



United Nations

FCCC/SBSTA/2015/INF.7



Framework Convention on
Climate Change

Distr.: General
28 September 2015

English only

Subsidiary Body for Scientific and Technological Advice

Forty-third session

Paris, 30 November to 11 December 2015¹

Item 6 of the provisional agenda

Issues relating to agriculture

Report on the workshop on the assessment of risk and vulnerability of agricultural systems to different climate change scenarios at regional, national and local levels, including but not limited to pests and diseases

Note by the secretariat

Summary

The in-session workshop on the assessment of risk and vulnerability of agricultural systems to different climate change scenarios at regional, national and local levels, including but not limited to pests and diseases was held in Bonn, Germany, on 3 June 2015, during the forty-second session of the Subsidiary Body for Scientific and Technological Advice.

In the presentations and discussions that took place at the workshop, Parties highlighted the important role of the assessment of risk and vulnerability of agricultural systems, taking into consideration the particular vulnerability of agriculture to climate change impacts and the central role of the agriculture sector in ensuring food security in different climatic conditions. Parties also highlighted the importance of, inter alia, exploring the potential for synergies among existing processes under the Convention in facilitating the assessment of risk and vulnerability of agricultural systems to different climate change scenarios, and sharing knowledge and information on good practices and lessons learned relating thereto.

¹ Exact dates within the sessional period are subject to confirmation.

GE.15-16368(E)



Please recycle



Contents

	<i>Paragraphs</i>	<i>Page</i>
I. Introduction	1–6	3
A. Mandate	1–4	3
B. Scope of the note	5	3
C. Possible action by the Subsidiary Body for Scientific and Technological Advice	6	3
II. Proceedings of the workshop	7–11	3
III. Summary of the introductory presentation and the panel discussion	12–26	4
IV. Summary of the plenary discussion.....	27–52	7
A. Climate change impacts on agriculture	28–30	8
B. Risk and vulnerability in agricultural systems affected by climate change	31–46	8
C. Synergies and collaboration.....	47–52	10

I. Introduction

A. Mandate

1. The Conference of the Parties (COP), by decision 2/CP.17, paragraph 75, requested the Subsidiary Body for Scientific and Technological Advice (SBSTA) to consider issues relating to agriculture.
2. SBSTA 40 invited Parties and admitted observer organizations² to submit their views³ on the following areas:
 - (a) Development of early warning systems and contingency plans in relation to extreme weather events and their effects such as desertification, drought, floods, landslides, storm surge, soil erosion, and saline water intrusion;
 - (b) Assessment of risk and vulnerability of agricultural systems to different climate change scenarios at regional, national and local levels, including but not limited to pests and diseases.
3. The above-mentioned submissions were compiled by the secretariat and are contained in document FCCC/SBSTA/2015/MISC.1 and Add.1 and 2.
4. At the same session, the SBSTA requested the secretariat to organize, subject to the availability of supplementary resources, an in-session workshop at SBSTA 42 on the issues referred to in paragraph 2(b) above. The SBSTA also requested the secretariat to prepare a report on the workshop for consideration at SBSTA 43.⁴

B. Scope of the note

5. This report provides an overview of the proceedings of the workshop referred to in paragraph 4 above, held in Bonn, Germany, on 3 June 2015 (hereinafter referred to as the workshop) (chapter II), a summary of the introductory presentation and the panel discussion (chapter III), and a summary of the plenary discussion that took place at the conclusion of the workshop (chapter IV).

C. Possible action by the Subsidiary Body for Scientific and Technological Advice

6. The SBSTA may wish to consider the information contained in this report at its forty-third session as part of its consideration of issues relating to agriculture, in accordance with the conclusions contained in document FCCC/SBSTA/2014/2, paragraph 89.

II. Proceedings of the workshop

7. The workshop was organized by the secretariat and was open to all Parties and admitted observer organizations attending SBSTA 42.
8. Ms. Lidia Wojtal (Poland), the Chair of the SBSTA, delivered the opening remarks and introduced the mandate and objectives of the workshop. She requested that Mr.

² Submissions from admitted observer organizations are available at <<http://unfccc.int/7482>>.

³ FCCC/SBSTA/2014/2, paragraph 86.

⁴ FCCC/SBSTA/2014/2, paragraphs 88 and 89.

Emmanuel Dlamini (Swaziland) and Mr. Peter Iversen (Denmark) co-facilitate the workshop.

9. On behalf of the two co-facilitators, Mr. Dlamini gave an introduction to the workshop and posed the following questions in order to guide the panellists and facilitate discussions:

(a) What experience does your country have in the assessment of risk and vulnerability of agricultural systems to different climate change scenarios at regional, national and local levels?

(b) How do various processes under the Convention facilitate the identification and assessment of risk and vulnerability of agricultural systems in the context of different climate change scenarios in your country?

(c) What are the potential areas for synergies among various processes under the Convention to facilitate the assessment of risk and vulnerability of agricultural systems in the context of different climate change scenarios at regional, national and local levels?

10. The workshop was organized in two parts. Part I featured a framing presentation delivered by an expert from the Food and Agriculture Organization of the United Nations (FAO), followed by a panel discussion with representatives of six Parties. In part II of the workshop, Parties engaged in a plenary discussion, which provided an opportunity for interactive discussion among all participants. During the plenary discussion, representatives of three UNFCCC constituted bodies (the Adaptation Committee (AC), the Climate Technology Centre and the Network (CTCN) and the Least Developed Countries Expert Group (LEG)) and civil society organizations delivered short statements/interventions on their activities relating to the topic of this workshop (see paras. 43–46 below).

11. Further information on the workshop, including the agenda, an information note, presentations made by experts and statements by the panellists, is available on the UNFCCC website.⁵ Upon the request of Parties and UNFCCC constituted bodies, presentations and written statements submitted by them have also been made available with the above-mentioned material online.

III. Summary of the introductory presentation and the panel discussion

12. During part I of the workshop, the presentation of the representative of the FAO highlighted key climate risks, challenges and vulnerabilities in the context of agriculture, fisheries and aquaculture. In particular, the presenter provided a broad overview of the current state of the scientific knowledge and knowledge gaps in this area, focusing on risks and vulnerability of agricultural systems, including food insecurity and loss of terrestrial, marine, coastal and inland water livelihoods and income. He provided a brief introduction on the risk assessment process that involves scientists (e.g. researchers and experts) and users that apply the scientific information, including governments, local authorities, stakeholders and farmers. He emphasized the importance of knowledge exchange between scientists and users for delivering results that are understandable to all actors, including smallholder and farmer-level engagement such as addressing the information needs of individual farmers. The presenter noted that the mobilization of existing knowledge, including information available in countries exposed to similar or comparable climate impacts at the present or in the future, and the identification of gaps in this knowledge is

⁵ <<http://unfccc.int/8936>>.

necessary for the effective assessment of risk and vulnerability of agricultural systems due to climate change.

13. According to the presenter, downscaled and precise information on the impacts of climatic hazards and extreme events, including those on specific crops is much needed in the agriculture sector. He noted that climate hazards and economic and social risks are interrelated. Economic and social risks stemming from reduced income and capacity to invest are amplified by volatility and increases in food prices caused by climate events. High vulnerabilities, including those arising from degraded environment, poverty, lack of knowledge and/or gaps in information, and weaknesses in institutions and governance further amplify the impact of climate-related risks in agriculture.

14. The introductory presentation was followed by a panel discussion, in which representatives of six Parties provided responses to the questions posed by the co-facilitators as listed in paragraph 9 above. Ecuador and the United States of America responded to the first question, China and New Zealand to the second question and the European Union (EU) and Malawi to the third question.

Assessment of risk and vulnerability of agricultural systems to different climate change scenarios

15. In its response to the first question posed by the co-facilitators (see para. 9(a) above), Ecuador informed workshop participants that the vulnerability assessments carried out in that country use a wide range of indicators and considerations related to four basic pillars: (1) exposure to climate threats; (2) food security; (3) potential impacts on food security; and (4) adaptive capacity. These pillars are aligned with the broader national strategies for food security and climate change that work in conjunction with each other.

16. Ecuador addresses its vulnerability to climate-related risks impacting food security by identifying the affected local areas with the aim of strengthening the adaptation capacities of local communities with low food security. These activities are coordinated within a project implemented through financing from the Adaptation Fund in collaboration with the World Food Programme. This project has three main pillars: climate change, food security and livelihoods related to agricultural practices. Determination of the potential climate change impacts on food security along with assessment of adaptive capacity through an analysis of these pillars is captured by a vulnerability index of affected areas. The analysis of this index leads to the following conclusions: (1) agriculture and fisheries are the main livelihoods in rural areas and are practised primarily for subsistence; (2) droughts and frosts are the most significant threats to agriculture; (3) food security is mostly affected by agricultural performance, local crop resistance and irrigation; and (4) due to the multiple socioeconomic dimensions of agriculture, risk and vulnerability of agricultural systems cannot be delinked from social components such as income and employment.

17. Responding to the same question, the United States of America presented the major findings from a report on climate change and agriculture in that country which is part of a larger national climate change assessment. The report describes the state of American agriculture and climate science and the effects of climate change on agricultural production, including the economics of these effects, and potential adaptation strategies to minimize the costs involved and capitalize on the opportunities that are presented. According to the report's findings, crop and weed response to the elevated carbon dioxide concentration in the atmosphere will vary with both positive and negative direct effects. Pests and diseases are expected to increase their ranges with increasing air temperature and humidity. Livestock production will decrease due to high producing animals being the most affected.

18. The United States Department of Agriculture (USDA) has prepared comprehensive adaptation plans, including elements relating to heat stress adaptation by breeding animals,

changes in cultivar selection or timing of field operations and development of new pesticides to control higher pest pressures. National agricultural adaptation planning promotes policies that seek to strike a balance between adaptation and mitigation measures, integrate local responses with national actions and provide sustainable solutions at the local level. In particular, USDA Climate Hubs provide periodic regional assessments of risk and vulnerability in agriculture as part of outreach, education and extension services to farmers and rural communities on science-based risk management in order to help them to better understand the potential direct and indirect impacts of a changing climate.

Convention processes that could facilitate the identification and assessment of risk and vulnerability of agricultural systems

19. While addressing the second question (see para. 9(b) above), China elaborated on the existing practices and approaches relating to the monitoring of climate change and use of integrated impact models to obtain relevant vulnerability indicators appropriate to China's conditions. The panellist emphasized the importance of localized modelling tools and transdisciplinary analysis that involves, inter alia, a dialogue between policymakers and scientists.

20. The panellist further highlighted the importance of the Convention processes for sharing knowledge, building capacity and providing guidance, menus, concepts, methods, tools and measures by which to conduct national or regional assessments in developing countries, including China, through the provision of funds and technology. The panellist concluded by suggesting the following further activities under the Convention to this end: (1) organizing regular training sessions and workshops within the framework of the Nairobi work programme on impacts, vulnerability and adaptation to climate change (NWP), or national adaptation programmes to build the capacity of developing countries; (2) considering setting up regional adaptation centres to localize support and conduct research which could create a regional knowledge hub and provide expertise on vulnerability assessment and risk management, and adaptation in the agricultural sector; and (3) reviewing national and regional assessments in developing countries which could offer valuable experiences and lessons for developing countries, including China, and help to identify the gaps and priority areas for developing methodologies, tools, finance, technologies and capacities.

21. New Zealand, in its response to the second question, stated that it has conducted a number of detailed assessments of climate change impacts and risks posed to both agriculture and production forestry with a focus on the downscaling of global climate forecasts in order to update and improve the projections of climate trends, variability and extremes across New Zealand up to the year 2100. Further research focuses on first-order impacts of increased temperature and changes to rain and wind patterns, including changes to variability between years and within years as well as second-order impacts, such as pests and diseases, fire risk and windthrow impacts as well as changes in nutrient cycling and ecosystem services.

22. The research on first-order impacts reveals that the hydrological cycle is likely to become more dynamic. Rainfall could become less frequent but more intense, leading to an increase in both drought and flood frequency and severity. New Zealand has also conducted research on interactions within second-order impacts. Due to the presence of hundreds of microclimates, local observations will be an important tool to allow land managers to identify management and adaptation options for climate change at the individual farm level. The panellist concluded that New Zealand has found that the downscaling of information is vital to enable land managers to understand the climate change impacts in order to allow them to develop adaptation options involving a broad range of social, economic and environmental factors to ensure sustainable land management under the future climate.

Potential areas for synergies among various processes under the Convention to facilitate the assessment of risk and vulnerability of agricultural systems

23. In the context of the third question (see para. 9(c) above), a representative of the EU and its 28 member States noted the relevant processes under the Convention that could facilitate the assessment of risk and vulnerability of agricultural systems under different climate change scenarios at local, regional and national levels, including NWP for the dissemination of knowledge through methods such as regional workshops; the national adaptation plans (NAPs) to support the formulation and implementation of adaptation strategies; and capacity-building.

24. The panellist further noted relevant elements in the work of other international initiatives and entities such as FAO; the International Fund for Agricultural Development; the United Nations sustainable development goal process; the Convention on Biological Diversity; the United Nations Convention to Combat Desertification; the United Nations Economic Commission for Europe; the Convention on the Protection and Use of Transboundary Watercourses and International Lakes; the Sendai Framework for Disaster Risk Reduction 2015–2030; and the Intergovernmental Panel on Climate Change (IPCC). He also provided concrete examples of studies, programmes and activities involving the EU related to risk and vulnerability assessments of agricultural systems.

25. Malawi, on behalf of the African States, while responding to the third question, informed workshop participants about the current and projected climate change scenarios and related climate risks in Africa. Malawi elaborated on sources of climate vulnerability in Africa, including: decline in land area suitable for major staple crops; scarcity of water for use in agriculture, especially in predominantly rain-fed agriculture; changes in the dynamics of pests and diseases; limited access to adaptable crop/fodder; germplasm and livestock breeds; and lack of alternative livelihood strategies. The panellist also provided an overview of African countries' experiences in the assessment of risk and vulnerability of agricultural systems and highlighted activities under the Convention that facilitate the identification and assessment of risk and vulnerability, such as the Consultative Group of Experts on National Communications from Parties not included in Annex I to the Convention (CGE), and the national adaptation programme of action (NAPA) and NAP processes. The panellist also mentioned the importance of application/downscaling of the work of the IPCC to the regional level.

26. Malawi further noted the importance of supporting policy harmonization and sectoral coordination in agriculture and highlighted the following areas for synergy among various processes under the Convention: (1) risk and vulnerability assessment (e.g. development of generic guidelines for assessments and improvement of readiness for effective responses; increased participation of the private sector in the assessments; provision of support to research and development; and implementation of control and management methods for the climate-related occurrence of pests and diseases); (2) data management (e.g. establishing linkages between climate and hydrological databases; enhancing climate databases across regions; and strengthening national systems for collecting and analysing data, and disseminating information); and (3) integration of gender issues into policies addressing climate risks and vulnerabilities in the agriculture sector (e.g. development of guidelines and analytical and communication tools).

IV. Summary of the plenary discussion

27. During part II of the workshop, Parties engaged in a general discussion, adding to and elaborating on the elements presented in the presentation, statements and the panel discussion in the first part of the workshop. While presenting their views on issues relating

to the workshop's topic (as detailed below), many Parties highlighted the diversity of the agricultural systems, including those relating to different stakeholders (e.g. rural and poor people, smallholders, women and youth), and different spatial (e.g. regional, national and local levels; macro to micro specificities) and temporal (e.g. short, medium and long-term perspectives) scales. Parties considered it important to take into account all the diversities inherent in agricultural systems in the work on risk and vulnerability assessment and emphasized the importance of agriculture in ensuring progress, food security, sustainable rural development, economic development, poverty eradication and livelihoods.

A. Climate change impacts on agriculture

28. All Parties emphasized that agriculture and food production are highly affected by the adverse effects of climate change, climate variability and extreme weather events, particularly in developing country Parties. Parties highlighted that despite the diversity of their national circumstances, all Parties face significant impacts of a changing climate.

29. Parties gave many examples of specific climate change impacts on agriculture observed in their countries, including temperature stress (increasing day/night temperature, heatwaves, heat/cold stress) and changes in precipitation patterns (increase in precipitation variability, heavy/erratic rainfall leading to flooding and landslides and/or droughts and desertification and soil degradation, cyclones/deficient monsoons, periodical water scarcity/stress and devastating hailstorms, deficient crop seasons or crop failure). They also highlighted the increased occurrence of extreme weather events and changes in the range and virulence of pests, diseases and invasive species and their impacts on agriculture. All these impacts increase risk and vulnerability of agricultural systems as detailed in the section below. A group of Parties noted that urgent action is required in order to improve productivity and promote the adaptive capacity of agriculture as it may not be possible to return to previous production conditions.

30. A Party also noted a few positive outcomes stemming from climate change, including longer growing and feeding seasons, extended range of some crops and increased yields. In this context, a group of Parties mentioned that although climate change impacts can have both positive and negative effects on agriculture, the negative ones such as the adverse effects of extreme events, pests and diseases and limited water availability tend to dominate in many parts of the world.

B. Risk and vulnerability in agricultural systems affected by climate change

31. All Parties recognized that agriculture is vulnerable to climate change impacts and subject to increased risks from extreme weather events. In this context, Parties highlighted the central role of the agriculture sector in ensuring food security under future climatic conditions. A group of Parties emphasized that risk and vulnerability assessments, including in terms of social and economic impacts, are critical in view of the adverse effects of climate change on existing and planned productive systems.

Importance of risk and vulnerability assessments

32. Developing country Parties, in particular, stressed the importance of risk and vulnerability due to the significance of agriculture in the whole value chain, including industry and services, in their national economies. A Party highlighted that risk and vulnerability assessments are necessary so as to design appropriate measures to address the negative effects of climate change, while noting that developing countries face challenges in undertaking such assessments.

33. Several Parties noted that risk and vulnerability assessments are central to their political concerns and actions, and contribute to their national decision-making processes. Others noted that advanced climate change risk assessments may identify a significant number of risks from a changing climate and determine their severity and likelihood in the short, medium and long terms.

34. A group of developing country Parties highlighted the importance of increasing the adaptive capacity of agriculture to deal with the adverse effects of climate change. It was noted that adaptation is important because climate change could induce situations that would not allow the restoration of past production conditions. Many Parties emphasized the important role of risk and vulnerability assessments in their adaptation strategies, scenarios and plans. Parties also highlighted the importance of considering the interests of smallholders, marginal farmers and indigenous communities as well as the role of poor people, women and youth in climate-resilient agriculture.

Risk and vulnerability assessments in the context of adaptation

35. Several Parties emphasized the importance of involving risk and vulnerability assessments in identifying adaptation measures suited to local circumstances and productive systems. Such measures included, inter alia, the development of improved seed varieties adapted to new agro-climatic conditions, thermal/water stress and exposure to different pests. Parties also noted the importance of the improvement of the adaptive planning capacity of farmers in order to ensure stabilized and increased yields and thus contribute to food security.

36. A Party indicated that adaptation is one of the key priorities in its national development strategies given that it is a developing country. This Party further noted that projects focusing on assessing vulnerabilities and identifying options to build resilience in smallholder agricultural systems are eligible for funding by the Adaptation Fund.

37. Another Party informed workshop participants that it applied climate change risk assessment in order to develop a national adaptation plan which included specific actions for agriculture. The plan was produced in a participatory manner with broad consultations with different stakeholders all over the country. It relied significantly on local actions being put in place by local governments, while also involving the national frameworks.

38. Many Parties emphasized the importance of scientific and technical information, research, data, simulation models and other tools in the work on risk and vulnerability assessments. A group of Parties noted the important role of risk and vulnerability assessments in the research and development of improved crop and animal varieties, breeds and species appropriate to national micro to macro specificities. A Party noted that in order to reduce vulnerability, concerted adaptation efforts based on research and technology and policy support, are required.

39. Another Party informed workshop participants of a national adaptation fund established for projects related to climate-resilient agriculture and for strategic research in areas that include providing access to improved climate-resilient practices to farmers at the village level.

National experiences

40. Many Parties shared their experiences relating to risk and vulnerability assessments, including: (1) pro-active risk management in high-risk areas and increasing awareness of farmers and poor local agricultural communities; (2) integration of natural resources, ecosystem services, water availability, pest and disease occurrence, socioeconomic aspects, and technology gaps and financial needs; (3) combining the work of intergovernmental organizations (e.g. Consultative Group on International Agricultural Research, FAO, the IPCC); and (4) the use of data from weather forecasting systems, satellite images and

historical records in developing maps of risk and vulnerability, including floods, potential landslides and desertification hotspots.

41. Some Parties informed workshop participants of indices developed in their countries for the assessment of vulnerability for insurance purposes. However, since these indices affect actual managerial decisions on crop planning by individual farmers, they stressed the need for further research to cover all different agro-economic conditions in order to be able to down size the national level indexes to regional and local levels.

42. A number of Parties noted that the risk assessment process enabled the identification of reduced water availability and soil productivity as the two primary threats to their agriculture systems. Soil degradation, in particular, could decrease the soil's ability to support agricultural production and carbon storage. In this context, a Party expressed the opinion that soil protection is an adaptation action that also benefits mitigation. A group of Parties proposed to identify co-benefits of adaptation, including socioeconomic and environmental ones.

Non-Party statements

43. A representative of the AC elaborated on its role as the overall advisory body to the COP on adaptation to the adverse effects of climate change and on its activities, including the facilitation of dialogue among various stakeholders on different elements of adaptation action; addressing NAPs and their development; and the promotion of available tools for the use of indigenous and traditional knowledge and practices for adaptation.

44. A representative of the CTCN informed workshop participants of its mandate, mission and services, and presented a number of concrete examples of technical assistance provided at the request of developing countries, knowledge-sharing on climate technologies and collaboration/networking among climate technology stakeholders relevant to developing countries.

45. A representative of the LEG provided relevant information on the technical support and advice provided by the LEG to the least developed countries (LDCs) on NAPAs and the LDC work programme, and its technical guidance and support to the process to formulate and implement NAPs.

Civil society intervention

46. A representative of the Climate Action Network, a worldwide network of non-governmental organizations, noted that climate change poses a significant threat to agriculture and food security. She urged Parties to promote sustainable farming approaches and take immediate action in order to build resilience and create equitable food systems ensuring that small scale farmers are supported and ecosystems are protected. The representative called for ambitious emission reductions together with adaptation actions and provision of support.

C. Synergies and collaboration

47. A group of Parties felt that there is a wide space for collaboration among Parties in relation to risk and vulnerability assessments adapted to local, national and regional circumstances and sharing of lessons learned from the experiences of different Parties. The group welcomed the opportunity to undertake scientific and technical work on the impact of climate change on agriculture consistent with the mandate of the SBSTA.

Potential role of the Convention

48. Many Parties highlighted the potential role of the Convention in facilitating the sharing of knowledge and information on good practices and lessons learned in the assessment of the risks and vulnerabilities of agricultural systems at different levels, in the context of the application of adaptation practices and technologies in different countries. Some Parties suggested an involvement of the CGE and the Adaptation Fund in this process. In addition, some Parties suggested exploring relevant experiences and success stories available outside the Convention.

49. Several Parties highlighted the potential role of the Convention to assist Parties in downscaling climate scenarios and in developing multi-layered risk and vulnerability maps for different climatic events in order to enhance resilience by strengthening risk management approaches. These Parties also noted the importance of assisting developing country Parties in improving the data needed to run models that predict climate change impacts on yields of important crops, animal production, water availability and soil erosion among others (i.e. integrated assessment of climate change impacts on food security).

50. The majority of developing country Parties highlighted the importance of support for enhancement of their capacity in the area of risk and vulnerability assessment, vulnerability mapping and adaptation scenario development, especially in agriculture. These Parties highlighted the role of assistance and cooperation under the Convention, including access to finance, technologies, know-how and practices for adaptation in the agricultural sector. In this context, the least developed country Parties stressed the limited availability of data, methods and experiences in their countries as an important factor and emphasized a need for urgent support and capacity-building.

51. A group of Parties noted that developed countries should play a role in technology transfer, capacity-building and in providing the means of implementation for risk and vulnerability assessments and adaptation in developing countries.

Way forward

52. In their statements, several Parties reflected on the potential role of the Convention in facilitating collaboration and identifying synergies for the assessment of the risks and vulnerabilities of agricultural systems. In summary, this could include the following:

(a) Exploring the potential for synergies among existing processes under the Convention, for example, processes related to finance, technology transfer and capacity-building, including technology needs assessments, the CTCN and other UNFCCC adaptation-related processes;

(b) Focusing cooperation activities under the Convention on sharing knowledge (including the facilitation of database development and sharing), exchanging experts, technology transfer, capacity-building, financing, and learning from each other with a particular focus on success stories and good practices;

(c) Developing a web platform for exchanging information on, inter alia, experiences gained, good practices, support tools and models, databases, and lessons learned on the assessment of risk and vulnerability in agricultural systems.