYSTEM basis!

## Summary of impacts of climate change on biodiversity, ecosystem services and food security:

1. Increased vulnerability and reduced resilience
2. Impact on agriculture
3. Impact on fisheries
4. Impact on biodiversity

**Key Point:** Sound management of biodiversity and ecosystem services is often a highly cost-effective way to adapt to climatic change



# ADAPTATION ELEMENTS RELATED TO CC AND CNRM

