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Nairobi work programme on impacts, vulnerability and adaptation to climate change

Synthesis of information on economic diversification submitted by Parties and relevant organizations

Note by the secretariat*

Summary

This document presents a synthesis of information and views submitted by Parties and relevant organizations on examples of measures, methodologies and tools to increase the economic resilience of, and reduce reliance on, vulnerable sectors. The document also synthesizes views on needs, concerns and lessons learned from these examples, and concludes with issues for further consideration.

* This document was submitted after the deadline due to the late date of the submission of views.

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I. Introduction

A. Mandate

1. The Subsidiary Body for Scientific and Technological Advice (SBSTA), in its conclusions on the Nairobi work programme on impacts, vulnerability and adaptation to climate change (FCCC/SBSTA/2006/11, para. 69), invited Parties and relevant organizations to submit to the secretariat, by 17 August 2007, information on examples of measures, methodologies and tools to increase the economic resilience of, and reduce reliance on, vulnerable sectors. The SBSTA also requested the secretariat to prepare a synthesis report based on these submissions, by its twenty-seventh session.

B. Scope of the note

2. This document synthesizes the information submitted by Parties and relevant organizations on examples of measures, methodologies and tools to increase the economic resilience of, and reduce reliance on, vulnerable sectors. As background to this synthesis, the note reviews the context of the invitation by the SBSTA in the light of the purpose and objectives of the Nairobi work programme. The concluding chapters draw out common experiences, needs and concerns, and issues for further consideration.

C. Background

3. The overall objective of the Nairobi work programme is to assist all Parties, in particular developing countries, including the least developed countries and small island developing States, to improve their understanding and assessment of impacts, vulnerability and adaptation, and to make informed decisions on practical adaptation actions and measures to respond to climate change on a sound, scientific, technical and socio-economic basis, taking into account current and future climate change and variability.

4. Activities in the area of economic diversification are undertaken in line with the objective in the annex to decision 2/CP.11 to advance sub-theme b (v), "Promoting understanding and the development and dissemination of measures, methodologies and tools including for economic diversification aimed at increasing economic resilience and reducing reliance on vulnerable economic sectors, especially for relevant categories of countries listed in Article 4, paragraph 8, of the Convention".[1]

5. Activities in the area of economic diversification can contribute to efforts by Parties and organizations, inter alia:

(a) To exchange experiences and opportunities related to the development and dissemination of measures, methodologies and tools aimed at increasing economic resilience;

(b) To exchange experiences and lessons learned in economic diversification, including ways to develop institutional capacity, and improve understanding on how economic diversification can be integrated into sustainable development plans, especially those that promote sustainable economic growth and eradication of poverty.

6. In general, the submissions revealed that in order to achieve economic diversification, it is important to aim to increase the economic resilience of, and reduce reliance on, vulnerable sectors. Therefore, these goals could be considered as means to achieve the objective laid out in decision 2/CP.11, annex, paragraph 1. It is important to note that, although these two goals are closely related, they are distinct. At the national level, increased economic resilience can be achieved by economic

[1] FCCC/SBSTA/2006/11, paragraph 68.

diversification – reducing overdependence on a narrow economic base. At the sectoral level, increased economic resilience is often achieved by adapting existing practices to reduce exposure to risk. In the agricultural context, for example, increased resilience may be achieved by improved water management practices. On the other hand, it may involve diversification within the sector by diversifying the mix of the crops planted. The submissions synthesized for this report cover practices aimed at increasing sectoral resilience using both these approaches.

7. As regards reducing reliance on vulnerable sectors, it should be noted that climate change impacts will vary by region, and by ecosystem within regions. The result is different impacts by sector of economic activity, depending on the characteristics of the sector and on its geographical location. For example, sectors that depend heavily on water supply, precipitation or hydropower-based electricity, may be seriously affected in regions where drought is predicted.

8. However, potential impacts, a function of both exposure and sensitivity to climate change effects, are not the only indicators of vulnerability. Adaptive capacity is also key to determining vulnerability. It may be noted that countries and sectors with the means to identify risks and adapt accordingly are less vulnerable, given the same magnitude of impacts.

9. This understanding of vulnerability reflects in part the focus of the Nairobi work programme on developing country Parties, including the least developed countries and small island developing States. Many of these Parties have relatively low capacity to identify climate-related risks (for which adequate technical and financial resources are needed) and to take adaptive action (for which adequate public services, infrastructure and financial resources are required). In addition, many of those countries have geographical characteristics that predispose them to impacts of greater magnitude.

10. Although unfavourable geographical characteristics and the low capacity to adapt are important in justifying the focus on Parties identified in Article 4, paragraph 8, of the Convention, the other key characteristic of many of those countries is an over-reliance on a narrow base of economic activity. Many low-income countries are heavily dependent on agriculture – one of the sectors widely identified as susceptible to serious climate change impacts. Others are highly dependent on the export of a limited range of non-agricultural commodities.

II. Summary of submissions

A. Background

11. Submissions were received from four Parties (representing the views of 30 Parties) and one intergovernmental organization (IGO). The Parties were Bolivia, New Zealand, Portugal (on behalf of the European Community and its member States) and Saudi Arabia. The IGO was the secretariat of the United Nations Convention on Biological Diversity (CBD).

B. Increasing economic resilience

1. Vulnerability assessment as a prerequisite

12. The submissions emphasized, and illustrated, that assessing vulnerability to climate change is a prerequisite to any successful measures to increase economic resilience. The submission from Bolivia underlined the importance of the concept of resilience and its links to adaptive capacity. The submission from Saudi Arabia highlighted the need to promote the development and dissemination of measures, methodologies and tools to increase economic resilience. The assessments described in the submissions typically entailed a two-step process of forecasting climate change impacts and mapping these against socio-economic trends or scenarios that helped define sensitivities. The end results pinpoint those

economic sectors that might be vulnerable to climate change impacts, and those that suffer from gaps in the efforts to increase resilience and to adapt.

13. Research to assess more accurately the risks of climate-induced adverse impacts and to improve modelling efforts is one of the components of New Zealand's multi-year programme entitled Research on Adaptation to Climate Variability and Change. There are plans to extend the modelling to quantify the economic impacts of climate change, incorporating the scenarios and climate change impacts of the Fourth Assessment Report of the Intergovernmental Panel on Climate Change, on land use, agriculture, energy and other climate sensitive sectors. In the agriculture sector, identified by New Zealand as particularly vulnerable, *Changes in Drought Risk with Climate Change* (a report of the National Institute of Water and Atmospheric Research, commissioned by the Ministry for the Environment and the Ministry of Agriculture and Forestry) gives policymakers and agricultural producers some indication of the possible significance of changes in drought risks by region over the twenty-first century.

14. The International Global Change Institute at Waikato University, in collaboration with a number of Crown Research institutes, has developed an integrated computer-based model (CLIMPACTS) to assess the sensitivities of New Zealand's various sectors and regions over time under different socio-economic scenarios. In a similar exercise, the UK Climate Impacts Programme (UKCIP) has developed a number of publicly available software-based tools (including the UKCIP Adaptation Wizard) to assess vulnerability and potential for adaptation across a range of sectors.

15. The CBD secretariat has prepared a compendium of existing tools and methods to assess climate-related risk. These focus both on monitoring and assessment of expected physical impacts, and on assessing the vulnerability of ecosystems. A few of these also make the link with economic activities. The CBD secretariat also cited a number of case studies of successful adaptation initiatives. One of these, the Capacity Building for the Development of Adaptation Measures in Pacific Island Countries project, was undertaken by the secretariat of the Pacific Regional Environment Programme and the Canadian International Development Agency. One element of this project, which was undertaken in the Cook Islands, Fiji, Samoa and Vanuatu, was the assessment of vulnerabilities in small communities and the development of policies to address them. Another case study, the Caribbean Planning for Adaptation to Climate Change project, involved assessment of coastal vulnerability in Barbados, Guyana and Grenada, and coral reef monitoring in the Bahamas, Belize and Jamaica.

2. Increasing sectoral resilience through innovation

16. The submissions described examples of efforts to increase sectoral resilience through innovation by adapting existing methods and processes to reduce vulnerability to climate-induced adverse impacts.

17. In the United Kingdom of Great Britain and Northern Ireland, climatic changes have led to notable shifts in patterns of agricultural production, with a movement away from conventional crops and towards those more traditionally cultivated in the Mediterranean region. There is a significant growth in the number of British vineyards, for example, and in cultivation of temperate tree fruit varieties. This innovation is also highlighted as necessary in the report *Climate adaptation in the Netherlands*,[2] which describes the vulnerabilities of the Netherlands in the agricultural sector, and which recommends changing crop varieties and genotypes, or growing different crops that are more resilient to environmental pressures.

18. One of the case studies described by the CBD secretariat – Conservation of Traditional Plant Varieties in India – involves a programme of measures aimed at reversing the trend to abandon traditional plant varieties. The resulting changes in patterns of production will work against a decline in

[2] <http://www.mnp.nl/en/publications/2006/ClimateAdaptationintheNetherlands.html>.

biodiversity that threatens to reduce resilience in the agricultural sector, both in India and elsewhere, to climatic changes and increased climatic variability.

19. The submission from New Zealand describes a number of efforts to increase resilience within economic sectors through changes in current practice. One of the components of the Party's Research on Adaptation to Climate Variability and Change programme is the development of new tools and products for vulnerable sectors to help cope with climate variability and climate impacts. The Sustainable Water Programme of Action targets a range of stakeholders, including agricultural producers, communities, indigenous groups, electricity generators and the forest products industry. One of the key elements of the programme is managing the increasing demand for water, and achieving greater efficiency of use through improved water management practices. The result will be more economically resilient sectors in the face of climate-induced water scarcity.

20. Many of the country's efforts focus on agriculture because it is a key vulnerable sector. The Sustainable Farming Fund supports rural communities in achieving economic resilience in their farming practices, including through support for drought tolerant species, dryland management, irrigation efficiency, water feasibility studies and new forestry species.

21. In the United Kingdom, where climate change now threatens the viability of low-altitude ski resorts, there is an initiative to diversify into four-season resort activities such as mountain biking, climbing and walking. Other countries have also considered with some concern the impending plight of low-altitude ski resorts, including Austria, where some nine per cent of the gross domestic product is derived from winter tourism.

3. Sharing tools: institutions for spreading and promoting good practice

22. Some submissions described initiatives to disseminate existing knowledge and practices that could foster greater resilience in vulnerable sectors.

23. UKCIP has developed a database of adaptation actions, searchable by region, sector or adaptation type. The database, meant to be used in conjunction with other UKCIP tools that can identify risks and vulnerabilities, contains over 250 case studies that should help others identify actions appropriate to their own situations.

24. Earthwise Consulting Ltd, which is based in New Zealand, has compiled several publicly available resources for agricultural producers. *The View from the Ground: A Farmer Perspective on Climate Change and Adaptation*[3] goes over best practices and tools to help build climate change resilience on New Zealand farms. *Adapting to Climate Change in Eastern New Zealand*[4] does the same for Eastern New Zealand, cataloguing impacts, opportunities and strategies for adaptation at farm level.

25. The CBD secretariat notes the need to provide tools and methods that are adapted to local conditions and practices. One of its case studies, Soil and Water Research Management Network in Eastern and Central Africa, works to develop and disseminate effective strategies for farmers, communities and countries to cope with climate-induced adverse impacts and increased climate variability. The long-term goal is improved soil and water management to improve productivity, thereby increasing the competitiveness of the agricultural sector in the subregion.

4. Increasing resilience through planning and decision-making

26. Increasing sectoral resilience in the face of adverse climate-induced impacts requires changes in not only practice at the level of producers, but also in policymaking processes. The Land Use, Climate

[3] <http://www.mfe.govt.nz/publications/climate/view-from-the-ground-jul03/index.html>.
[4] <http://www.mfe.govt.nz/publications/climate/adapt-climate-change-eastern-nz-jul05/index.html>.

Change and Kyoto: Human Dimensions Research to Guide New Zealand Policy research programme aims to develop modelling techniques that will link natural scientific and socio-economic aspects of land-use change. The goal is to help derive recommendations for integrating adaptation into land-use management policies.

5. Recovery measures – post-adverse-event resilience

27. New Zealand's On-Farm Adverse Event Recovery Framework provides a number of 'safety-net' features to assist those affected by adverse events, including those related to climate change. Different levels of financial and other support are available based on a ranking of the nature of the adverse event, ranging from small scale to large scale. This example reinforces the point that for many producers resilience is not only about preventive measures, but also about contingencies for recovery from traumatic adverse impacts. Without such contingencies, uninsurable risks may add significantly to the costs of doing business.

C. Reducing reliance on vulnerable sectors

1. Vulnerability assessment as a prerequisite

28. As in the context of efforts aimed at increasing resilience, Parties stressed that an essential prerequisite is to undertake a vulnerability assessment. For example, as Malta was concerned about its heavy reliance on tourism as a contributor to its economy (over a third of its current account), it undertook a number of studies to quantify economic vulnerability and to identify the sectors likely to be affected by climate-induced adverse impacts, and in what manner.

29. Saudi Arabia, in its submission, noted the dearth of tools and methodologies available to address economic resilience and the reduction in reliance on vulnerable sectors. In particular, it noted the need to improve the quality of models to assess the impacts of climate change response measures in those countries that are highly dependent on income generated from the production, processing and export, and/or consumption, of fossil fuels and associated energy-intensive products. It urged collaboration between the UNFCCC secretariat and other organizational members of the scientific community to address these needs.

2. Diversifying away from vulnerable sectors

30. Several submissions cited the need for, and examples of practices of, diversifying away from sectors vulnerable to climate-induced adverse impacts. The CBD secretariat described a case study of sustainable dryland management support – Community-based Rangeland Rehabilitation in Sudan – that included as one of its elements a drive to diversify local production systems. The intent was to reduce reliance on rangeland resources, and simultaneously to reduce the pressure on those resources that threatened the viability of continued traditional practices.

31. In July 2007, the European Union (EU) launched a process of consultation on a Green Paper, *Adapting to Climate Change in Europe – Options for EU Action*. Among other things, the paper suggests that economic diversification away from vulnerable sectors is an appropriate course of action, in particular where the options for adaptation and strengthening resilience in that sector are found to be minimal. Malta, and to some extent the Netherlands, illustrates one problem with this approach: a given economy's options for diversification may be limited by its small size and natural resource constraints.

32. However, the EU observes, based on its work to date in this area, that there is no common approach to economic diversification that will effectively apply in all contexts. It argues, however, that there are certain policy measures that will facilitate economic diversification across the board. These are the types of measures traditionally used to improve the investment climate in a country: efficient

administration, the rule of law, a stable macroeconomic environment, efficient and effective infrastructure and manageable political risks. Also mentioned as potentially important are the education system, well-designed market-based instruments and a policy regime that encourages sustainable development.

III. Experiences, needs and concerns

33. It was noted that submissions concentrated more on themes related to increasing resilience in existing sectors of activity, and a broad number of examples of initiatives aimed at these themes were submitted. Relatively few examples were offered of efforts at diversifying away from vulnerable sectors of activity.

A. Needs and concerns

34. One prevalent issue was the need for improved tools for modelling and assessment of vulnerability to climate change impacts in the context of economic diversification. The most widely available tools are those that assess the physical impacts of climate change in various regions; these tools are in need of further refinement, particularly at the subregional level. Much less prevalent are models that link predictions of physical impacts to input–output models to assess sectoral vulnerability, although these are necessary for effective initiatives in this area.

35. There is also an urgent need for public participation in all the processes that increase resilience of and decrease reliance on, vulnerable sectors. Submissions indicated that the private sector was one of the key initiators of the necessary multi-stakeholder discussions, given that it includes practitioners who are most heavily affected by the current and expected climatic changes, and those who will be instrumental in the implementation of innovative practices or new economic activities, non-governmental stakeholders are key to successful efforts in this area.

36. Bolivia stressed the importance of tapping into the collected knowledge and practice outside of the formal scientific community, arguing that such knowledge and practice has the potential to complement that provided by the scientific community, given the appropriate facilitative mechanisms and approaches.

37. Submissions noted that fostering economic diversity is a matter of concern for a number of existing agencies and organizations outside of the UNFCCC process, and it was argued that the UNFCCC process on its own would not be able to make significant progress in this area. It was pointed out that it is necessary for the UNFCCC process to partner with other relevant organizations to make progress in reducing climate-related vulnerability through economic diversification.

38. A number of Parties expressed concern over the difficulty of undertaking economic diversification, particularly in countries where natural geography and other immutable factors combine to make alternative economic activities difficult.

B. Experiences and lessons learned

39. Experiences and lessons learned, as reflected in the various submissions, include the following:

(a) It is vitally important to involve all affected stakeholders in the processes of assessing vulnerability, formulating measures to increase economic resilience and reduce vulnerability, and in implementing those measures;

(b) Economic diversification is particularly appropriate where there are limited options for adaptation or to increase resilience within the existing sectors of activity;

(c) There is no single approach that will work in all contexts to foster the resilience of, or decrease reliance on, vulnerable sectors. It is important not only to assess vulnerability at the local level, but also to adapt tools and methodologies to their context in each case. In this pursuit, the local knowledge can be invaluable in complementing scientific expertise;

(d) Although no single approach is appropriate for all countries, some common measures can still be employed across the board. In particular, those measures that improve the investment climate in a country or region will inevitably make it easier to foster economic diversity;

(e) It is important to integrate climate change considerations into the planning and decision-making on economic diversification.

IV. Issues for further consideration

40. In view of the needs, concerns and experiences identified in the submissions, Parties may wish to consider the following questions in further work on increasing the economic resilience of, and reducing reliance on, vulnerable sectors:

(a) How can methodologies and tools be further refined? What further role would international cooperation play in this area?

(b) How can best practices on economic diversification be compiled and disseminated to practitioners and policymakers?

(c) Given the central role of the UNFCCC process, what is the best role for it in pursuing economic diversification as a buffer against climate-induced adverse impacts?

(d) How can climate change considerations be integrated into conventional planning and policymaking aimed at increasing the economic resilience of, and reducing reliance on, vulnerable sectors?

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