Summary report and main conclusions

The 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 to 24 April 2012, at FAO headquarters in Rome.

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 in 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-day workshop consisted of four sessions including setting the scene, types of risks and risk management, case studies and, finally, tools, policies and institutions.

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 on natural science and the latter on social science. A framework table for the practical assessment of climate changed-related vulnerability was also presented.

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 and 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.

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 analysed, 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 a 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 hotspot 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 percent of production) and that it is dominated by a few countries. This increases importing countries' vulnerability to price volatility.

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 in 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 operation.
- 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.