Conference conclusions and recommendations

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Economics of drought and drought preparedness in a climate change context

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Conclusions and Recommendations

The Fourth Assessment Report of the International Panel on Climate Change foresees a temperature rise globally in the range of 2 to 6 ℃ by 2100 and indicates that extreme weather events such as storms and droughts will most likely amplify in semi-arid regions in the Mediterranean, the Near East and Sub-Saharan Africa. Water shortages will grow, potentially creating conflicts among different users, leading to social stress, economic losses and environmental damage. International disputes over shared rivers may also be exacerbated as a result of more severe droughts and water scarcity.

Within this context, better estimations of the environmental, social and economic effects of droughts are needed in order to help government agencies become more conscious of their consequences and more effective in coping with them. The objectives of the Conference have been to analyse existing methods that allow for more accurate estimations of the impacts of droughts, to establish best practices in the Mediterranean, Near East and Central Asia, and to offer recommendations for drought preparedness.

The Conference has been organised by the General Directorate of Agricultural Research of the Ministry of Agriculture and Rural Affairs of Turkey, by the Ministry of Environment, and Rural and Marine Affais of Spain, by the NEMEDCA Network (Network on Drought Management for the Near East, Mediterranean and Central Asia), a Network supported by FAO, ICARDA, and CIHEAM, and by CEIGRAM (Research Centre of the Technical University of Madrid), and has been attended by more than 80 experts from 29 countries representing the five continents, with 60 contributions as guest conferences, oral presentations and posters.

Conclusions

1. Arid and semi-arid regions tend to experience higher variations in precipitation and, consequently, a higher probability of drought occurrence. Climate models coincide in projecting worse climatic conditions for the Mediterranean region. In the most vulnerable areas, uncertain future climate makes adaptation of human activities to climate variability a necessary strategy. Droughts should be seen as a risk component of the farming operations, and a threat to the most vulnerable rural livelihoods.

2. Socioeconomic drought vulnerability is generally greater throughout the rural areas in Africa and Asia, because of the large percentage of households making their living on agriculture and pastoral systems. By contrast, the Americas, Australia and Europe are less exposed to socioeconomic drought vulnerability, but still economic losses can amount to billions of euros.

3. There is a need to develop a better understanding of the total economic value of the impacts of droughts. Droughts negatively affect the capacity of natural resources and the environment to provide a wide range of beneficial goods and services to people and their communities. Some of these impacts are obvious, such as the loss of agricultural production valued at market prices, and the resultant fall in incomes to farmers. But other impacts may be less obvious, such as the loss due to droughts of the capacity of forests to absorb carbon to mitigate climate change or of wetlands to regulate water flows and mitigate flood risk. Economic analysis, combined for example with the type of approach adopted in the Millennium Ecosystem

Assessment, could provide a more comprehensive assessment of the impact of droughts on the prosperity and well being of people.

4. Numerous drought indicators are now available based on which impacts on agriculture can be anticipated. Some of these use free-of-charge satellite images and run on open software.

5. Drought effects are more visible in the agricultural sector and in rural areas. If not too severe they are partially cushioned by food and labour markets. Yet, extreme droughts can prove to have large socio-economic effects.

6. Networks provide suitable venues for effective collaboration among countries in dry areas regarding mitigation, adaptation and preparedness to drought and climate change. NEMEDCA is an example that should be supported.

7. Some engineering solutions such as "turning the rivers inland", cloud seeding, or building mega dams, are largely discredited in contemporary drought policy debates in some countries. Water harvesting and micro-dams have proved to be effective in reducing drought vulnerability.

8. There is still uncertainty about the actual costs and benefits of drought preparedness and drought plans. Very little is known about the effectiveness of the strategies that have already been tried in the Mediterranean region.

10. The Millennium Ecosystem Assessment recognises the relationships between stocks of natural capital, such as land and water, and the services they can provide to support human wellbeing. From an economic perspective, the ecosystems framework can provide an opportunity to systematically and comprehensively assess the likely impact of droughts on the stocks of natural capital and on the flow of valuable services and on the prosperity and well being of people.

Recommendations

1. It is recommended that countries have available means to estimate drought indicators, or use those that are already available, and develop appropriate drought policies based on the information they provide.

2. Drought preparedness and planning should incorporate pro-active strategies at the farm and rural levels, but should also consider the drought effects on the food markets and the general economy. Preparation involves most governmental branches and a strong coordination at all levels.

3. Mediterranean countries should promote analyses to evaluate the socio-economic effects of droughts and the benefits and costs of drought planning.

4. In response to the expanding gap between water demands and a reduced availability resulting from climate change, governments should promote mixed and balanced strategic responses, including crop and irrigation management, engineering and irrigation technologies, and efficient economic instruments, including insurance, farm Management Deposits, microfinance and microinsurance.

5. Integrated and adaptive water management should be put into practice by water and basin agencies.

6. It is recommended that the potential of the approach adopted in the Millennium Ecosystem Assessment is demonstrated through selected case studies.

7. Adaptation strategies that combine positive mitigation effects should be given the highest priority.