UNFCCC SBSTA 39

In-session workshop

on the current state of scientific knowledge on how to enhance the adaptation of agriculture to climate change impacts while promoting rural development, sustainable development and productivity of agricultural systems and food security in all countries, particularly in developing countries

Overview

Alexandre Meybeck, FAO

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Outline

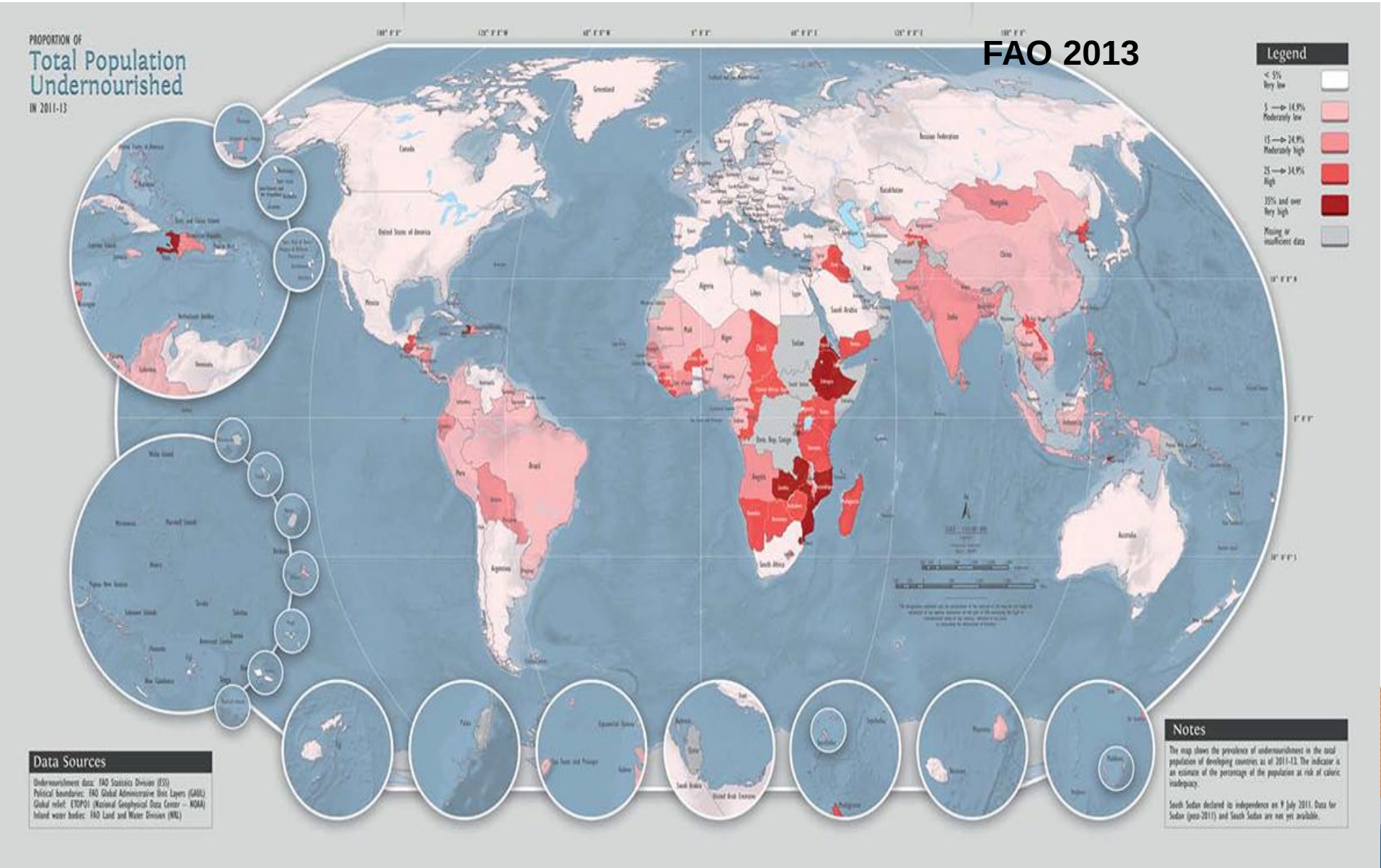
- Knowledge & knowledge gaps
- Information for decision makers
- Building resilience to CC
- Country led & local specific

Agriculture and Food Security

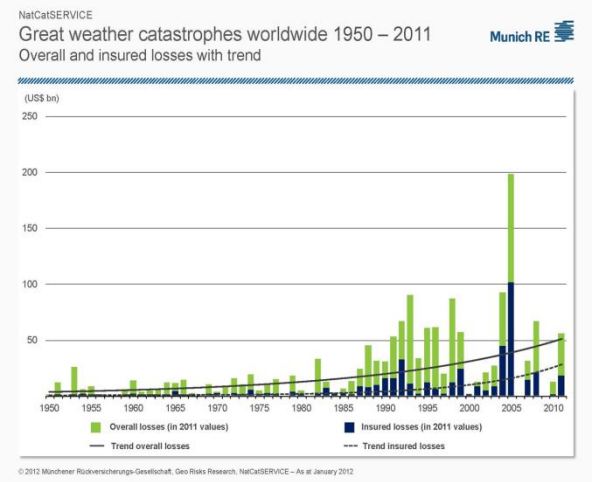
- 2,5 billion people in households depending on agriculture
- In many developing countries
  - agriculture > 50% people (often >75%).

    > 30% GDP
- In many countries rural pop increases
- Food production to increase by 50% towards 2050

Hunger Map 2013



Climate change impacts: short and long term



Short term: Increased variability

Increased frequency

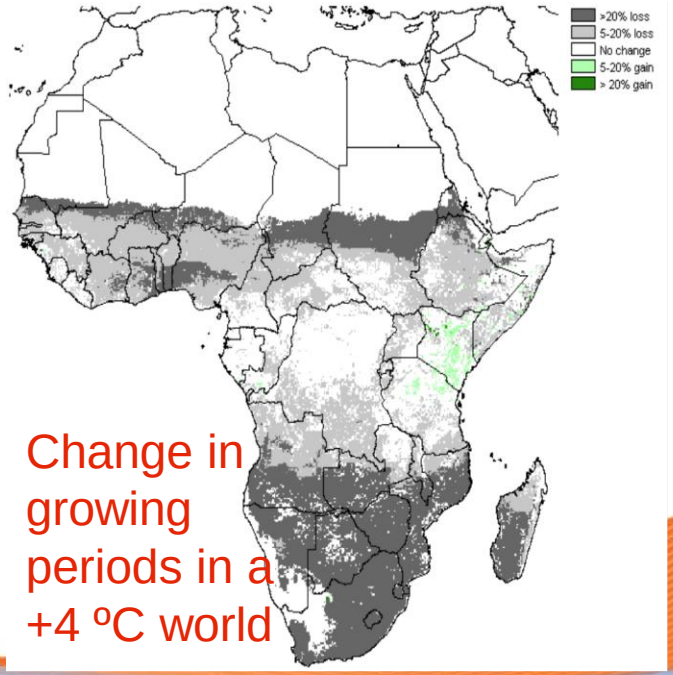
intensity of shocks

Long term: major changes in

temperature &

rainfall patterns,

Sea level rise

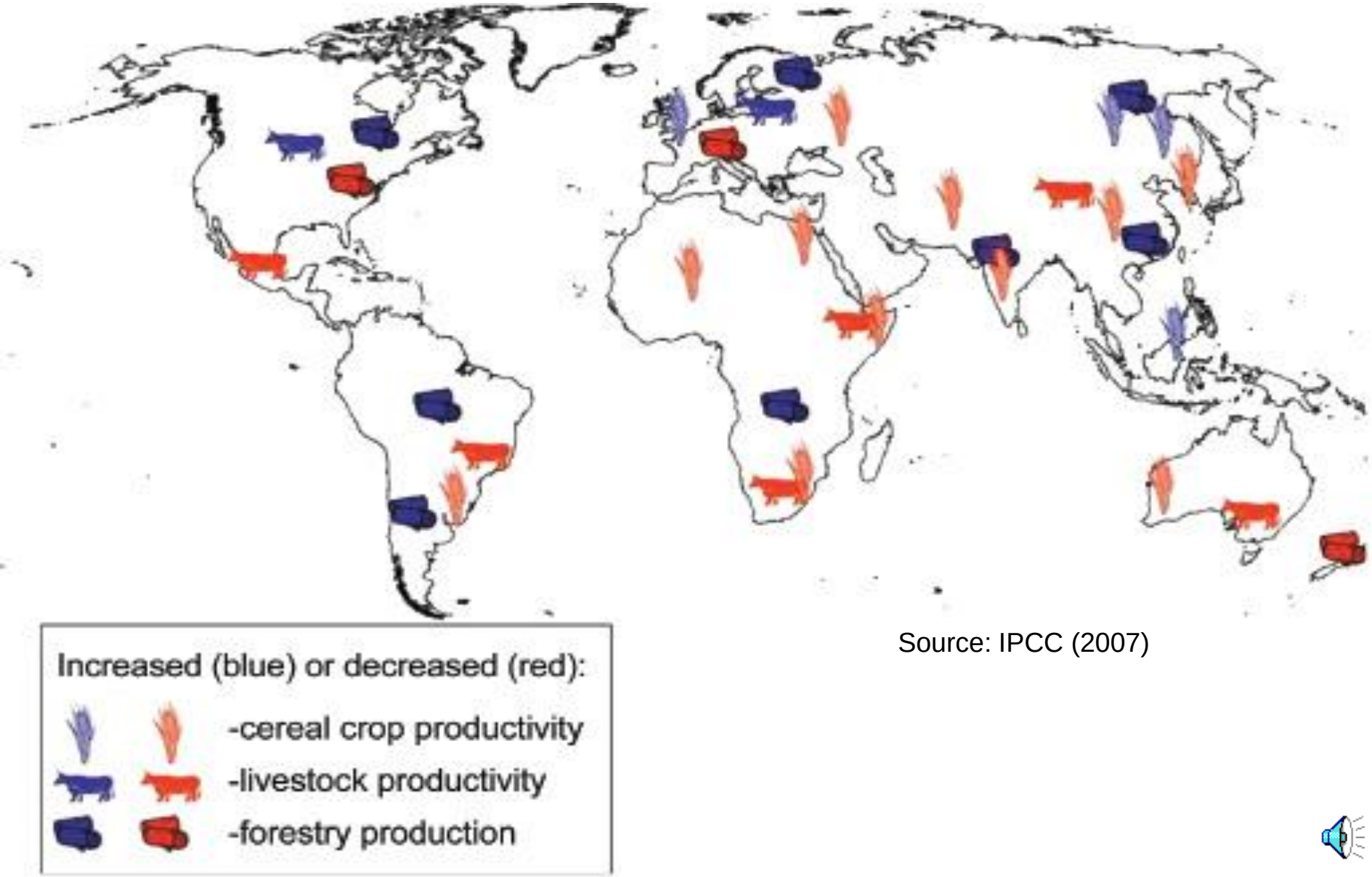


Change in growing periods in a +4 ºC world

Main effects on agricultural production

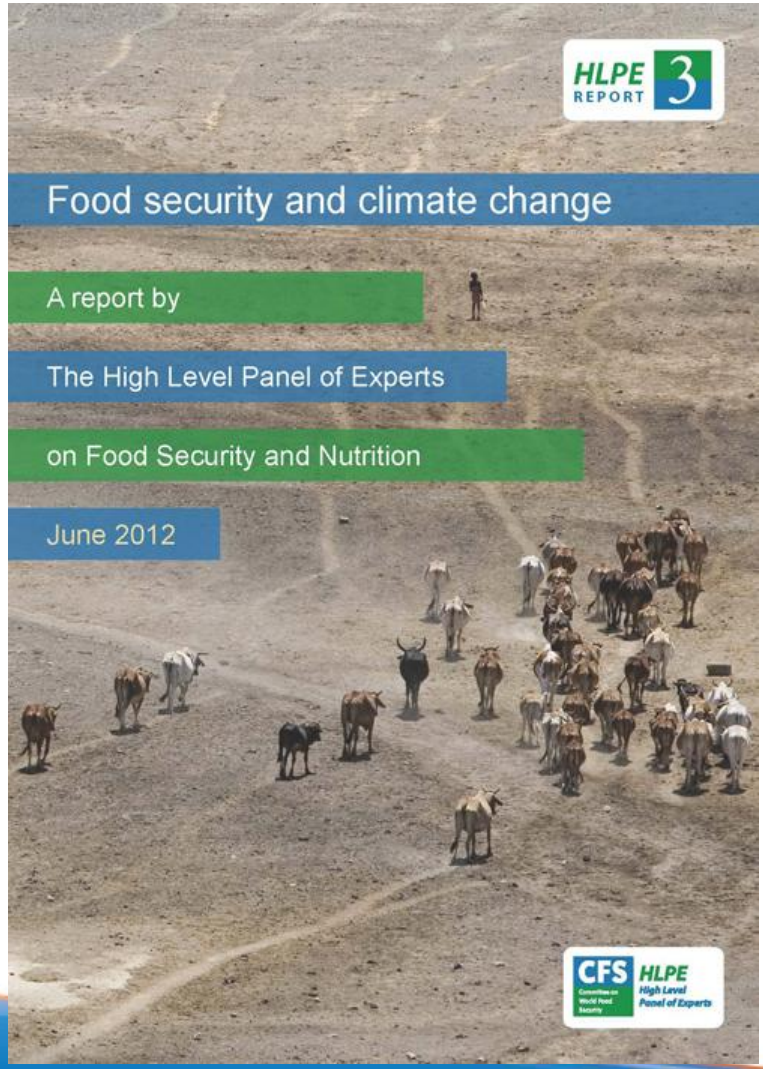
- Increased variability of production
- Decrease of production in certain areas
- Changes in the geography of production

Productivity trends by 2050



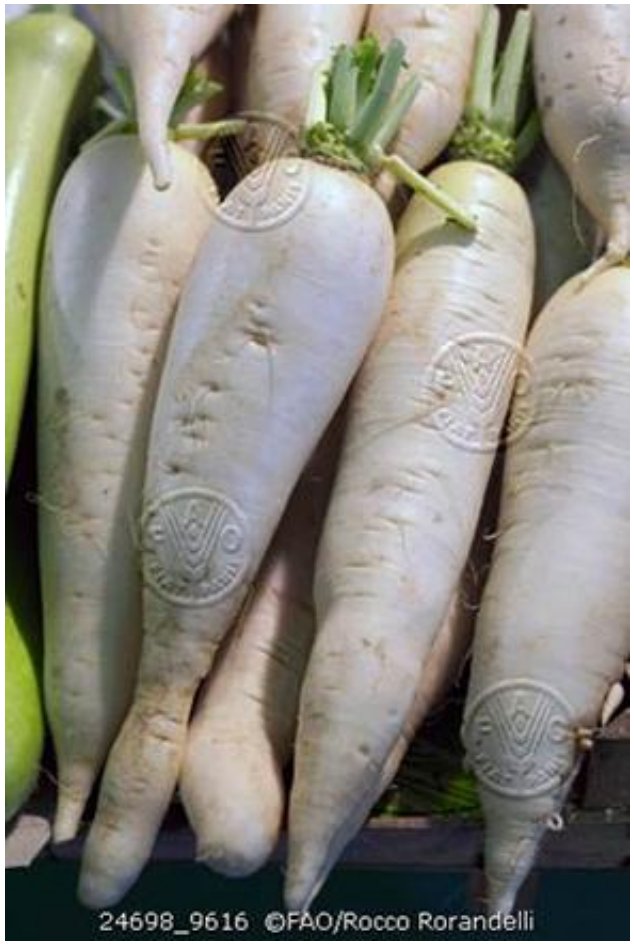
Source: IPCC (2007)

Food security and climate change



A report by the High Level Panel of Experts on Food Security and Nutrition (HLPE)

What effects of climate change on these?



What effect on ecosystems?

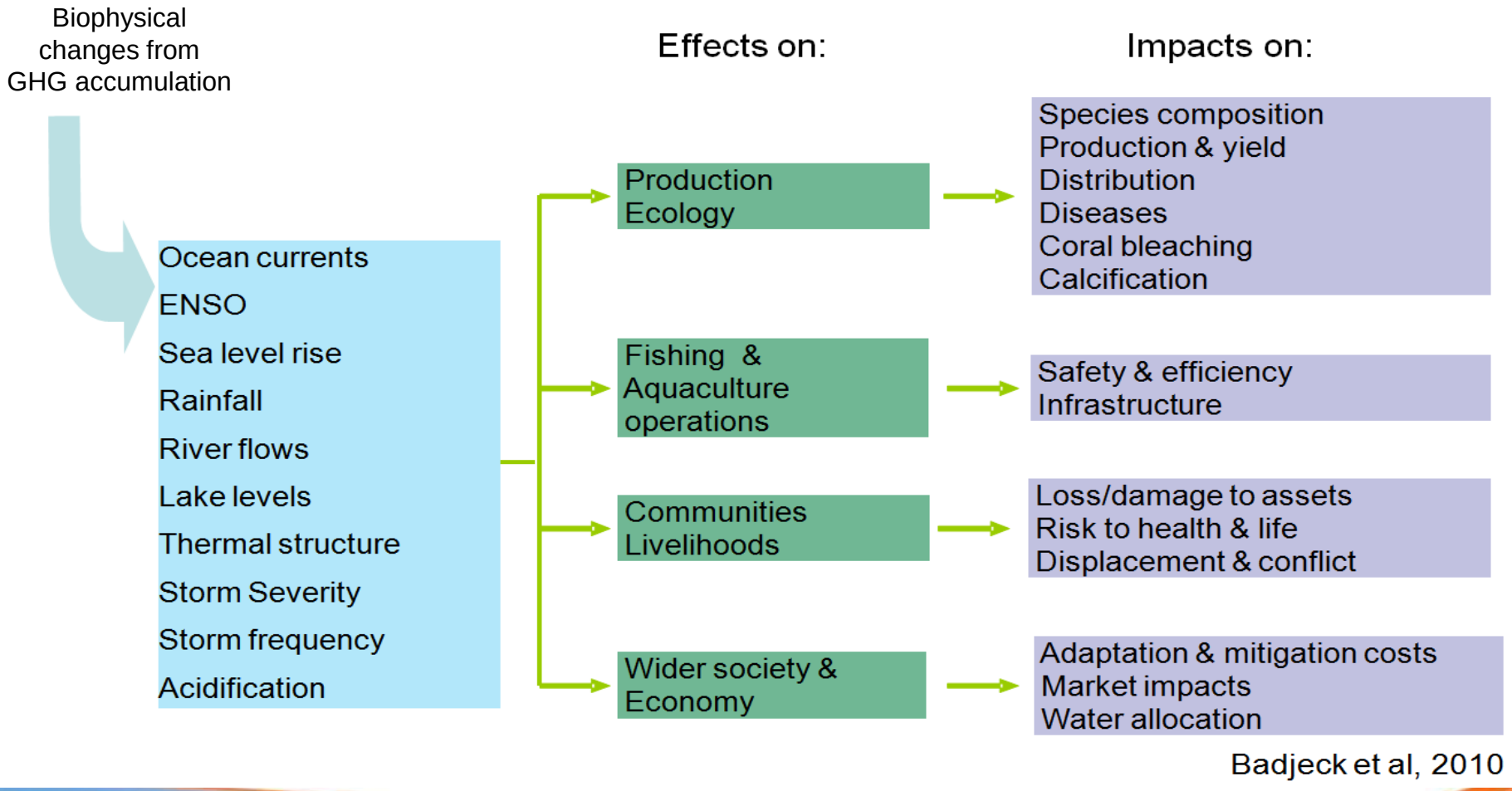
80% of flowering plant species are highly dependent on animal vectors for successful reproduction

What effect on pests and diseases?

Rift Valley Fever (RVF)

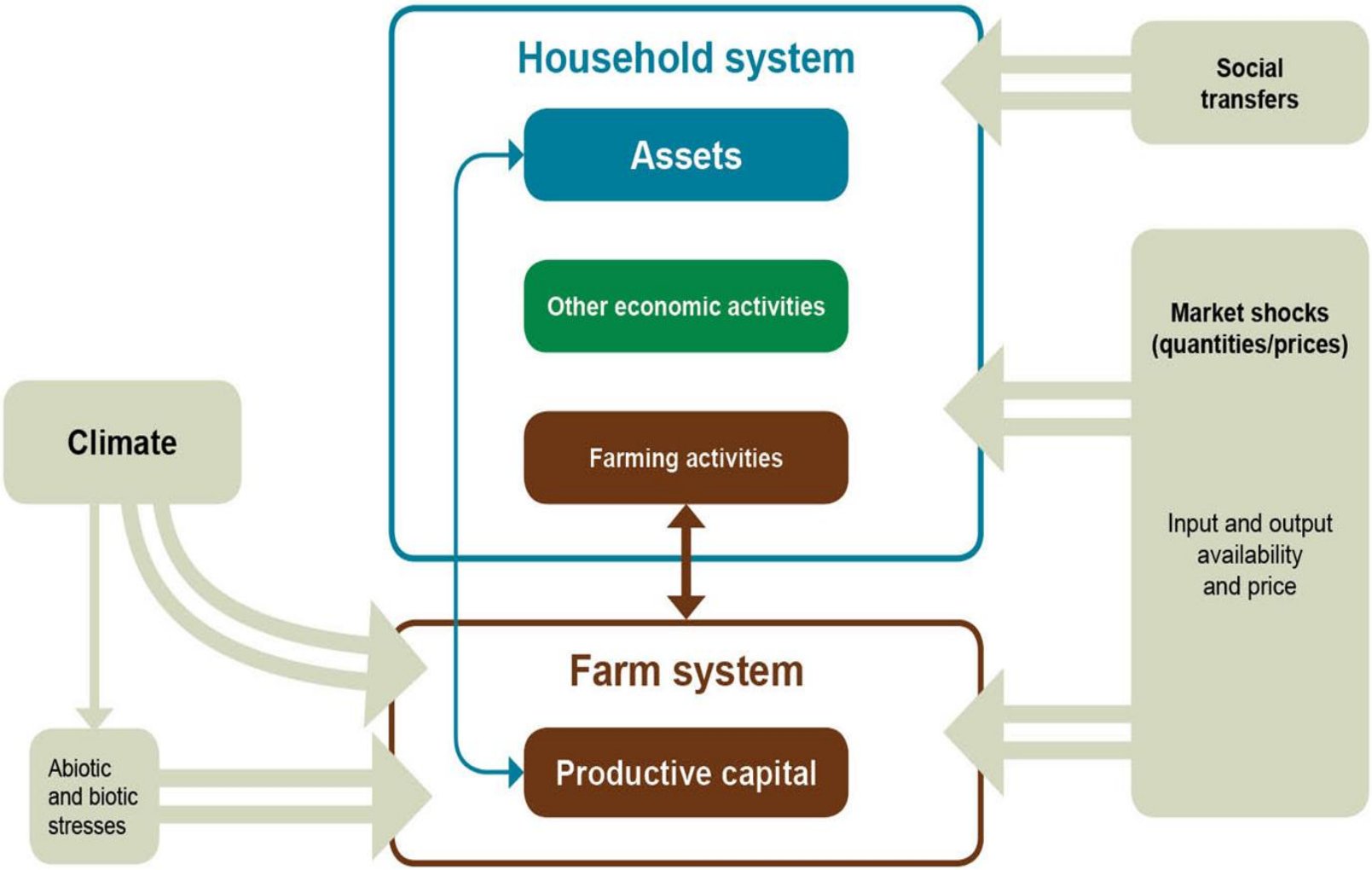
- Floods
  - Hatching of aedes eggs
- High temperatures
  - Increase feeding frequency
  - Increase egg production
  - Decrease the duration of development cycle
- Mosquito density increase

Risks and vulnerabilities: CC impacts on fisheries and aquaculture



Badjeck et al, 2010

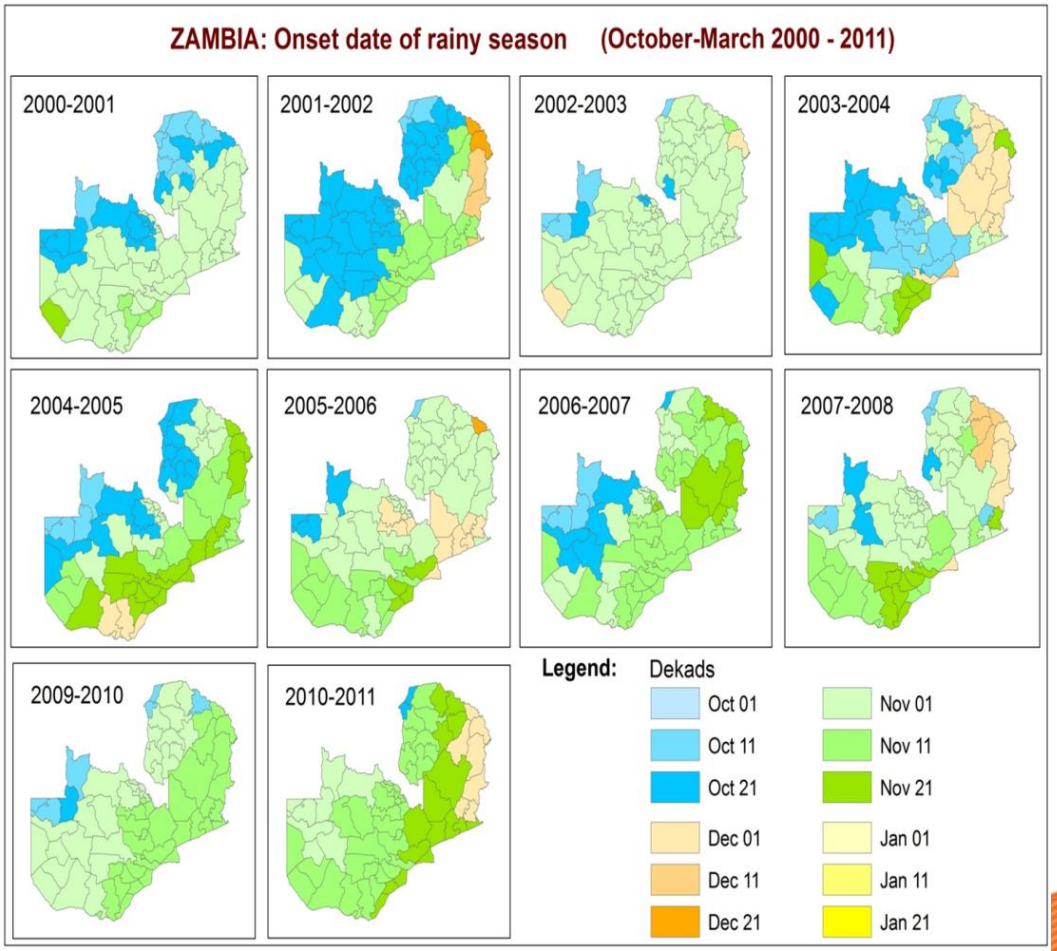
At Household level



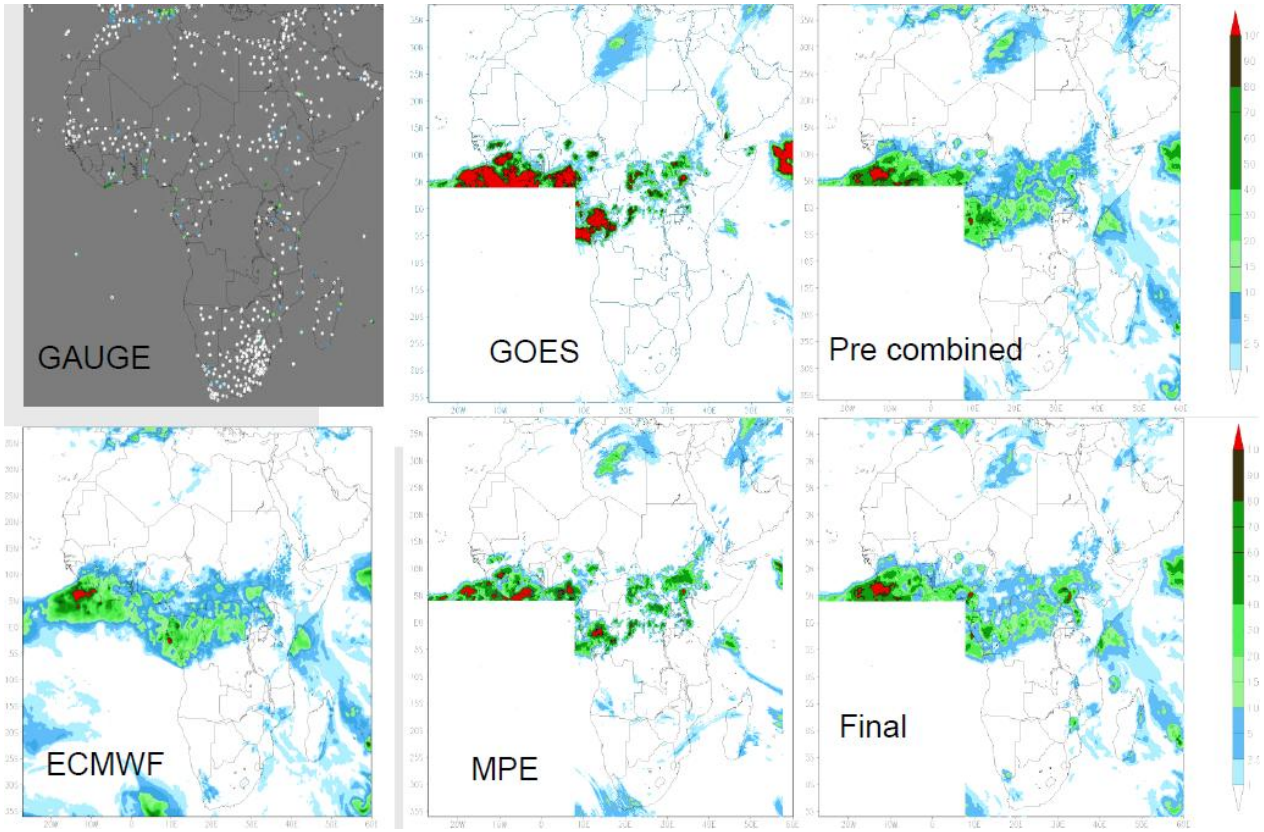
Agricultural sector adaptation: country experiences

Building the evidence base: *what are the recent observable changes to climate?*

- Use rainfall and temperature data to identify change in rain onset; peak temperatures
- Link to household level data to explore hoe farmers responded
- CC changed had major impact on adoption of conservation agriculture

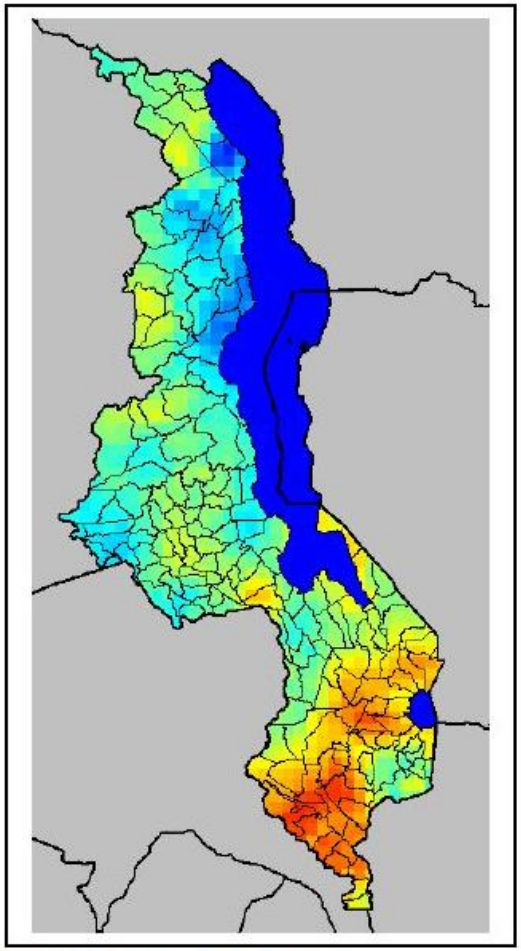


FAO Rain Fall Estimate



FAO is supporting the transfer of this methodology to **Sudan** Meteorological Authority

COYOTE: CrOp Yield Estimation



N-S extension of mapped area is approximately 800 km

Forecast of yield of local maize varieties in Malawi (Southern Africa) in 2005, based on ground data and satellite information

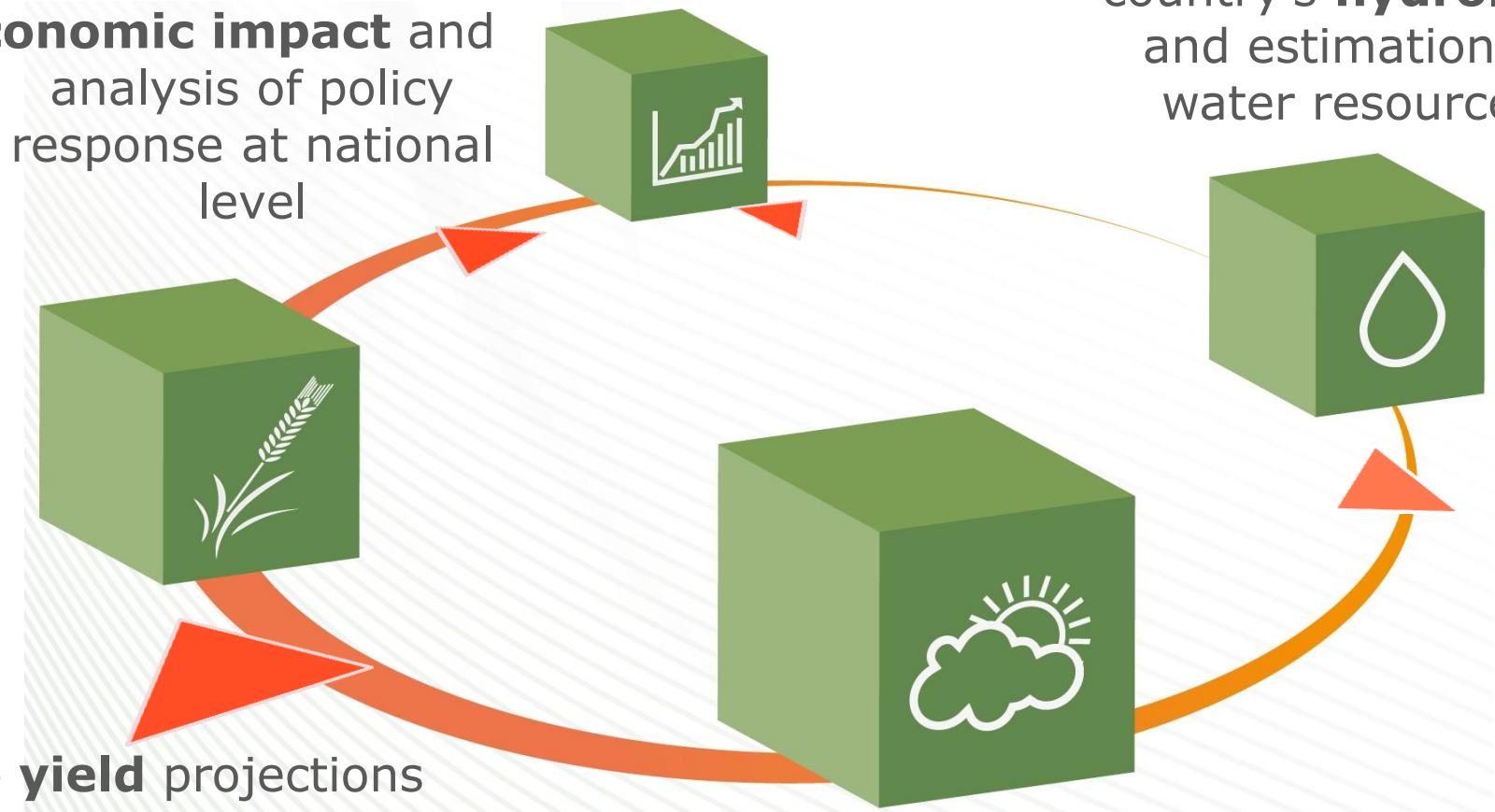
- An operational crop monitoring and forecasting system

- Can be tailored to suit countries' specific requirements

MOSAICC's 4 disciplines:

Economic impact and analysis of policy response at national level

Simulation of the country's **hydrology** and estimation of water resources



Crop yield projections under climate scenarios (WABAL and AQUACROP)

Statistical downscaling of **climate scenarios** over weather stations networks (AR4 and AR5 data available)

Building resilience in/through forestry

- Maximize resilience of forest ecosystems - for continued delivery of ecosystem services
- Use forests and trees to increase human resilience - through diversification, income/employment, food security
- Build resilient landscapes – through synergies with other land uses (e.g. with agriculture)
- Adopt forest policies and build institutions conducive to resilience

Dryland agroforestry systems

Guinea
Mosaic of crop fields, pasture and houses with boundary trees and wind breaks

Mali
Parkland agroforestry system. Acacia in sorghum fields, livestock in fields after harvest

Planning for Community Based Adaptation to Climate Change

- "Planning for Community Based Adaptation to Climate Change" E-learning Tool
- **Target audience:** development partners, agricultural extension staff, community based organizations and field practitioners
- **Objective:** A training and self learning tool to support awareness raising and capacity building on "Planning for adaptation to climate change in agricultural sectors"
- Successfully tested in Nepal, Dominica, Saint Lucia, Senegal, Sudan, and the Philippines

Freely available at http://www.fao.org/climatechange/learning/en/

Building adaptive capacity to changes: address uncertainty

Diversification

Genetic resource

Commission on Genetic Resources for Food and Agriculture

- Adoption of **"Programme of work on climate change and genetic resources for food and agriculture"** (CGRFA-14/13/Report paras 34-37)
  - *Promote the understanding of the roles and importance of GRFA in food security and nutrition and in ecosystem function and system resilience in light of climate change*
  - *Provide technical information to enable countries to understand the role of genetic resources for food and agriculture in climate change mitigation and adaptation, as appropriate*

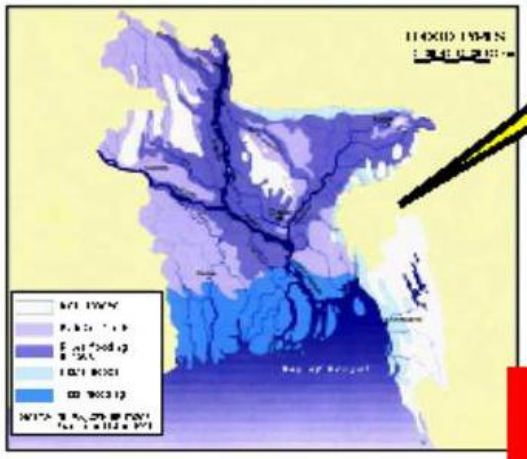
- Survey on lessons learned on the use of agricultural biodiversity to build resilience to climate change
- Development of technical material and guidelines for use in the integration of genetic-diversity considerations into climate change adaptation planning
- Compilation of information on hotspots of biodiversity for food and agriculture under particular threat from climate change

Building networks of innovation: Disseminating & selecting seeds of crops & varieties adapted to climate change

Farmer testing 3 wheat varieties as part of Bioversity Seed4Needs crowdsourcing crop improvement for adaptation

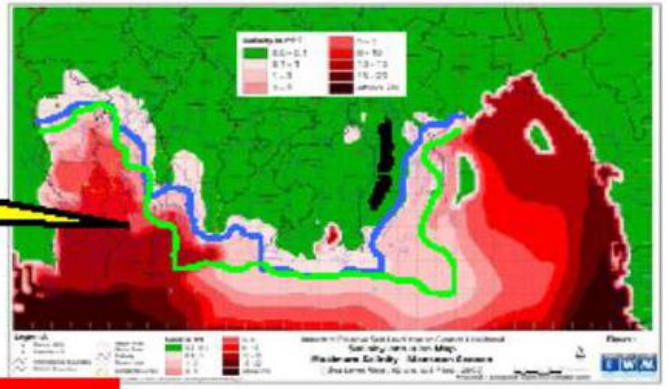
Seed supply for adapted crops is limited; ICRISAT experimenting with private sector seed suppliers to increase supply

Impact of climate change in Bangladesh

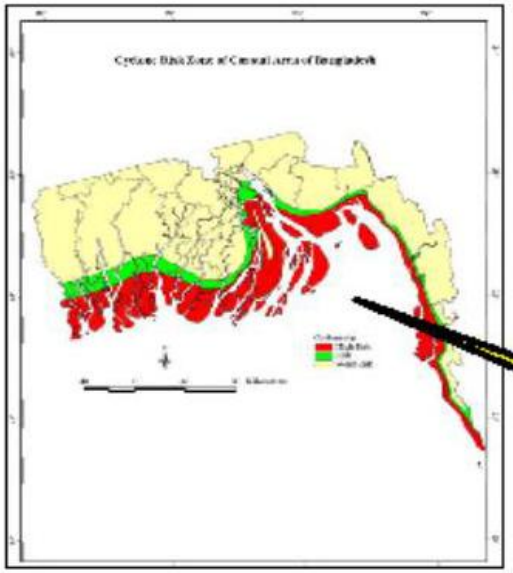


Flood

Salinity intrusion

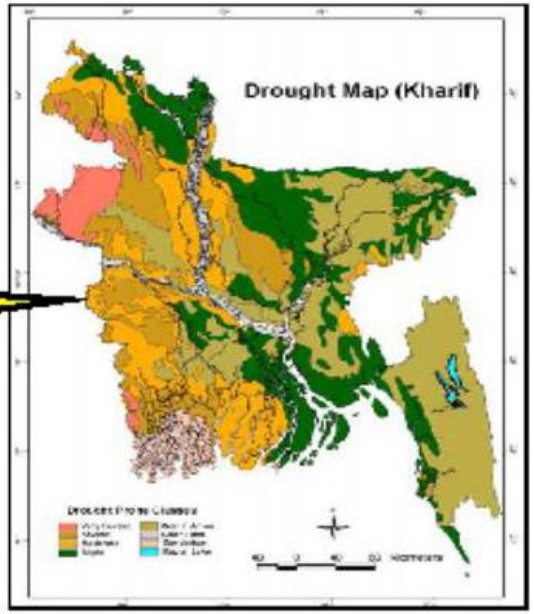


CC induced major hazards in Bangladesh



Cyclone

Drought



Location-specific suitable adaptation technologies:

Saline tolerant sunflower cultivation

Wheat cultivation (Less water loving for drought-prone area)

Cultivation of Flood tolerant rice BRRI Dhan 52

Rice: Alternate wetting And drying

Integrating Climate Resilience into Agricultural Production for Food Security in Rural Areas in Mali

- Integrated pest management
- Integrated management of soil fertility
- Diversification of cropping systems
- Connect smallholders to local/regional markets
- Monitoring of the environment and risks to human health
- Farmer field schools

From Slash and burn to Agroforestry

Key lessons and messages

- Adaptation to climate change is a social learning process - capacity building is required at all levels
- Farmer-level demonstrations are key
- Adaptation to climate change is very location specific

Thank you

Alexandre.Meybeck@fao.org