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**Policy issues: State of the environment**

**ADAPTATION TO CLIMATE CHANGE**

**Note by the Executive Director**

The present document contains information on the activities of the United Nations Environment Programme in the area of adaptation to climate change in response, in particular, to the Plan of Implementation adopted by the World Summit on Sustainable Development, which asked for actions at all levels to support initiatives to assess the consequences of climate change. The text of the note has been reproduced without formal editing.

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\* UNEP/GC.22/1.

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## BACKGROUND

### WSSD

1. The World Summit on Sustainable Development's (WSSD) plan of implementation asked for actions at all levels to support initiatives to assess the consequences of climate change.

### UNFCCC COP8

2. The Delhi Ministerial Declaration on Climate Change and Sustainable Development adopted at the 8<sup>th</sup> Conference of Parties of the UN Framework Convention on Climate Change (UNFCCC) on 1<sup>st</sup> November 2002 in New Delhi referred to adaptation to the adverse effects of climate change as a high priority for all countries.

### IPCC

3. The Intergovernmental Panel on Climate Change (IPCC), *Climate Change 2001: Impacts, Adaptation, and Vulnerability* assessed the sensitivity, adaptive capacity, and vulnerability of natural and human systems to climate change, and the potential consequences of climate change. The *Summary for Policymakers*, which was approved by IPCC member governments in Geneva in February 2001, describes the current state of understanding of the impacts, adaptation, and vulnerability to climate change and their uncertainties. The SPM provides a summary of the three work groups of IPCC. The second working group summary on impacts, adaptation, and vulnerability states the following:

4. Available observational evidence indicates that regional changes in climate, particularly increases in temperature, have already affected a set of physical and biological systems in many parts of the world. Examples of observed changes include shrinkage of glaciers, thawing of permafrost, later freezing and earlier break-up of ice on rivers and lakes, lengthening of mid to high latitude growing seasons, poleward and altitudinal shifts of plant and animal ranges, declines of some plant and animal populations, and earlier flowering of trees, emergence of insects, and egg-laying in birds.

5. The report states that adaptation has the potential to reduce adverse impacts of climate change and to enhance beneficial impacts, but will incur costs and will not prevent all damages. Human and natural systems will to some degree adapt autonomously to climate change. Planned adaptation can supplement autonomous adaptation, though options and incentives are greater for adaptation of human systems than for adaptation to protect natural systems. Adaptation is a necessary strategy at all scales to complement climate change mitigation efforts.

6. Observed changes in climate, their causes, and potential future changes are assessed in the report of Working Group I of the IPCC, *Climate Change 2001: The Scientific Basis*. The Working Group I report concludes, *inter alia*, that the globally averaged surface temperatures have increased by  $0.6 \pm 0.2^\circ\text{C}$  over the 20th century; and that, for the range of scenarios developed in the IPCC *Special Report on Emission Scenarios* (SRES), the globally averaged surface air temperature is projected by models to warm 1.4 to 5.8°C by 2100 relative to 1990, and globally averaged sea level is projected by models to rise 0.09 to 0.88 m by 2100. These projections indicate that the warming would vary by region, and be accompanied by increases and decreases in precipitation. In addition, there would be changes in the variability of climate, and changes in the frequency and intensity of some extreme climate phenomena. These general features of climate change act on natural and human systems and they set the context for the IPCC Working Group II assessment.

## UNFCCC

7. Article 4 paragraph 8 of the UN Framework Convention on Climate Change states that, "... the Parties shall give full consideration to what actions are necessary under the Convention, including actions related to funding, insurance and the transfer of technology, to meet the specific needs and concerns of developing country Parties arising from the adverse effects of climate change...."

8. Decision 5/CP.7 of the UN Framework Convention on Climate Change (UNFCCC) on the implementation of Article 4, paragraphs 8 and 9, of the Convention and Article 2, paragraph 3, and Article 3, paragraph 14, of the Kyoto Protocol lists a broad list of potential activities that needs to be undertaken by developing countries to reduce their vulnerability to potential climate change. It encourages Parties not included in Annex I to the Convention (non-Annex I Parties) to provide information, including in their national communications, and/or any other relevant information sources, on their specific needs and concerns arising from the adverse effects of climate change. The decision decides that the implementation of the following activities shall be supported through the Global Environment Facility and other bilateral and multilateral sources:

- (a) Information and methodologies:
  - (i) Improving data collection and information gathering, as well as their analysis, interpretation and dissemination to end-users;
  - (ii) Integrating climate change considerations into sustainable development planning;
  - (iii) Providing training in specialised fields relevant to adaptation such as climate and hydroclimate studies, geographical information systems, environmental impact assessment, modelling, integrated coastal zone management, soil and water conservation and soil restoration;
  - (iv) Strengthening existing and, where needed, establishing national and regional systematic observation and monitoring networks (sea-level rise, climate and hydrological monitoring stations, fire hazards, land degradation, floods, cyclones and droughts);
  - (v) Strengthening existing and, where needed, establishing national and regional centres and institutions for the provision of research, training, education and scientific and technical support in specialised fields relevant to climate change, utilising information technology as much as possible;
  - (vi) Strengthening existing and, where needed, establishing national and regional research programmes on climate variability and climate change, oriented towards improving knowledge of the climate system at the regional level, and creating national and regional scientific capability;
  - (vii) Supporting education and training in, and public awareness of, climate change related issues, for example through workshops and information dissemination;
- (b) Vulnerability and adaptation:
  - (i) Supporting enabling activities for vulnerability and adaptation assessment;
  - (ii) Enhancing technical training for integrated climate change impact and vulnerability and adaptation assessments across all relevant sectors, and environmental management related to climate change;

- (iii) Enhancing capacity, including institutional capacity, to integrate adaptation into sustainable development programmes;
- (iv) Promoting the transfer of adaptation technologies;
- (v) Establishing pilot or demonstration projects to show how adaptation planning and assessment can be practically translated into projects that will provide real benefits, and may be integrated into national policy and sustainable development planning, on the basis of information provided in the national communications from non-Annex I Parties and/or other relevant sources, and of the staged approach endorsed by the Conference of the Parties in its UNFCCC decision 11/CP.1;
- (vi) Supporting capacity-building, including institutional capacity, for preventive measures, planning, preparedness of disasters relating to climate change, including contingency planning, in particular, for droughts and floods in areas prone to extreme weather events;
- (vii) Strengthening existing and, where needed, establishing early warning systems for extreme weather events in an integrated and interdisciplinary manner to assist developing country Parties, in particular those most vulnerable to climate change.

9. The UNFCCC decision 5/CP.7 also states that the implementation of the following activities shall be supported through the special climate change fund and/or the adaptation fund, and other bilateral and multilateral sources:

- (a) Starting to implement adaptation activities promptly where sufficient information is available to warrant such activities, *inter alia*, in the areas of water resources management, land management, agriculture, health, infrastructure development, fragile ecosystems, including mountainous ecosystems, and integrated coastal zone management;
- (b) Improving the monitoring of diseases and vectors affected by climate change, and related forecasting and early-warning systems, and in this context improving disease control and prevention;
- (c) Supporting capacity-building, including institutional capacity, for preventive measures, planning, preparedness and management of disasters relating to climate change, including contingency planning, in particular, for droughts and floods in areas prone to extreme weather events;
- (d) Strengthening existing and, where needed, establishing national and regional centres and information networks for rapid response to extreme weather events, utilising information technology as much as possible;

10. Article 4 paragraph 9 of the UNFCCC states that, "The Parties shall take into full account of the specific needs and special situations of the least developed countries and their actions with regard to funding and transfer of technology." Within this article the UNFCCC decision 5/CP.7 decides to establish a work programme for the implementation of Article 4, paragraph 9, of the Convention, which would include following activities:

- (a) Strengthening existing and, where needed, establishing, national climate change secretariats and/or focal points to enable the effective implementation of the Convention and the Kyoto Protocol, in the least developed country Parties;
- (b) Providing training, on an ongoing basis, in negotiating skills and language, where needed, to develop the capacity of negotiators from the least developed countries to participate effectively in the climate change process;
- (c) Supporting the preparation of national adaptation programmes of action;

(d) Establishes a least developed country fund to be operated by an entity entrusted with the operation of the financial mechanism, under the guidance of the Conference of the Parties, to support the work programme for the least developed countries. This work programme shall include, *inter alia*, the preparation and implementation of national adaptation programmes of action. The national adaptation programmes of action will serve as a simplified and direct channel of communication of information relating to the vulnerabilities and adaptation needs of the least developed countries.

## CLIMATE CHANGE AND POVERTY

11. There are still over 1 billion people – two thirds of them women – living in abject poverty, and a further 2 billion people living on less than \$2 a day. While the last century saw massive falls in poverty and improved well being, poverty remains a scourge on the face of humanity. To address this challenge, the world's governments committed themselves at the United Nations Millennium Summit in 2000 to the Millennium Development Goals, including the over-arching goal of halving extreme poverty by the year 2015.

12. Climate change and climate variability is a serious threat to poverty eradication. While climate change will have global impacts, poor countries and poor people will be most vulnerable because of their geographical and climatic conditions, high dependence on natural resources, and limited capacity – human, institutional and financial – to cope.

13. Coping with climate variability is as old as human history, and is central to understanding human history, demography, folklore and religion. Much can be learned from the past and from how traditional coping strategies have developed to cope with mean climatic conditions, extreme weather events and year-to-year climate variability in relation to poverty alleviation. But the growing effects of climate change due to man made greenhouse gas emissions may stretch traditional coping mechanisms beyond their current ability to absorb climate related shocks and chronic long term climate change. Governments, civil, society and the private sector need to build on the existing coping mechanisms of poor people to ensure that climate change adaptation becomes a priority and is undertaken in ways that will benefit the poor.

14. Climate affects poor people's vulnerability, health and livelihoods and undermines growth, which is crucial for poverty reduction. Climate change will in many low income countries significantly increase the incidence of vector borne diseases, aggravate water stress, reduce food security and increase impacts from extreme weather events. There may be some beneficial impacts, such as longer growing seasons, and these opportunities must also be harnessed.

15. The impacts of climate change and climate variability are already being felt: natural disasters in the year 2000 – often climate related – affected 256 million people in developing countries, pushing many of them further into poverty. The cumulative effects of climate change are also significant: by the year 2100 some estimates are that an additional 2 billion people will be at risk of malaria as a result of climate change.

16. Without taking actions now to cope and adapt to climate change, it will be difficult to achieve the Millennium Development Goals (MDG) by the year 2015 and impossible to continue to achieve these goals beyond 2015. For example as the Poverty Reduction Strategy of Honduras states: "A disaster of even half the magnitude of (Hurricane) Mitch would make the Poverty reduction Strategy goals impossible to reach, at least in the medium term, and would probably delay the achievement of long term goals (p119)".

## ACTION TO STRENGTHEN CAPACITY TO COPE WITH CLIMATE CHANGE: PROMOTING SUSTAINABLE DEVELOPMENT

17. In order to cope with climate change there is a need to take incremental steps now. The first major area of action is that climate change makes it even more imperative that actions are taken which should have been taken to achieve sustainable development – but which are often not happening. These include broad

actions to strengthen the capacity of poor people and poor countries to cope with climate change (“adaptive capacity”) – such as improving human resources, strengthening institutional systems and putting public finances on a sound financial footing. There are also many actions needed in the natural resource management field – to ensure that resources most affected by climate change, such as water, land and coastal systems – are not further degraded and remain resilient to chronic climate change and sudden climate variability.

18. While changes in the climate due to greenhouse gas emissions are irreversible in the short to medium term, the impacts that this has particularly on developing countries, including the Least Developed Countries and Small Island States depend on decisions taken now. The cost of taking preventive action now is much lower than paying the price later. Already many governments, civil society groups and international organisations are paying more attention to the issues of climate change adaptation.

### **UNEP’s Implementation**

19. UNEP co-ordinated and catalysed international activities on climate change and response strategies within the international programme framework – the World Climate Programme and the Climate Agenda. The World Climate Programme (WCP) was established in 1979 by the first World Climate Conference. The Climate Agenda was an offshoot of the WCP initiated in 1993. UNEP is currently responsible for “*Studies of Climate Impact Assessments and Response Strategies to Reduce Vulnerability.*”

20. In the past one year UNEP initiated below mentioned activities on the subject pursuant to decisions UNEP GC 21/9A (The Climate Agenda and the World Climate Impact Assessment and Response Strategies Programme).

21. UNEP initiated a global project *Assessment of Impacts of and Adaptation to Climate Change (AIACC)* supporting 24 research activities in which more than 100 scientists from over 50 developing countries are participating. The twenty-four selected studies include 11 in Africa, 5 in Asia, 5 in Latin America and 3 in Small Island States. The project is funded by the Global Environment Facility (GEF), USAID and USEPA:

(a) AIACC is designed to enhance the scientific and technical capacities of countries to assess the impacts of climate change, and to design cost-effective adaptation response measures, which are needed to formulate national policy options and prepare for national communications;

(b) AIACC has also held training workshops, the first one was in February 2002 to provide overview on methods for assessment of climate change impacts, adaptation and vulnerability and to elaborate and refine the work plans for the regional assessment projects. This was followed by a two-week course on development and application of climate and socio-economic scenarios for impact, adaptation and vulnerability assessment in April 2002. The course was developed in partnership with the Tyndall Centre and hosted by the University of East Anglia, United Kingdom. The last was a two-week course in June 2002 on methods for impact, adaptation and vulnerability assessment. This course was developed in partnership with the Stockholm Environment Institute – Oxford and hosted by the Third World Academy of Sciences in Trieste, Italy. These three workshops provided training to more than 60 scientists from developing countries linked to AIACC projects.

22. On the request of Indian Government UNEP organised a *South Asia Expert Workshop on Adaptation to Climate Change for Agricultural Productivity* jointly with the Government of India and the Consultative Group on Agricultural Research (CGIAR) from 1-3 May 2002 in New Delhi. The workshop attracted more than 150 participants, including senior policy makers and agriculture scientists from India, Nepal, Bangladesh, Sri Lanka and Bhutan. The chairman of Subsidiary Body on Science and Technology (UNFCCC) also actively participated at the meeting:

(a) The main goal of the workshop was to identify strategic actions, nationally and internationally, to strengthen the planning process and decision making framework to mainstream adaptation to climate change in the context of agriculture. The Government of India is now developing a follow-up project with the assistance of UNEP and CGIAR;

(b) In efforts to provide policy tools in developing countries UNEP is supporting a pilot project to develop and test indicators for measuring vulnerability to climate change in the priority sectors to implement Article 4 paragraph 8 of the UNFCCC.

23. On request from the hosts of COP8, UNEP put together an exhibition on Adaptation to Climate Change at the 8<sup>th</sup> Conference of Parties to the UNFCCC. UNEP also participated in the writing of a multi-agency paper on “*Poverty and Climate Change – Reducing the Vulnerability of Climate Change*.” Ten multilateral and bilateral agencies signed the consultation draft for receiving comments by countries on a strategy to mainstream climate change activities in poverty eradication programmes supported by international agencies. The consultation draft was distributed at the 8<sup>th</sup> Conference of Parties of the UNFCCC in New Delhi, India on 25<sup>th</sup> October 2002.

24. In relation to decision UNEP GC 21/9 D (Programmatic support to atmosphere-related conventions) UNEP has been requested by 16 Least Developed Countries to assist them prepare the National Adaptation Programmes of Action (NAPAs). UNEP is working with all the LDCs to prepare proposals for GEF funding. In this context UNEP also participated in the LDC Workshop on NAPAs held in Dhaka, Bangladesh from 19 to 21 September 2002 and presented an outline of its technical assistance activities.

25. UNEP is also assisting African countries to prepare a background paper for consultations on a climate change action plan within the environmental action plan of NEPAD approved by AMCEN in early 2002.

26. UNEP has prepared a set of 28 graphics titled “*Vital Climate Change Graphics for Africa*” with its collaborating centre, GRID-Arendal as a special effort to provide easily understandable scientific information to policy makers working in Africa. The publication focussing on impacts and adaptation was formally released at UNFCCC COP8.

27. Based on the IPCC report highlighting the need for adaptation to climate change and UNFCCC decisions to prioritise activities on the subject, UNEP as a lead UN implementing agency is receiving increased requests from developing countries to assist them. In this context some of the following activities need to be initiated pending a clear decision by the Governing Council to establish a programme on adaptation to climate change within the UNEP secretariat:

(a) Organising regional workshops on adaptation to climate change for developing country Parties to increase the knowledge and understanding by developing country policy makers;

(b) Assisting countries in Africa and South Asia to develop projects on vulnerability assessment and mainstreaming adaptation to climate change;

(c) Assisting developing countries to prepare their second national communications to the UNFCCC that stresses more on adaptation to climate change.

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