

Building resilience for adaptation to climate change in the agriculture sector

Joint FAO/OECD Workshop, 23-24 April 2012, Rome

A joint workshop on ***Building resilience for adaptation to climate change in the agriculture sector*** was organized by FAO and OECD, and was held from 23-24 April 2012, at FAO Headquarters in Rome. A copy of the agenda is appended hereto.

The background and objectives of the workshop

This workshop was a follow-up of the Joint OECD-INEA-FAO Workshop on **Agriculture and adaptation to climate change**, which was held on June 2010. One of the conclusions of that 2010 Workshop was that as climate change brings new uncertainties, adds new risks and changes already existing risks, one of the most effective ways for agriculture to adapt to climate change could be to increase its resilience. This is why this workshop started from the various types of risks to which agriculture is prone, considered the impact that climate change is expected to have on them, and discussed various risk management strategies, depending on types of risks, and the country and region in question.

This two full day workshop consisted of **4 different sessions** including **setting the scene, types of risks and risk management, case studies, and finally tools, policies and institutions**.

The presentations and background papers are posted at:

<http://www.fao.org/agriculture/crops/news-events-bulletins/detail/en/item/134976>

The first session: Setting the scene

The first introductory session presented an overview of the main issues in agriculture and climate change, provided definitions of risks, vulnerabilities, resilience and adaptive capacity, and reviewed conceptual frameworks for climate change related vulnerability. The presentations stressed that there are two main long-term goals for agriculture: (i) achieve food security; and (ii) adapt to climate change. Climate smart agriculture addresses multiple goals, such as the sustainable increase of productivity, increased resilience and reduction of sector's GHG emissions, whereas the FAO-wide framework "FAO-adapt" aims to mainstream climate change adaptation into all FAO development activities. It was noted that it is important to build resilience to **existing risks** and to **changes in an evolving context**. Alternative concepts of vulnerability were reviewed, including outcome and contextual vulnerability of which the former is based mainly in natural science and the latter in social science. A framework table for the practical assessment of climate change related vulnerability was also presented.

The second session: Types of risks and of risk management

The second session considered various biophysical and economic risks affecting crop and livestock production, fisheries and aquaculture, forests and agroforestry, as well as households. It also considered risk management strategies to address these risks and how they are adapted to changing conditions. It also briefly reviewed national adaptation plans for Least Developed Countries (LDCs) as related to agriculture.

The presentations stressed the fact that various biophysical risks (weather, animal diseases, plant pests) are going to change – in terms of their nature, frequency and location- **and in many cases in an uncertain way**. This makes the need for tools and means to monitor risks even more necessary. The presentations also emphasized the fact that it is difficult to predict the impacts of climate change on ecosystems as each component of the system will react differently, and hence changing relationships within the system. This is of crucial importance for forestry, fisheries, but also for agro-ecosystems. Moreover, it was stressed that building resilience to climate change starts by building resilience through sustainable management of natural resources and ecosystem restoration. Interventions on both plant pests and animal diseases emphasized the importance of early action to prevent the spread of the risk. This requires having the proper tools, policies and institutions in place. A typical example is seeds - an essential tool for farmers to adapt to change. It requires preserving genetic resources and then making them accessible: multiplying and diffusing them where they are needed. As regards **farm risk management policies** such as different types of insurance and ex-post payments it was shown that **the possibility of extreme climatic events significantly changes the decision environment and that government's best response to this ambiguity is the implementation of "robust" policies, which may not be optimal under any given scenario, but which allow avoiding negative outcomes**.

The third session: Case studies

The third session was devoted to case studies, which had been selected to cover a broad range of issues, farming systems and social and economic situations. For each case study, specific risks and vulnerabilities were analyzed, and looked at the way they are expected to be influenced by climate change and how resilience can be improved to adapt to climate change.

The Finnish case study on crop production in northern climate addressed the issue **whether diversity enhances resilience and adaptive capacity** and whether there is **a trade-off between diversity and efficiency**. It was found that there is no trade-off in land use diversity and resource use efficiency – and in fact there are even cases of positive correlation between diversity and efficiency. **The Mediterranean case study** gave a broad overview of the main impacts of climate change in the area. It was noted that **the Mediterranean is a climate-change**

hot spot area and building a resilience strategy is a priority “no regret” action. The third case study considered vulnerabilities and conditions for resilience in crop-livestock systems in the Sahel region. The study shows that these systems have to address, in addition to climate change, other important sources of risks, including economic and land tenure risks but also important drivers of change including population growth. **The fourth study** considered challenges to production in rice systems in Southeast Asia. Importantly, it underlined that population increase in Southeast Asia has not been matched by an equivalent increase in production. It also underlined that the international rice market is very thin (7% of production) and that it is dominated by a few countries. This increases importing countries' vulnerability to price volatility.

The fourth session: Policies, tools and institutions

The fourth session focused on tools, policies and institutions designed to monitor and manage risks and vulnerabilities in OECD member countries. This was an informative session of concrete policies and institutions that OECD countries have in managing farm risks in a changing climate and introduced several new policies and policy frameworks to address adaptation to climate change.

Main conclusions

The various sessions of the workshop questioned the notion of resilience from very different angles, confronting concepts, specific risk management strategies, case studies and national policies, from different perspectives, biophysical, economic, or social and institutional, and at various scales, from farm and household to national and global.

The confrontation of these various approaches and the discussions that followed led to some important points.

- There are huge uncertainties on the way climate change will directly and indirectly impact agricultural and food systems, and related vulnerabilities.
- Building resilience now is central to being prepared for future changes.
- The notion of resilience enables examining together various domains - biophysical (ecosystems), economic, social and institutional -- and scales of operations.
- It also allows the interactions between domains and between scales to be analysed.

The workshop also identified some general ways to increase resilience:

- Identify and monitor potential risks and vulnerabilities. Early action is needed, especially to avoid cumulative and long term effects.
- Increase the adaptive capacity of farmers and systems, both to recover from shocks and to be prepared for changes.
- Take into account interactions between domains and scales in order to reduce the transmission of shocks between them.

FAO/OECD WORKSHOP

BUILDING RESILIENCE FOR ADAPTATION TO CLIMATE CHANGE IN THE AGRICULTURE SECTOR

23-24 APRIL 2012

Red Room, FAO

AGENDA

Theme of the workshop

This workshop is a follow-up of the Joint OECD-INEA-FAO Workshop on Agriculture and adaptation to climate change, held on 23-25 June 2010. One of the conclusions of that Workshop was that, as climate change brings new uncertainties, adds new risks and changes already existing risks, one of the most efficient ways for agriculture to adapt to climate change could be to increase its resilience.

The workshop will consider the various types of risks to which agriculture is prone, the incidence climate change is expected to have on them, and various risk management strategies, depending on types of risks, and the country in question. It will examine technical issues and case studies in order to determine how addressing various types of risks and vulnerabilities, including plant pests and diseases, animal health and socio-economic vulnerabilities can contribute to prepare agriculture for future climate induced risks and uncertainties.

Expected outcome

This workshop is an input into the OECD's and FAO's continuing work on agriculture and climate change. The intent is to provide background information on risks, vulnerabilities and resilience in a changing climate to feed into the ongoing reflections about adaptation of agriculture to climate. The concluding session of the workshop will include a discussion of the policy conditions needed to build resilience in agriculture to adapt it to climate change. This could be seen as a preliminary discussion leading to policy recommendations.

Day 1 - Monday 23 April 2012

09.30 – 10.00

Introductory Remarks

FAO: Modibo Traoré, Assistant-Director General, Agriculture and Consumer Protection Department

OECD: Dale Andrew, Head, Environment Division, Trade and Agriculture Directorate

10.00 – 11.30

I. Global view

Chair: Dale Andrew

The first introductory session gives a broad overview on the notions of risks, vulnerabilities and resilience and how to consider them in the context of climate change. It addresses the issues of interactions between the various types of risks and vulnerabilities, from biophysical and economic perspectives, including considerations of scale and time, in order to better define resilience, there again from biophysical and economic perspectives and including considerations of scale and time.

- **Agriculture and climate change: overview** (Peter Holmgren, FAO, Director Climate and Energy Division, Natural Resources and Environment Department).
- **Risks, vulnerabilities and resilience in a context of climate change** (Vincent Gitz, FAO, Agriculture and Consumer Protection Department).
- **The assessment of climate change related vulnerability in the agricultural sector: reviewing existing conceptual frameworks** (Thomas Fellmann, University of Seville, Spain).

<p>11.30 – 12.30</p> <p>and</p> <p>14.00 – 15.00</p>	<h2>II. Types of risks and of risk management</h2> <p>Chair: Aseffa Abreha</p> <p>The second session considers various biophysical risks affecting production, economic risks, both for producers and small holders as consumers, the impact Climate Change may have on them and the ways to address these various risks.</p> <ul style="list-style-type: none"> • Climatic risks: assessment and management in agriculture (Selvaraju Ramasamy, FAO, Natural Resources and Environment Department). • Coping with changes in cropping systems: plant pests and seeds (Manuela Allara, FAO, Agriculture and Consumer Protection Department). • Animal Diseases (Juan Lubroth, FAO, Agriculture and Consumer Protection Department). • Drivers of change within fisheries and aquaculture: adapt your policy! (Cassandra De Young, FAO, Fisheries and Aquaculture Department). • Building resilience to climate change through Sustainable Forest Management (Susan Braatz, FAO, Forestry Department).
<p>15.00 – 17.00</p>	<p>Chair: Bob MacGregor</p> <ul style="list-style-type: none"> • Risk management at the farm level (Jesús Antón, OECD/TAD). • A framework for the assessment of the socio-economic impacts of climate change at household level (Panagiotis Karfakis, FAO, Economic and Social Development Department). • The urgency to support resilient livelihoods: FAO disaster risk reduction for food and nutrition security framework programme (Cristina Amaral, FAO, Technical Cooperation Department). • Agricultural measures in NAPAs (FAO, Agriculture and Consumer Protection Department). • The role of the International Treaty for Plant Genetic Resources in Food and Agriculture (Dr. Shakeel Bhatti, Secretary, International Treaty on Plant Genetic Resources for Food and Agriculture).
<p>17.30-18.30</p>	<p>Welcome reception hosted by FAO</p>

Day 2 - Tuesday 24 April 2012

9.30 – 10.30	<p>III. Case studies (Part 1)</p> <p>Chair: Guido Bonati</p> <p>The third session is devoted to case studies, which have been selected to cover a broad set of issues, farming systems and social and economic situations. For each, specific risks and vulnerabilities are analysed, the way they are expected to be influenced by Climate Change and how resilience can be improved to adapt to Climate Change.</p> <ul style="list-style-type: none"> • Crop production in a northern climate (Helena Kahiluoto, MTT Agrifood Research, Finland). • Crop and livestock in the Mediterranean area (Demetrios Psaltopoulos and Dimitrios Skuras, University of Patras, Greece).
10.30-11.30	<p>III. Case studies (Part 2)</p> <p>Chair: Mr. Pattanayak</p> <ul style="list-style-type: none"> • Crop-livestock production systems in the Sahel: increasing resilience for adaptation to climate change and preserve food security (Alexandre Ickowitz, CIRAD). • Rice in Southeast Asia: facing risks and vulnerabilities to respond to climate change (Jesie Binamira, The Philippines).
11.30 – 12.30	<p>IV. Tools, policies, institutions</p> <p>Chair: Marca Weinberg</p> <p>These sessions focus on tools, policies and institutions designed to monitor and manage risks and vulnerabilities and how they can be enhanced and modified to better help agriculture adapt to Climate Change.</p> <p><u>Country Presentations:</u></p> <ul style="list-style-type: none"> • Italian presentation on “Perspectives on risk management in agriculture: reflections for a post-2013 CAP” (Antonella Pontrandolfi, INEA, Italy). • Canadian presentation on “An Assessment of the Canadian Crop Insurance Program with Climate Change” (Bob MacGregor,

14.00 – 15.30	<p>Agriculture and Agri-food Canada, Canada).</p> <ul style="list-style-type: none"> • EU presentation on “The EU agricultural policy contributing to adaptation to climate change” (Maria Fuentes, EC). • Dutch presentation on “Climate and agriculture project in Northern Netherlands” (Sjoerd Croqué). <p>Chair: Chang-Gil Kim</p> <p><u>Country Presentations continued:</u></p> <ul style="list-style-type: none"> • Spanish presentation (Ana Iglesias, Universidad Politecnica de Madrid, Spain). • Swiss presentation on “Swiss climate strategy for agriculture” (Daniel Felder, Federal Department of Economic Affairs FDEA, Switzerland). • Japanese presentation on “Japanese adaptation policy and AMICAF (Analysis and Mapping of Impacts under Climate change for Adaptation and Food security) project” (Hiroki Sasaki, Ministry of Agriculture, Forestry and Fisheries, Japan). • Australian presentation on “Australia’s Carbon Farming Initiative (CFI)”, (Director, Department of Climate Change and Energy Efficiency, Australia). • US presentation on “Agricultural response to a changing climate: the role of economics and policy in the United States” (Marca Weinberg, USDA).
15.30 – 16.30	Summary remarks from session chairs and open discussion
16.30 – 17.00	Concluding Remarks (FAO/OECD)