

Proposed scope of the HLPE study on climate change

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http://km.fao.org/fsn/discussions/climate_change

1. Assessing direct and indirect impacts of climate change on food security and nutrition

a – The direct and indirect impacts of climate change on food security:

The Food and Agriculture Organization (FAO) defines food security as a “situation that exists when all people, at all times, have physical, social, and economic access to sufficient, safe, and nutritious food that meets their dietary needs and food preferences for an active and healthy life”. This definition comprises four key dimensions of food supplies: availability, stability, access, and utilization. Therefore,

- The study of climate change effects on food security should include the impacts on food production and availability, the impacts on the stability of food supplies, the impacts of climate change on access to food, and the impacts of climate change on food utilization.
- The studies should be focused not only on the potential impacts of climate change, but also on the observed impacts of climate change, such as: the observed impacts on instability in agricultural production, variation in spring phenophase and cropping system, trends in pests and diseases.

b - The direct and indirect impacts of climate change on nutrition:

The Standing Committee on Nutrition of United Nations (UNSCN) states that “Undernutrition” is caused by inadequate dietary intake and disease, which stem from insufficient food, poor maternal and child care practices and inadequate access to clean drinking water, safe sanitation and health - all of which are directly affected by climate change. Therefore, the study of climate change effects on nutrition should cover:

- Comprehensive analyses of the multiple climate change-related threats to nutrition, including the impacts of climate change on food quantity and food price, the effects on the diversity and nutritional quality of the diet, the threat on the human health (such as vector-borne diseases, diarrheal and respiratory diseases, increased morbidity and mortality from extreme weather), the risk of being exposed to increased water stress, the threats to the ability of women to provide proper care to infants and young child, the impacts on livelihood strategies and assets.
- Identifying, validating and costing the set of interventions required to reduce the impacts from climate change on nutrition, and capitalizing on lessons learnt through experience.

c – Uncertainty issues:

There are various forms of uncertainty in the assessment of the climate change effects on food security and nutrition, especially for the study of the potential impacts of climate change. Some of these uncertainties can be quantified, but many simply cannot, leaving some level of irreducible ignorance in our understanding of the effects of climate change. Therefore, some of the most important uncertainties should be highlighted and studied, such as:

- The uncertainties from the emission scenarios and General Circulation Models (GCMs) used for projecting future climates
- The uncertainties from the effects of CO₂ fertilization
- Limits from land, water and other related agricultural resources
- The changes in the intensity and frequency of weather extreme events
- Others

2. Identifying vulnerable regions and populations

a – The most affected and vulnerable regions

• Impacts of climate change will likely vary substantially within individual regions according to differences in biophysical resources, management, and other factors. Different environmental, economic and social factors imply distinct impacts of climate changes and distinct capabilities to cope with them. Prioritization of investment also needs the identification of “climate risk hot spots”. Hence, it is significant to identify vulnerable regions by assessing impacts of climate change at various scales (global, continental and regional) and integrating environmental, economic, and social objectives.

b –The most affected and vulnerable populations

• Identifying vulnerable populations by assessing impacts, including socio-environmental vulnerability, of climate change on different socio-economic groups: woman, infant, elder. Due to the very large number of people that may be affected, malnutrition, linked to extreme climatic events, may be one of the most important consequences of climate change. Populations at greater risk of food insecurity may include smallholder and subsistence farmers, pastoralists, traditional societies, indigenous people, coastal populations and artisanal fisherfolk. Men and women also are affected differently by all kinds of climatic impacts, shocks and extremes. Many of the world’s poorest people are rural women in developing countries who depend on subsistence agriculture to feed their families.

3. Adaptation to climate change

The International Panel on Climate Change (IPCC) AR4 noted that “Adaptation” means both the actions of adjusting practices, processes and capital in response to the actuality or threat of climate change as well as changes in the decision environment, such as social and institutional structures, and altered technical options that can affect the potential or capacity for these actions to be realized. Adaptation is a key factor that will shape the future severity of climate change impacts on food security and nutrition. Adaptation studies are suggested to focus on the below key points.

a – Observed adaptation for food security and nutrition

- Classifying the adaptation options according to their distinguishing characteristics, such as intent and purposefulness, timing and duration, scale and responsibility.
- Developing and assessing the adaptation responses to climate change for food security and nutrition, such as developing new crop varieties, developing early warning system, developing farm-level resource management innovations, modifying crop insurance programs, changing investment in established income stabilization programs, implementing irrigation practices.

b – The cost-benefit analysis for adaptation

- Estimating the costs and benefits of adaptation options for decision-making at different levels by individual producers (farmers), agri-business (private industries), or governments (public agencies).

c – The role for public and private sectors in adaptation

- Encouraging the private sectors to play a more important role in the public-private collaboration in the development of adaptation responses, such as national planning and implementation of adaptation; assessment of risks, impacts and vulnerability and knowledge sharing; technology development and transfer; disaster risk management and insurance; financing adaptation activities.

d – The comprehensive and dynamic policy approach

- Increased adaptation action will require integration of climate change risk in a more inclusive risk management framework, taking into account climate variability, market dynamics, social factors, and specific policy domains. Overcoming the barriers to adaptation will require a comprehensive and dynamic policy approach, linking with anti-poverty and inequalities strategies, and covering a range of scales and issues, from individual farmer awareness to the establishment of more efficient markets.

4. Climate change mitigation

IPCC defines mitigation as: “An anthropogenic intervention to reduce the sources or enhance the sinks of greenhouse gases.” A mitigation strategy shall reduce the rate and magnitude of climate change and enhance food security and nutrition. The key topics of climate change mitigation in agriculture are listed below.

a – Contribution of agriculture to climate change

- Agriculture is thought to be a major source of CO₂ equivalent emissions and to contribute a disproportionate amount of other GHGs (N₂O and CH₄) which have high impact on warming. It is the most important to review investigations and quantifications of the emission status of agriculture at global, regional and national levels, in various production systems (from intensive to extensive systems).

- Both the magnitude of the emissions and the relative importance of the different sources in agriculture vary widely among world regions. It is necessary to review and analyze the available projections of the global and regional trends of emission in agriculture.

b – The mitigation options in agriculture

- Collecting and summarizing the mitigation measures that have been proposed for reducing the GHG emissions in agriculture, such as enhancing carbon removals, optimizing nutrient use, improving productivity, managing and benefiting from the outputs including manure and plant biomass, reducing the carbon intensity of fuel inputs through energy efficiency improvements.

- Review assessments of the role of regional and global land-uses and land management options to mitigate climate change.

c – The cost effectiveness and efficient mitigation

- Review and analyze available studies on the cost effectiveness of climate change mitigation for decision-making and their relevance to prioritise agricultural mitigation measures in different cases.

d – The multi-objective policy for climate change mitigation

- Developing multi-objective policy in climate change mitigation. It will be critically important for policies on climate change mitigation to take full account of their potential impact on the global food system, in view of its vital role in human survival and wellbeing and its influence on wider issues of sustainability. There is a need to address agricultural emissions without compromising food security, environmental sustainability and poverty alleviation.

5. Recommendations for policies and actions

- How to design and implement good overall development policies and programs? Linking policy on climate change and food security, and taking an integrated response to addressing food and nutrition security, agricultural productivity and climate change.
- Enhancing research and technology investments to minimize the impacts of climate change on food security and nutrition;
- Improving the social protection system, for the most vulnerable groups, including women and children, in developing countries;
- Setting up or strengthening early warning and surveillance systems for food security and nutrition, integrating the climate dimension;
- Investments in climate change adaptation and mitigation using the full potential that agriculture presents;
- Policies and investments to promote agricultural growth, in particular smallholder productivity;
- An international working group to regularly monitor the world food situation and trigger action to prevent excessive price volatility;
- Others.