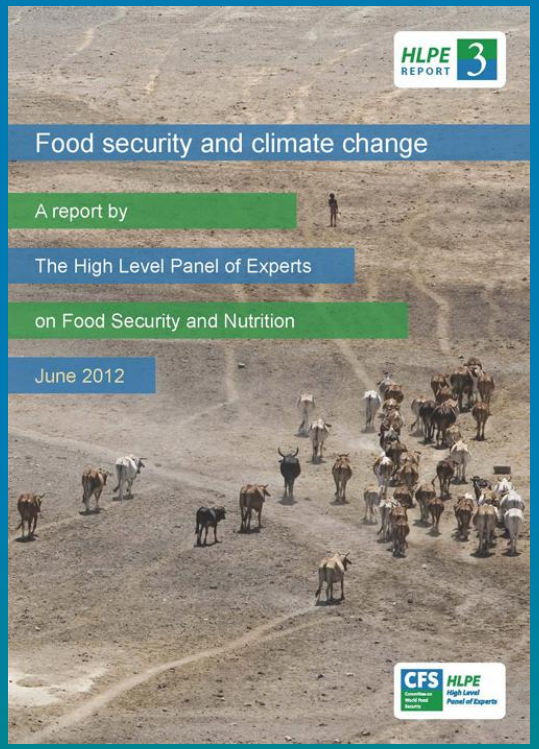

Food security and climate change

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

Gerald C. Nelson
HLPE Writing Team Leader

CFS Committee on World Food Security
HLPE High Level Panel of Experts
FAO FIAT PANIS

Request from CFS

- Review existing assessments and initiatives on the effects of climate change on food security and nutrition
- Focus on
  - the most affected and vulnerable regions and populations
  - the interface between climate change and agricultural productivity,
  - the challenges and opportunities of adaptation and mitigation policies and actions for food security and nutrition.

CFS Committee on World Food Security
HLPE High Level Panel of Experts

Report organization: five chapters

1. Assessing vulnerability to climate change *today*
2. Assessing vulnerability *tomorrow*
   - Plausible scenarios of the future
3. Adaptation
   - Options to address food security challenges from climate change
4. Mitigation
   - Options to reduce GHG concentrations while supporting sustainable food security and poverty reduction
5. The need for coordination and coherence of food security and climate change policies and actions

CFS Committee on World Food Security
HLPE High Level Panel of Experts

Dimensions of vulnerability to climate change

- Vulnerability depends on risk…
  - Exposure
  - Magnitude
  - Sensitivity
  - Ability to respond and adapt
- Vulnerability components
  - Biophysical *and* social
- Vulnerability affects individuals, household, communities, and agricultural systems
- The poor are especially vulnerable

CFS Committee on World Food Security
HLPE High Level Panel of Experts

Examples of vulnerable livelihoods

- Sensitive cropping systems
  - Potato-based systems are sensitive to high nighttime temperature
  - Rice-based systems are sensitive to high daytime temperature
- Women who haul water are sensitive to increased variability in precipitation
- Key staples and sources of diet diversity susceptible in some regions (e.g., wild foods, fruits and vegetables)
- Low-income, rural communities

Most vulnerable regions?

- Arid and semi arid regions of the tropics
  - Sahel of sub-Saharan Africa, South and West Asia, North Africa, India and parts of the dry Andes in Latin America.
- Coastal areas, at risk from flooding and sea level rise.
  - Countries with agriculture in river deltas
  - Small Island States.

Most vulnerable systems?

- Pastoralists and smallholder farmers in dry areas, particularly in South Asia and Africa
- Marine fishery production among tropical nations
- Small farms with limited access to input and output markets and off-farm opportunities
- Regions where conflicts for land and water are already pending

Integrating biophysical and socioeconomic futures essential for understanding vulnerability

- With high population growth and low income growth average kilocalorie availability declines in all regions by 2050.
- Climate change increases the number of malnourished children substantially.
- Trade flows adjust if trade policies don't constrain

Adaptation to increase the general resilience of food systems

- Adaptation to climate change is embedded in the broader need to
  - Produce more food
  - Build more resilient food systems
  - Consider the needs and rights of farmers
  - Support vulnerable groups and communities
  - Address sustainability

GHG emissions linked to agriculture

- Sources of agricultural GHGs
  - 13% of ***total*** GHG emissions result directly from agricultural activities
  - 2% indirect (energy and other inputs used in ag)
  - 11% to 17 % from land use change, most associated with agricultural practices
- Total: 26 to 32% (2005)

CFS Committee on World Food Security
HLPE High Level Panel of Experts

Assess mitigation and food security jointly

- Reduce emissions at the lowest food security cost and Improve food security at the lowest emissions cost
- Undertake full-cost assessment of mitigation options
  - upfront, transaction, transition, opportunity
- Need appropriate metrics to assess emissions reductions in a food security perspective

Mitigation options that also enhance food security: examples

- Direct
  - Farming practices that increase soil carbon in degraded soils
  - Fertilizer management that reduces fertilizer application by increasing plant uptake
  - Livestock and manure management that reduce GHG emissions and lower farmer cost per unit of output
  - Water management that saves water and reduces GHG emissions
  - Crop residue management that increases soil health and reduces GHG emissions
- Indirect
  - Manage food consumption for lower emissions and more efficient food systems
  - Reduce emissions from land use change for agriculture by increasing agricultural productivity

RECOMMENDATIONS FOR COORDINATION AND COHERENCE OF FOOD SECURITY AND CLIMATE CHANGE POLICIES AND ACTIONS

CFS Committee on World Food Security
HLPE High Level Panel of Experts

Four principles for policies and action

- Integrate food security and climate change actions
- Increase the base of evidence for policy-making
- Involve all stakeholders in decision-making
- Focus on the needs and contributions of the disadvantaged

CFS Committee on World Food Security
HLPE High Level Panel of Experts

Five sets of recommendations for national governments and international organizations

- Pursue synergies in food security and climate change actions
- Increase resilience of food systems to climate change
- Develop low-emissions agricultural strategies that contribute to food security
- Collect information locally and share knowledge globally
- Facilitate participation of all stakeholders in decision making and implementation

CFS Committee on World Food Security
HLPE High Level Panel of Experts

Recommendations for the CFS

- Include climate change recommendations in the Global Strategic Framework (GSF) for Food Security and Nutrition
- Encourage more explicit recognition of food security in negotiations on
  - Climate change
  - International trade
- Enhance the role of civil society
- Support efforts to improve data collection and a collection sharing mechanism on international data gathering for climate change and food security

CFS Committee on World Food Security
HLPE High Level Panel of Experts

To download the report

www.fao.org/cfs/cfs-hlpe

CFS Committee on World Food Security

HLPE High Level Panel of Experts