Food Security and Climate Change: Policy Recommendations

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Overview

1. Food Security in a Changing World
2. Impact on Food Systems and Trade
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1 Food Security in a Changing Word
Food security exists when all people, at all times, have physical, social and economic access to sufficient, safe and nutritious food which meets their dietary needs and food preferences for an active and healthy life.
4 Dimensions of Food Security

Availability of sufficient quantities of food of appropriate quality, supplied through domestic production or imports;

Access by individuals to adequate resources (entitlements) for acquiring appropriate foods for a nutritious diet;

Stability: reliable access to adequate food at all times, for populations, households or individuals

Utilization of food through adequate diet, clean water, sanitation and health care to reach a state of nutritional well-being in which all physiological needs are met;
THE GLOBAL COST OF MALNUTRITION

US $3.5 T
Malnutrition costs the global economy US $3.5 trillion per year.

US $1.4 T
The cost of obesity and overweight-related non-communicable diseases was estimated at US $1.4 trillion in 2010.

US $2.1 T
Undernutrition and micro-nutrient deficiencies cost up to US $2.1 trillion per year.

Source: EAT and Sustainia 2015.
By 2050 we will be more than 9 billion humans on Earth, and we will need to produce 60% more food.
World Fish Production (in million tons)

Per capita fish consumption has soared from...

- 1960s: 10 kg
- Today: 20 kg

By 2022, 18% more fish should be produced globally to meet consumers' demand.
1. **Carbon dioxide** concentration is 40% higher than in pre-industrial times.

2. **Human activity** caused most of the warm between 1951 and 2010.

3. Earth’s surface **warmed 0.85°C** over the period 1880 to 2012.

4. **Heatwaves and heavy rains** have become more frequent since the 1950s.

5. Arctic sea **ice has declined** on average 3.8% per decade since 1979.

6. **Global sea level is expected to rise** between 26 and 82 cm by 2100.

7. Only an **aggressive mitigation scenario** can keep temperature rise below 2°C.

Source: Cambridge University.
Without greater efforts to reduce them, they could increase an additional 30% by 2050

Source: FAOSTAT
GHG emissions from livestock

Regional emissions: Regional total emissions and their profile by animal species are shown. Results do not include emissions allocated to non-edible products and other services.
Agriculture is part of the problem and the solution

- Agriculture, land use, and forestry sectors account for about 25% of Greenhouse Gas (GHG) emissions globally.
- Largest contributor of non-carbon GHGs, such as methane.

Opportunities for Mitigation: Livestock & land use management, CO2 storage in soil & biomass, Changing in consumption.
FOOD PRICE HIKES AND EXTREME WEATHER EVENTS IN SELECTED COUNTRIES

Source: EAT and Sustainia 2015, based on CCAFS and World Bank data.
With 3°C or more, agricultural adaptive capacity is projected to be exceeded in low latitude regions. Family farmers with fewer assets will need more support for adaptation (insurance, weather forecast, investments, etc.)

Source: EAT and Sustainia 2015, based on Vemeulen 2014.
Land endowments losses in low-lying zones

Agricultural extent loss to 1-metre global mean sea-level rise, by region

FAO, 2015.
PROJECTIONS
Ocean warming 2051-60: displaced and reduced fish and invertebrate stocks

CHANGE IN MAXIMUM CATCH POTENTIAL (2051-2060 COMPARED TO 2001-2010, SRES A1B, 2°C warming)

- <50%
- 21 - 50%
- 6 - 20%
- 1 - 5%
- No data
- 0 - 4%
- 5 - 19%
- 20 - 49%
- 50 - 100%
- >100%

WGII, 6-14, SPM.6
Climate change could add more than 100 million people living in extreme poverty (2030) due to reductions in Ag productivity and income.

Climate Change impact 4 pillars of Food Security

Availability
- Yields reductions
- Crop movement to new areas
- Agro biodiversity and ecological services losses

Access
- Loss of agricultural and non-agricultural income
- Humanitarian aid dependency

Stability
- Increase on food prices
- Food chain modifications and increase on trading costs

Use
- Pollution of irrigation water
- New diseases affecting human health and productivity
Critical issues at the interface of climate and food security

- Improving analysis of climate nutrition-health links
- Growing need for systematic climate-food-water analysis
- Co-benefits versus trade-offs
- Understanding the trends and tackling trade-offs
- Mainstreaming adaptation into development
Key Messages:

■ Climate related impacts are already reducing crops yields in some parts of the world this trend will continue as T° increases further.
■ Climate variability and change will add further stresses on a global food production system that needs to respond to future trends of increasing population, changes in diet and urbanization.
■ The impacts on food security will vary from one part of the world to another and hinder progress on hunger eradication.
■ The stability of whole food systems may be at risk under climate change, largely due to short term variability and extreme events in agricultural markets.
■ Climate change risks to agricultural output, to food systems and for food security will increase over time and so should not be ignored by those making medium- and long-term planning decisions about food security.
Implications on Food System and Trade
Spatial patterns of food supply impacts. Average annual change in caloric production of maize, soy, wheat and rice by end-of-century for RCP 8.5. Median of six global crop models, driven by outputs of five global climate models from CMIP5. Results are averaged to 309 Food Producing Units (FPUs), assuming no change in farm management and including the effects on crops of increased atmospheric CO₂.
Sustainable consumption

Changes in consumption has high GHG mitigation potential
- Food waste and losses
- Overconsumption
- Consumption patterns: diets low GHG intensive food

Madin & Macreadie, 2015
Farmers and Food producers can adapt to some changes, but there is a limit to what can be managed.

Retrieve from EAT and Sustainia 2015.
Agriculture in National Determined Contributions

Countries have made agriculture sectors a priority for climate action

Out of 130 countries that included adaptation in their Intended Nationally Determined Contributions...

- 95% refer to crop and livestock production
- 83% refer to forests
- 46% refer to fisheries and aquaculture
Key Messages:

• Climate change is projected to cause food production to fall, crop shifting and new areas of production; that would lead to shift the current flows of food globally.

• Major current global breadbaskets are expected to see significant reductions in agricultural production that will reduce their export shares and may require increased imports.

• Climate Change is projected to increase price volatility for food and agriculture commodities and reduce food quality.

• Mitigation via consumption as well as the Paris agreement implementation could have an effect on food trade.

• Global Food System and agriculture industry’s own interests are best serve by ambitious approaches both in adaptation and mitigation.
3 Policy Recommendations
Farmers, fishers and foresters need support now!

- Knowledge of alternative or improved production systems and management options.
- Local support institutions or mechanisms (extension services, cooperatives, etc.).
- Availability of more resilient varieties (need for research and development).
- Access to resources, both for men and women: inputs, land, financing/investment.
- An enabling policy environment.
Enabling environment for a positive change requires

• Turn political will into policies, investments, legal frameworks.

• Sharpen the focus of policies and programmes for Climate Change on food security.

• Increase the base of evidence for policy-making.

• Involve all stakeholders in decision-making.
Policy messages, communication and the need for two-way science-policy dialogue

- Matching evidence on climate impacts to the needs of policy-makers
- Policy insights on climate change impacts under uncertainty
- Recommendations for structured science-policy dialogue
- Harmonizing climate with trade policy
Climate change, Trade, and Food Security Policies

In the post-2015 development framework, the relationship between climate change and trade policies should change to a more positive one, in which climate change policies with economic and trade aspects and trade policies with environmental and climate change aspects are considered, regulated and implemented as mutually supportive in achieving sustainable development and poverty eradication in the post-2015 period. UNCTAD
4 FAO’s Work on Climate Change
Implementation Mechanism of FAO’s work

**International**
- UNFCCC Process, related conventions
  - Advise negotiations processes
  - Advocacy
  - Technical support to IPCC

**Regional**
- Multi-stakeholder platforms
  - Nairobi Work Programme
  - Capacity building
  - Data management & knowledge portals
  - Partnerships
  - Policy guidance
  - Good practices

**National**
- National processes
  - NAPAs
  - NAMAs
  - REDD

**Local**
- Field projects/programmes
  - Awareness raising
  - Mainstreaming climate change
  - Technology development & dissemination
FAO supports capacity building for transformational change in agriculture through...
Several entry points & Frameworks

- Climate change adaptation (CCA) and Disaster Risk Reduction (DRR)
- Mitigation of Climate Change in Agriculture (MICCA)
- FAO’s Forest and Climate Change Programme
- FAO’s Fisheries and Aquaculture Programme
- Sustainable Crop Production Intensification
- UN-REDD Programme
Methods & Tools

MOdelling System for Agricultural Impacts of Climate Change (MOSAICC)

EX-Ante Carbon balance Tool (EX-ACT)

Self-evaluation and Holistic Assessment of climate Resilience of farmers and Pastoralists (SHARP)

Agriculture Stress Index System (ASIS)
Global Data & Information Systems

Welcome to FAOSTAT
Large time-series and cross sectional data relating to hunger, food and agriculture for 245 countries and territories and 35 regional areas, from 1961 to the most recent year.
Innovative tools for visualization and basic statistical analysis.

WHAT'S NEW IN FAOSTAT?

OCTOBER 2012
New monthly Producer Price data now available through FAOSTAT

OCTOBER 2012
Release of the New FAOSTAT interface. Easier than ever to access food and agriculture statistics.

OCTOBER 2012
A more advanced download functions and pivot tables have restored the classical Download Data section.

COMING UP

NOVEMBER 2012
Launch of the new Agri-environmental indicators database. Includes data on responses, driving forces, pressures, and the state of the environment.

NOVEMBER 2012
Launch of new Food Security domain. Data on determinants, outcomes, and vulnerability/stability.

DECEMBER 2012
Launch of the new Greenhouse Gas domain, which will include data on emissions from agriculture, forestry and other land uses.
Publications and Guidelines
Promoting Alliances & collaboration
Piloting Sustainable Practices and Policy Innovations

**Build Evidence**
- Analyze synergies and tradeoffs
- Cost-benefit analysis

**Strengths Policies and Institutions**
- Coordination CC and AG policies
- Institutions to overcome barriers

*Innovations*

- Build Evidence
- Strengthen Policies and Institutions

- Analyze synergies and tradeoffs
- Cost-benefit analysis
- Coordination CC and AG policies
- Institutions to overcome barriers

*Graph*
- Yield: average marginal increase (%/year)
- GHG reduction (tCO₂/ha/year) (1 ton=100%)
Participating of International Fora and Promoting Regional Dialogues

United Nations Framework Convention on Climate Change

Marrakech COP22 2016 CMP12 UN Climate Change Conference

Leveraging Climate Finance

GEF Green Climate Fund
Thanks for your attention

For more information, please visit: www.fao.org/climatechange