

24 May 2004

ENGLISH ONLY

UNITED NATIONS FRAMEWORK CONVENTION ON CLIMATE CHANGE

**SUBSIDIARY BODY FOR IMPLEMENTATION**

**Twentieth session**

**Bonn, 16–25 June 2004**

**Item 8 (a) of the provisional agenda**

**Implementation of Article 4, paragraphs 8 and 9, of the Convention**

**Progress on the implementation of activities under decision 5/CP.7**

**Information on current and/or planned activities implemented in support of  
the various provisions of decision 5/CP.7.**

**Submissions from Parties and international organizations**

1. The Subsidiary Body for Implementation (SBI), at its nineteenth session, invited Parties and relevant international organizations to submit to the secretariat, by 15 May 2004, information on current and/or planned activities including, where appropriate, support programmes, to meet the specific needs and circumstances of developing country Parties arising from the adverse effects of climate change, implemented in support of the various provisions of decision 5/CP.7 (FCCC/SBI/2003/19, para. 44 (a)).
2. The secretariat has received seven such submissions. In accordance with the procedure for miscellaneous documents, these submissions are attached and reproduced\* in the language in which they were received and without formal editing.

---

\* These submissions have been electronically imported in order to make them available on electronic systems, including the World Wide Web. The secretariat has made every effort to ensure the correct reproduction of the texts as submitted.

**FCCC/SBI/2004/MISC.2**

GE.04-61383 (E)

CONTENTS

	<i>Page</i>
1. AUSTRALIA (Submission received 21 May 2004).....	3
2. IRELAND ON BEHALF OF THE EUROPEAN COMMUNITY AND ITS MEMBER STATES, supported by Bulgaria (Submission received 14 May 2004).....	8
3. NEW ZEALAND (Submission received 17 May 2004).....	18
4. SAUDI ARABIA (Submission received 13 May 2004).....	20
5. UNITED NATIONS DEVELOPMENT PROGRAMME (Submission received 17 May 2004).....	25
6. UNITED NATIONS EDUCATIONAL, SCIENTIFIC AND CULTURAL ORGANIZATION, INSTITUTE FOR WATER EDUCATION (IHE), CO-OPERATIVE PROGRAMME ON WATER AND CLIMATE (Submission received 12 May 2004).....	28
7. UNITED NATIONS EDUCATIONAL, SCIENTIFIC AND CULTURAL ORGANIZATION / WORLD METEOROLOGICAL ORGANIZATION, HYDROLOGY FOR THE ENVIRONMENT, LIFE AND POLICY (Submission received 12 May 2004).....	37

PAPER NO. 1: AUSTRALIA

AUSTRALIA

***Information on current and/or planned activities including, where appropriate, support programmes, to meet the specific needs and circumstances of developing country Parties arising from the adverse effects of climate change, implemented in support of the various provisions of decision 5/CP.7.***

**Introduction**

1. Australia is actively working to implement the provisions of *decision 5/CP.7* through constructive collaboration on a multilateral, regional and bilateral basis to address the adverse effects of climate change on developing countries.
2. Australia's program of assistance for developing countries in support of *decision 5/CP.7* is primarily managed by the Australian Agency for International Development (AusAID). The purpose of Australia's international development cooperation program is to advance the national interest by assisting developing countries to reduce poverty and achieve sustainable development. Measures to assist developing countries in meeting the adverse effects of climate change contribute to meeting this objective.
3. A number of other Commonwealth and State government agencies, including the Australian Greenhouse Office and Bureau of Meteorology, also provide significant assistance to developing countries to address climate change through the transfer of environmentally sound technology, capacity building, research and technical assistance.

**Current and Planned Activities and Support Programmes**

4. Australia comprehensively outlined its financial assistance, activities and transfer of environmentally sound technology to developing countries from 1996-97 to 2000-01 in its Third National Communication on Climate 2002 in support of *paragraph 4 decision 5/CP.7*.
5. Since 2000-01, updated information on Australia climate-related assistance to developing countries is available at the Australian Greenhouse Office website, the Bureau of Meteorology website and in AusAID's 2001-02 and 2002-03 annual reports. Planned assistance is available in AusAID's 2003-04 budget statement.
6. A comprehensive compilation of all climate-related assistance to developing countries will follow in Australia's Fourth National Communication in 2006.
7. This submission highlights the following aspects of Australia's assistance to address adverse impacts of climate change for developing countries:
  - multilateral assistance
  - regional assistance in the Asia-Pacific region
  - bilateral assistance to small island developing states in the Pacific
  - assistance through climate change partnerships.

### ***Multilateral Assistance***

8. Australia progresses the implementation of *decision 5/CP.7* multilaterally through the United Nations Framework Convention on Climate Change (UNFCCC), contributions to the Global Environment Facility (GEF) and the Intergovernmental Panel on Climate Change (IPCC).

#### *UNFCCC*

9. Australia places a high value on the exchange of information on experiences regarding the adverse effects of climate change and measures that might be taken to adapt to these. Consistent with *paragraph 5 decision 5/CP.7*, Australia has actively participated in information exchanges arranged by the UNFCCC Subsidiary Body for Implementation Secretariat, including the New Delhi workshop on local coping strategies and technologies for adaptation in November 2003<sup>1</sup>.
10. In addition to its core funding contribution to the UNFCCC budget, Australia has contributed to the Trust Fund for Participation in the UNFCCC Process, including some targeted funding for the participation of experts from the Asia-Pacific region.
11. Australia has been actively working to improve access by all Parties to existing sources of data and analytical tools by proposing the development of a data interface under the UNFCCC<sup>2</sup>.
12. The establishment of a Global Climate Observing System Cooperation Mechanism, that will provide a means to support improvements in systematic observations in developing countries, arose from an Australian proposal.

#### *GEF*

13. Consistent with *paragraph 7 decision 5/CP.7* Australia has increased its financial commitment to the GEF by pledging A\$68.2 million for the third replenishment period (2003-05). This is a increase of almost 58 percent since the second replenishment period. Since 1991, Australia has committed over A\$184 million to the GEF. In the period since its establishment (1991-2002), the GEF has allocated almost 37% of its program funding to climate change (about 35% in 2002).

#### *IPCC*

14. Australian scientists and researchers contribute constructively to the IPCC work in assessing the state of knowledge on climate change. The IPCC's work provides important guidance and information for all countries relevant to addressing the adverse effects of climate change.

#### *Other international forums*

15. In addition to the major multilateral forums, Australia participates in and contributes financially to a number of policy forums that include a focus on building capacity through informal policy dialogue, to equip officials with the skills and knowledge to participate more effectively in negotiations. These include the Centre for Clean Air Policy dialogues and the Annex I Experts Group.

### ***Regional Assistance***

16. In the Asia-Pacific region, Australia engages in practical climate-related cooperation with a range of regional bodies and programs.
  - a. Australia is an active participant in the Asia Pacific Network for Global Change Research that develops projects that contribute to climate science on local and regional scales,

---

<sup>1</sup> FCCC/SB/2003/INF.2

<sup>2</sup> FCCC/SBSTA/2003/15

assessing climate impacts and adaptation, and enabling countries to meet their reporting commitments under the UNFCCC (7(a)(vi) decision 5/CP.7).

- b. Australia currently contributes core funding of A\$1.4 million per annum to the South Pacific Regional Environment Program that has an extensive program to protect and improve the environment including strengthening the capacity of the Pacific island countries to respond to climate change, climate variability and sea level rise (7(b)(ii), (vi) and 8(d) decision 5/CP.7). Australia also contributed over A\$20,000 to fund a workshop organised by SPREP, the Foundation for International Environmental Law and Development and World Wildlife Fund South Pacific Program, to build international negotiating capacity of Pacific island officials.
- c. Australia contributes A\$1.8 million annually to the South Pacific Applied Geoscience Commission that progresses the sustainable development of natural, non-living resources and reduces the vulnerability of the region to natural hazards and disasters (8(b)(vi) and (vii) decision 5/CP.7).
- d. Australia provides A\$8.2 million annually for the Secretariat of the Pacific Community that provides technical and scientific support and capacity supplementation for land, marine and social resources including response to climate change (7(b)(ii) and (iii) decision 5/CP.7).
- e. Australia has constructively engaged in the Japan-initiated Asia-Pacific Seminar on Climate Change. It has provided a forum for information sharing and discussion on climate change for over a decade. Australia will co-host the 14<sup>th</sup> Asia-Pacific Seminar on Climate Change with Japan in Sydney, Australia in September 2004 (7(a)(vii) decision 5/CP.7).
- f. Australia engages constructively with the APEC Energy Working Group that has pursued projects focussing on energy efficiency, renewable energy and clean fossil fuel energy (7(a)(vii) decision 5/CP.7).
- g. Australia is involved in World Summit on Sustainable Development Type II partnerships, including the Asia-Pacific Network for Global Change Research CAPaBLE project, the Clean Energy Initiative, the APEC Energy Working Group project and the Asia-Pacific Network on Climate Change.

#### ***Bilateral Assistance in the Pacific***

17. UNFCCC Parties have recognised that Small Island Developing States (SIDS) may be particularly vulnerable to climate change impacts and require special assistance. Consistent with this, Australia's assistance for climate change adaptation has focussed on SIDS in the South Pacific, including Samoa, Fiji, Tonga, Vanuatu, Kiribati, Tuvalu, the Solomon Islands and Papua New Guinea.
18. Australia's climate-related action in the Pacific region includes practical assistance in monitoring sea levels, improving climate prediction services, enhancing renewable energy technology options and directly addressing vulnerability and adaptation. Project examples are outlined below.

### Example 1: Sea-Level and Climate Monitoring

**Contribution:** A\$9.4 million (phase III)

**Duration:** 2000–05

**Contractor:** Australian Marine Science and Technology Ltd

**Coverage:** 12 Pacific island countries

This project was developed in response to Pacific island concerns about climate change, climate variability and sea-level rise. The project is archiving sea-level and climate data that provides information about sea-level variability and change required to sustainably manage coastal resources and to respond to long-term trends. It aims to develop the capability within counterpart agencies to acquire, manage and disseminate data and information about sea-level variation.

The project builds on the achievements of two earlier Australian-funded project phases. Phase I (1989-1995) saw the installation of 11 sea level monitoring stations around the Pacific, a transmission network and computer databases to collect, store and analyse data from the stations. Phase II (July 1995-March 2001) emphasised training, public education and the provision of monthly data reports that can be used by partner governments in vulnerability studies, integrated coastal management programs and contingency planning. Australia's main contribution to the third project phase will be technical specialists to work with national and regional counterpart staff. Australia is also funding communication and telemetry costs, database establishment and maintenance, and the procurement and maintenance of monitoring equipment.

### Example 2 - Enhanced Application of Climate Predictions

**Contribution:** A\$2.2 million

**Duration:** 2002–05

**Implementer:** Bureau of Meteorology

Australia's Bureau of Meteorology aims to provide Pacific island countries with better climate prediction services to assist with disaster management, land use planning, and social and economic planning and investment in, for example, agriculture and tourism. The project is providing personal computer-based stand-alone statistical climate prediction services that are tailored to specific needs and can be adopted for planning purposes.

### Example 3: Vulnerability and Adaptation Initiative

**Contribution:** A\$4 million

**Duration:** 2002–09

Pacific island countries need assistance to adapt to the future impact of extreme weather events such as cyclones and climate change. Early action is needed from Pacific countries and regional organisations to identify, evaluate and trial adaptation interventions. This initiative aims to build Pacific island country capacity to adapt to the future impact of extreme weather events and climate change and strengthen regional collaboration between key stakeholders.

19. In addition to direct climate change adaptation assistance, Australia provides assistance relating to governance, transport, agriculture, coastal management, water management and fisheries that also increases the capacity of Pacific island countries to respond effectively to climate change. For example, the A\$6 million *Department of Environment and Conservation Strengthening Project* has increased Papua New Guinea's capacity to coordinate climate change responses .

### ***Assistance through Climate Change Partnerships***

20. Australia is currently pursuing collaborative programs on climate change with the United States, Japan, New Zealand, the European Union and China. These partnerships include adaptation projects in the Asia Pacific region, for example:
  - a. *Applications of Ocean Observations for the Pacific Islands* under the Australia-US Climate Action Partnership
  - b. *Regional Climate Information System in the Pacific* under the Australia-New Zealand Bilateral Climate Change Partnership.
21. Australia's partnership with China, announced in October 2003, is also consistent with decision 5/CP.7 by addressing climate change in the following areas:
  - a. climate change policies
  - b. climate change impacts and adaptation
  - c. national communications (greenhouse gas inventories and projections)
  - d. technology cooperation
  - e. capacity building and public awareness.

### **Developing and Evaluating Assistance**

22. Australia's assistance is needs-based and partner-country driven, in accordance with *paragraph 1 decision 5/CP.7*. Assistance is established through extensive consultations and jointly developed partner-country strategies that allow developing countries to pursue specific activities most appropriate to their national circumstances.
23. Consistent with *paragraph 2 decision 5/CP.7*, Australia's assistance to developing countries is subject to a comprehensive assessment and evaluation process through the "Performance Information Framework"<sup>3</sup> to prevent maladaptation and ensure adaptation actions are environmentally sound and sustainable.

---

<sup>3</sup> [http://www.ausaid.gov.au/anrep03/pdf/anrep02\\_03.pdf](http://www.ausaid.gov.au/anrep03/pdf/anrep02_03.pdf) page 14-15

PAPER NO. 2: IRELAND ON BEHALF OF THE EUROPEAN COMMUNITY  
AND ITS MEMBER STATES

**SUBMISSION BY IRELAND ON BEHALF OF THE EUROPEAN COMMUNITY AND ITS  
MEMBER STATES**

**This submission is supported by Bulgaria**

**Dublin, May 14, 2004**

**Subject: Implementation of Article 4, paragraphs 8 and 9 of the Convention;  
Progress on the implementation of decision 5/CP7**

The EU welcomes this opportunity to provide information on activities relevant to articles 4.8 and 4.9 of the Convention which address the needs of developing countries arising from the impacts of climate change.

**1. Goals and Principles**

The EU acknowledges the vulnerability of developing countries to the impacts of climate change and that the adverse effects will disproportionately affect poorer countries with economies predominantly based on natural resources and related economic sectors. The EU is committed to helping developing countries take action to address both the causes and effects of climate changes and recognises that action taken today to mitigate climate change reduces the need for and the cost of future adaptation action.

The EU is firmly committed to assisting developing countries in the fight against poverty, the fulfilment of the Millennium Development Goals and the promotion of sustainable development. Climate change forms an integral part of this agenda given the multiple ways it affects societies and interacts with place-specific vulnerabilities. It is important therefore that any response to climate change is conceived within, and in coherence with, existing development frameworks rather than in isolation from them.

The EU believes that development strategies and actions to combat climate change should be country owned and driven and that developing countries themselves must identify and respond to environmental issues. National Communications and NAPAs are vital mechanisms for the transfer of this information, while they provide useful information at country level for incorporation into development planning.

Climate change concerns often have low priority in developing countries and there is a need to raise the profile of climate change in order to assure the sustainability of development investments. Efforts to control the causes of climate change and early identification of adaptation measures are important first steps in tackling climate change.

In response to these issues, the EU has developed a 'Strategy on Climate Change in the Context of Development Cooperation' which aims to assist partner countries in meeting the challenges posed by climate change. The strategy calls for the incorporation of climate change concerns into development cooperation so that they receive a higher profile in priority-setting in a way that is completely coherent with the overarching objective of poverty reduction. The Strategy identifies four strategic priorities and places an emphasis on responses to adaptation and vulnerability;

- (i) Raising the policy profile of climate change
- (ii) Support for adaptation
- (iii) Support for mitigation and low carbon development
- (iv) Capacity development



The EU is currently developing an Action Plan to accompany this strategy in consultation with partner countries. It is hoped that this will result in concrete actions which the EU and its partner countries can work on together to address the effects of climate change in the framework of development cooperation.

## **2. Approaches to climate change in developing countries**

The EU strongly believes that the objectives of the Convention should not be pursued as stand alone activities, rather opportunities to rationalise and simplify links and complementarities between the various development activities and strategies should be sought. This implies that adaptation should be incorporated into all national, sub-national, and sectoral planning processes. In the least developed countries NAPAs should be prepared and considered in the context of PRSPs and national sustainable development strategies. In turn, this strategic planning should be coupled with the integration of specific adaptation measures into national and sectoral development priorities.

There are several advantages to this approach:

1. It ensures consistency between the needs of adaptation and other national priorities such as poverty eradication. This consistency is invaluable in preventing incoherence between priority approaches, for example, through development initiatives which inadvertently increase vulnerability to climate change.
2. By ensuring consistency it is also possible to enhance synergies between adaptation and other development priorities. For example, win-win and 'no regrets' measures can have a positive impact on poverty reduction while increasing resilience and reducing harmful effects on the atmosphere.
3. It encourages ministries with a broad mandate, such as finance or planning, to be fully engaged in adaptation. These ministries are in a powerful position to plan for the impacts of climate change and to allocate resources for adaptation.
4. By taking adaptation into account in national decision making processes and by giving responsibility for coordination to the Ministry of Finance or Planning, it is easier to integrate climate impacts into macroeconomic planning and budgetary processes. This will prevent the diversion of limited funds to deal with disaster relief and recovery away from long-term development priorities. It also ensures that funds for adaptation are balanced against competing priorities and that funds are available in the long term to meet recurrent costs of adaptation measures.
5. National growth strategies are protected from the short and long term impacts of climate change if adaptation responses are planned for at national level with a corresponding budget allocation.
6. The incorporation of climate change concerns into national economic planning means that resource needs for adaptation can be channelled through national development budgets with the support of bilateral and multilateral agencies. This assures access to substantially more funds than are available through climate specific funds (LDCF, SCCF).

National Communications, NAPAs and submissions from developing country Parties in recent years have highlighted key areas where they require support to facilitate national planning for adaptation. Furthermore, as NAPAs are being developed a clearer picture will emerge as to the actions and interventions required by LDCs in the area of adaptation. Current priorities include capacity development, technology transfer and vulnerability assessment and the following sections present the tools available to progress work in these areas.

## **2.1 Development and transfer of technologies**

Support for the transfer of technology is a key area targeted in Article 4.8 of the Convention. The development and transfer of technology to meet the challenges of climate change requires cooperation between developed and developing countries. The EGTT scoping paper on adaptation technologies and the SBSTA agenda item on vulnerability and adaptation to climate change are two ways in which the Convention is addressing this issue.

The EU and its Member States provide bilateral and multilateral funding for the development and transfer of technologies and will continue to do so in the future with a focus on both mitigation and adaptation technologies. In addition, the EU recognises the important role the private sector will play in developing sustainable solutions to climate change.

The EU is committed to promoting north-south and south-south sharing of information, experience and know-how to address the effects of climate change and to create enabling environments for technology transfer.

## **2.2 Capacity building**

Capacity development underlies the success of all measures taken to address climate change in developing countries. Capacity development has a direct impact on increasing adaptive capacity and underpins all aspects of EU support to combat climate change. The EU provides resources for training in the preparation of NAPAs, National Communications and NCSAs, thereby increasing capacity in developing countries to identify and prioritise adaptation needs.

The EU supports initiatives which increase capacity to monitor, control and reduce the impacts of climate change. The EU works within the UNFCCC Framework for Capacity Building to support the capacity building needs identified by developing country Parties (see EU submission on Capacity Building in FCCC/SBI/2004/MISC.1).

## **2.3 Vulnerability assessment and adaptation planning**

The EU supports research, technology transfer and capacity building to assess vulnerability of key sectors to climate change in developing countries. NAPAs and National Communications contain vital information to contribute to vulnerability assessment and the development of these tools is supported by the EU through UNFCCC funding channels. The EU is the main contributor to the Least Developed Countries Fund for climate change (LDCF) and as of April 15, 2004 has contributed EUR 34,835,019, or 86% of the total contributions.

The EU is involved in many programmes working to incorporate adaptation into general government policies and disaster prevention planning (see examples in annex). The EU also works with local communities, research and government institutions in developing countries to assist them to find ways to reduce risk and plan for adaptation.

## **3. Current and future action**

The EU addresses the adverse effects of climate change in developing countries through a wide range of country driven development programmes targeting poverty alleviation, food security, natural resource management, disaster preparedness and recovery, and training and research. These programmes respond to adaptation needs based on, for example, increasingly climate variability, and in the future we will need to have more planned interventions such as the examples outlined in annex 1.

The following paragraphs describe four key sectors addressed by the EU in relation to climate change; 1) water resources; 2) food security; 3) disaster prevention and 4) health. All actions in relation to these sectors take place within the framework of development cooperation and are an integral part of the EU's commitment to reduce poverty. A short discussion of each sector expands on their importance in the context of climate change.

### **3.1 Water resources**

Water is essential for life and health and one of the Millennium Development Goals is to halve the proportion of people who live without a sustainable supply of safe drinking water. However, climate change will contribute to water scarcity and it is estimated that 5 billion people will be affected by water shortages by 2025 (IPCC, 2001). Poor countries and areas already suffering water shortages will suffer from a decline in the supply and quality of fresh water.

As women often have responsibility for household water supply, methods need to be developed to monitor the ways in which the effects of the climate on water resources affect women and men respectively and to identify ways to reduce vulnerability.

Information on the ways in which variations and changes in the climate can affect the supply and quality of water resources is urgently needed and can be supplied through climate observatories and models. It is particularly important that the attention of those responsible for water use planning is drawn to the impacts of climate change on water supply and that this information is taken into account when planning for future sustainable use of water resources.

### **3.2 Food security**

Climate change has serious repercussions on food security and will have to be taken into account locally, nationally and globally if we are to succeed in halving the proportion of people who suffer from hunger by 2015.

The fields of agriculture, forestry and fisheries are related to the climate issue, as they present both adaptation needs and the capacity to reduce emissions of carbon dioxide. Research into applied farming methods and traditional practices, particularly in arid areas or semi-arid areas, and the possibility of building on this knowledge in the countries concerned, should be intensified. Development activities aimed at improving food security need to acknowledge the links between water, agriculture, forestry and fisheries, and the potential negative effects on food security if climate change is not taken into account in the planning process.

### **3.3 Disaster prevention**

Over two-thirds of all disasters are climate or weather-related, principally through drought, flooding, and storms. These disasters have inflicted high tolls in terms of lives lost and costs due to damaged infrastructure.

Climate change contributes to the more frequent occurrence of disasters such as hurricanes, cyclones, floods and drought and to the associated problems of famine, outbreaks of disease, water shortages and the displacement of people. It is essential that national and international efforts to increase disaster preparedness and disaster recovery take the impacts of climate change into account and include measures to address climate change amongst actions to reduce risk.

In the climate change arena, policymakers are grappling with how to respond to a changing climate and provide substance to the idea of adaptation. The conceptual and implementation challenges for policy makers associated with disaster reduction and adaptation to climate change are similar and will benefit from a coordinated approach to harmonize policy and maximize resource use.

### **3.4 Health**

In order to halt and begin to reverse the incidence of malaria and other major diseases by 2015, it is necessary to take the effects of climate change into account and to strive to reduce the emissions which cause global warming.

Malaria and dengue fever are examples of fatal diseases that can be spread to new areas as a result of a warmer climate. There is a need to develop our knowledge base on the spread of these diseases, to find appropriate response and control measures, to raise awareness of the relationship with climate change and explore possible countermeasures.

The spread of vector and water borne diseases is accelerated by factors such as climate change, population growth and poverty. Climate change can also contribute to malnutrition as a consequence of drought, while flooding and lack of a clean water supply increase the risks of diarrhoea and outbreaks of diseases such as cholera. Mothers and children are especially at risk meaning that climate change presents a serious obstacle to achieving Millennium Development Goals 4 and 5 which address child mortality and maternal health.

## Examples of EU actions on the implementation of 5/CP7

### 1. Publications and studies on climate change and adaptation

#### "Poverty and Climate Change: Reducing the vulnerability of the poor through Adaptation"

This paper was prepared and co-signed by 10 agencies: AfDB, ADB, DFID, EC, BMZ, DGIS, OECD, UNDP, UNEP and the World Bank. The paper is aimed at broadening understanding of the linkages between climate change and poverty, and to facilitate a common approach to adaptation to climate change within the donor community and beyond. The initial print run of 7500 copies has been distributed and a reprint is underway. The paper is widely quoted and was helpful in formulating the UK government response to a parliamentary enquiry on climate change and sustainable development and in informing the EC Communication on Climate Change in the context of Development Cooperation. The EU is working with other agencies to implement the recommendations of the paper with partner countries (e.g. UNDP/DFID comprehensive disaster management programme in Bangladesh).

#### Multi-agency paper on disaster risk reduction and climate change adaptation

The UK and ISDR are leading a collaborative multi-agency effort to explore the linkages between disaster risk reduction and climate change adaptation policy. A scoping study has been initiated and will be discussed by a wide range of partners in the coming months.

Over two-thirds of all disasters are climate or weather-related, principally through drought, flooding, and storms. These disasters are inflicted high tolls in lives lost and very large costs to damaged infrastructure. Of particular concern is that the reported impacts of climate and weather-related events have grown substantially over the last thirty years during which data are available. The reasons for the increases are not completely clear but they are thought to be largely due to growing social and economic vulnerabilities. It is clear that many communities and countries are not resilient to the natural variability of the climate.

In the climate change arena, policymakers are grappling with how to respond to a changing climate and provide substance to the idea of adaptation. The conceptual and implementation challenges for policy makers associated with disaster reduction and adaptation to climate change are similar and will benefit from a coordinated approach to harmonize policy and maximize resource use.

#### "Dialogue on Water and Climate (DWC)"

A worldwide initiative launched in 2001 which is hosted and sponsored by the Netherlands government. The objective of the DWC is to initiate a dialogue between diverse stakeholders to seek out and assemble scientific knowledge, generate widespread awareness, identify policy and management options that build capacity to cope with the adverse effects of climate change, and make this knowledge available to the most affected communities and decision makers. A synthesis report "Climate changes the water rules" was published in 2003. Further information is available on [www.waterandclimate.org](http://www.waterandclimate.org).

#### Pilot study on the Application of Disaster Risk Reduction Approaches in the Mainstreaming of Adaptation in Development Projects

This is a UN ISDR/GTZ collaboration which will be supported by the German Federal Ministry for Economic Cooperation and Development. The project aims to build bridges and engage people involved in disaster risk reduction, climate change adaptation and development cooperation. The project will develop information at global and national level on practical methods for incorporating disaster risk

reduction into existing projects concerned with the mainstreaming of climate change adaptation and will conduct national-level workshops on how to tailor and implement the methods.

#### Climate scenarios assessment project

This programme supported by Italy contributes to the carrying out of studies on Climate Change in Algeria. It provides training of high level personnel in climate science and has established a an exchange programme for scientists and administrators at post-doc and senior level in Universities, Research Agencies and Governmental Administrations, in order to raise awareness, understanding and scientific knowledge of climate change and its impacts. The programme will result in studies carried out in Algeria in the fields of Climate Change, Environment Protection and Sustainable Development.

## **2. Activities in the area of vulnerability assessment**

#### Netherlands Climate Change Studies Assistance Programme (NCCSAP), phase 1 and 2.

This programme has been in operation since 1996 in Bhutan, Bolivia, Colombia, Ghana, Mali, Senegal, Yemen, Kazakhstan, Mongolia, Zimbabwe, Costa Rica, Ecuador, Suriname, Bangladesh, Mozambique, Guatemala, Tanzania and Vietnam. It aims to promote climate change action, based on the precautionary principle, as a core government policy. It does this through providing support for the integration of climate change considerations into cabinet/government agendas. It also works to promote informed argument in the media particularly about adaptation in the context of poverty eradication.

Country studies consisting of technical and sectoral studies, including vulnerability assessments and summaries for policy makers have been drawn up in the first phase of the programme. These have provided inputs to national communications and national research capacities have been enhanced in the process.

#### Small Valley Flood Alert and Vulnerability Reduction Programme

This programme assesses vulnerability to floods in Honduras, Guatemala, Nicaragua and designs and implements Early Alert Systems in targeted watersheds. The programme was set up in response to the damage caused by Hurricane Mitch in 1998 and is supported by Development Cooperation Ireland. Case studies from pilot projects showed that vulnerability assessment and reliable advanced warnings allow residents to take life-savings measures before it's too late.

The main activities carried out by the programme are:

1. Vulnerability analysis and the identification of risk mitigation measures
2. Design and installation of a flood alert system
3. Community training for flood emergency preparedness.

The programme has demonstrated the effectiveness of community-based flood management approaches which increases capacity to evacuate communities before floods or landslides cause casualties and deaths. Direct community participation in all aspects of the programme from hydrologic monitoring to vulnerability assessment and reduction has contributed to the sustainability of the programme which will be expanded to cover 20 valleys in each country and to further strengthen regional capacity through training, technology transfer and technical assistance.

#### Survey and evaluation on ecological vulnerability in Central China

This programme, supported by the Italian government, assesses the current natural environment status in sample areas in Central China using remote sensing, primary data and secondary sources. State-of-the-art methodologies for the survey and evaluation of ecological environments are being developed to assess

vulnerability to the impacts of climate change and other environmental factors. The study will result in an exhaustive database of environmental/ecological data which will be used to identify and plan for emerging ecological problems in Central China.

### **3. Incorporating climate risk into national planning**

#### *Integration of adaptation concerns into local disaster risk management*

The German Federal Ministry for Economic Cooperation and Development supports a project in Mozambique which is aimed at integrating climate change impacts into existing and evolving disaster prevention programmes with a particular focus on the River Buzi. The project will actively support local disaster prevention committees and structures, thereby raising awareness of climate change impacts in both the local population as well as with decision makers. It will also support the NAPA process, focussing on disaster prevention as an aspect of adaptation.

#### *Lake Nasser Flood and Drought Control*

The Netherlands supports this programme which integrates climate change uncertainty into planning in the Lake Nasser area. Activities include the development of a planning support system to analyze management scenarios for Nile inflows and releases, and the development of scenarios to tackle floods and droughts caused by climate change, taking into account Nile water management plan as an integral part of national water policy.

#### *Impacts of climate change in India*

The UK government funds a collaborative project with the Indian Ministry of Environment and Forests (MOEF). The project involves eight Indian research institutes assessing the impacts of climate change on sea level variability, water resources, forests, agriculture, health, energy, industry and transport infrastructure. The research programme includes the sharing of knowledge through technology transfer and capacity building - for example, with developing country scientists working with UK research institutes.

#### *Integrated Coastal Zone Management*

The Netherlands supports programmes in integrated coastal zone management in Mozambique, Sri Lanka and Vietnam. The programmes aim to strengthen national technical and management capabilities to deal with evolving coastal zone management demands due to the impacts of climate change. Ireland supports integrated coastal zone management in Tanzania with a focus on community participation in resource management, risk reduction and sustainable livelihoods. The impacts of climate change and the need to react to and plan for changing pressure on coastal resources is a key feature of the programme. Coastal zone management projects are supported by Denmark in Egypt, Cambodia and Malaysia, helping communities to incorporate climate risk into their resource management planning, and Italy supports an integrated coastal and river basin management programme for East China and the Yellow Sea.

### **4. Action on adaptation**

#### *Adapting to climate change*

The development of adaptation options for glacial areas in Nepal is supported by the Netherlands. Yearly assessment and evaluation of the Tsho Rolpa glacier lake allow the development of adaptation options for future management.

*Establishing an integrated approach to climate change risk management at national and local level in Bangladesh*

The Comprehensive Disaster Management Programme supported by the UK in Bangladesh has established a climate change component as part of a wider programme of work with the Government of Bangladesh and UNDP designed to enable more anticipatory approach to disaster management. The climate change component is designed to establish a mechanism that facilitates management of long term climate risks and uncertainties as an integral part of national development planning.

The programme includes the development of a climate change work programme that is part of core Ministry of Environment and Forest business and is effectively coordinated with the activities of other organizations in order to mainstream climate change risks in development. This will enable the Ministry to take a lead in climate impacts and adaptation issues while ensuring the development of mechanisms and tools to ensure that climate change considerations are mainstreamed in development decisions. The programme also builds adaptive capacity at all levels by raising awareness of climate risks options for adapting to future climate changes.

*Gergera Valley Integrated Watershed Management*

This programme in the Tigray region of Ethiopia is supported by Development Cooperation Ireland and aims to develop water conservation and erosion control measures that will allow local communities to adapt to an increasingly variable climate. Activities include forest conservation, reforestation, small-scale hydrological engineering and improved farming techniques. These measures better equip local populations to survive the negative impacts of climate change (drought, intense rainfall events) and contribute to carbon sequestration.

*Watershed Management As a Tool for Adaptation*

Reacting to the request of the Indian Ministry of Agriculture, the German Federal Ministry for Economic Cooperation and Development seeks to supplement an existing watershed management project with a special adaptation component. For the last decade, the Indo-German Bilateral Project Watershed Management has been implementing innovative watershed management activities jointly with State Government Department and local NGOs in 7 Indian states. The new component will research and discuss traditional coping strategies of the local population to water-related stresses. It will develop selection criteria for prioritising watersheds most vulnerable to the impacts of climate change. With the participation and involvement of the local communities the project aims to raise awareness of adaptation needs and to identify adaptation options.

*The Climate Protection Project – Tunisia*

The project is funded by the German Federal Ministry for Economic Cooperation and Development has mitigation and an adaptation component. The adaptation component will identify and prioritise the most vulnerable sectors to the impacts of climate change. Tunisia will face severe problems with water availability and therefore the focus will be on the vulnerability of the agricultural sector and natural resources in general. Climate models and projections will be coupled with data on demand and supply of agricultural goods and services to create a basis on which a long-term strategy for adaptation interventions can be discussed with all relevant stakeholders on the national and sub-national level. Both the assessment and the strategy will enable the Government to integrate climate change impacts into their planning for agriculture, economic development and trade for the next decades. The project will also support the institutional framework needed to conduct a stakeholder driven dialogue to design an adaptation strategy for the agricultural sector in Tunisia.



*Water Resource Management Program of the Rio del Plata basin*

The Italian Government co-finances this project with the GEF which aims to strengthen the efforts of the governments of Argentina, Bolivia, Brazil, Paraguay and Uruguay to implement their shared vision for the environmentally and socially sustainable economic development of the la Plata Basin. Particular attention is given to integrated management of water resources and adaptation to climatic change and variability. The project, which represents the first phase of a possibly multi-phase effort, will harmonise and prepare, in co-operation with the Basin countries, a programme of strategic actions for the sustainable management of the la Plata Basin.

PAPER NO. 3: NEW ZEALAND

CURRENT AND/OR PLANNED ACTIVITIES INCLUDING, WHERE APPROPRIATE, SUPPORT PROGRAMMES, TO MEET THE SPECIFIC NEEDS AND CIRCUMSTANCES OF DEVELOPING COUNTRY PARTIES ARISING FROM THE ADVERSE EFFECTS OF CLIMATE CHANGE, IMPLEMENTED IN SUPPORT OF THE VARIOUS PROVISIONS OF DECISION 5/CP.7

*Submission by New Zealand  
15 May 2004*

New Zealand is pleased to submit the following overview of its current and planned activities to meet the specific needs and circumstance of developing country programmes Parties arising from the adverse effects of related to climate change, implemented in support of the various provisions of Decision 5/CP.7.

A key area of focus for New Zealand in supporting the implementation of Decision 5/CP.7 is the Pacific region, with which we have close historic and human links. It is also a region that is particularly vulnerable to the adverse effects of climate change. We are working closely with our Pacific partners in responding to their adaptation and capacity-building needs with respect to both long term climate change and short term climate variability.

In 2003, Leaders of the Pacific Islands Forum highlighted the importance of identification and implementation of ‘a range of adaptation options, particularly for extreme weather and climate events...and for them to be maintained and well-funded through various means, including through the Global Environment Facility (GEF)’.

To this end, New Zealand has expressed its support for four climate change-related Type II initiatives in the Pacific region: Adaptation; Vulnerability; Water and Sanitation; and Energy. These are Pacific priorities identified by Pacific Island Developing States and developed into Type II partnership initiatives within participatory preparations for the World Summit on Sustainable Development. The region is continuing to progress these initiatives. New Zealand is also strongly supportive of the process, mandated by Pacific Island Forum Leaders, to review the region’s Framework for Climate Change, Climate Variability and Sea-Level Rise. The New Zealand Agency for International Development (NZAID) sees this review as being particularly significant for confirming overall climate change priorities for the Pacific and providing donors such as NZAID with clear directions for commitment of new climate change development assistance.

NZAID also provides support to the region’s key environmental agencies, the South Pacific Regional Environment Programme (SPREP) and the South Pacific Applied Geoscience Commission (SOPAC). This support goes towards the agencies’ on-going work programmes, that include, among a raft of other activities: hazard assessment and risk management strategies; strengthening of the meteorological services and climatological capabilities of Pacific Islands countries; the development of frameworks for analysing impacts and vulnerability to climate change; the development of adaptation response measures; and institutional capacity-building.

New Zealand is providing additional technical and financial support towards efforts to strengthen systematic observation and national scientific and technical research capacities in the region. Pacific Island countries and their partners have identified key priorities for the region in the Implementation Plan for the Pacific Islands Regional Global Climate Observing System (PI-GCOS). By way of an example, as a contribution towards this plan, New Zealand is supporting the development of a suite of climate

prediction applications to assist Pacific Island countries in anticipating and planning for the impact of climate change and variability, with associated benefits in terms of disaster and disease mitigation strategies and economic development and capacity building.

At a bilateral level, NZAID's focus on sustainable livelihoods in partner countries has included support towards adaptation activities. These are generally integrated into broader community development goals to match both the holistic world view and priorities of development partners. For example coastal island communities view protection of their coral reef and mangrove resources as having both short-term resource conservation as well as long-term sea level rise and climate change benefits. Sustainable enterprises based on these resources such as ecotourism are seen by Pacific communities as meeting adaptation objectives.

At a multilateral level, New Zealand's contribution to the third replenishment of the GEF is approximately double its assessed contribution. In addition, New Zealand is currently the GEF Council member for the Australia/New Zealand/Republic of Korea constituency. As part of the forthcoming third Overall Performance Study of the GEF, New Zealand is working with the constituency and other GEF council members to investigate possible impediments to smaller developing countries (including Pacific SIDS) accessing GEF funding, including funds for climate change adaptation.

The activities outlined above provide a general indication of New Zealand's support for the implementation of Decision 5/CP.7 to date, but this is not an exhaustive summary. As part of its on-going efforts towards meeting New Zealand's voluntary commitment, made in 2001, to support climate change-related initiatives in developing countries, New Zealand will continue to work with partner countries in responding to country-driven priorities.

PAPER NO. 4: SAUDI ARABIA

**SUBMISSION BY SAUDI ARABIA**

**IMPLEMENTATION OF ARTICLE 4, PARAGRAPHS 8 & 9 OF THE CONVENTION**

**REFERENCE:**

The Subsidiary Body for Implementation invited Parties and relevant organizations to submit to the secretariat, by 15 May 2004, information on current and/or planned activities including, where appropriate, support programmes, to meet the specific needs and circumstances of developing country parties arising from the adverse effects of climate change, implemented in support of the various provisions of decision 5/CP.7.

The Subsidiary Body for Implementation decided to further consider issues under this theme at its twentieth session on the basis of the draft document FCCC/SBI/2003/L.26 dated 10 December 2003.

**INTRODUCTION**

This year marks 10 years since the UNFCCC entered into force. The Kingdom of Saudi Arabia is strongly concerned of with the lack of progress on the implementation of the aforementioned article and paragraphs during the past 10 years. The only significant step taken has been the adoption of decision 5/CP.7. We are even concerned with the implementation of this step. So far we have only addressed the workshop on the status of modeling activities to assess the adverse effects of climate change and the impact of implemented response measures pursuant to paragraph 33 of the decision. The concern is that even the outcomes of the workshop were not addressed by the last Conference of the Parties and no recommendations were proposed for implementation by either of the subsidiary bodies. Furthermore, so much work needs to be achieved and accomplished relating to issues under article 4, paragraphs 8 and 9 of the Convention. Paragraphs 34, 35, 36 and 37 of decision 5/CP.7 have not been initiated and are behind their scheduled dates.

**MODELING**

The Conference of the Parties should formulate a decision directing the Subsidiary Body for Science and Technological Advice to coordinate with the scientific research community, including the IPCC, to improve the quality of models, in particular those that assess the impact of response measures on developing countries. The Third Assessment Report suggests that there may be adverse impacts of response measures on developing countries, and further modeling work is needed to determine, with less uncertainty, the magnitude of the impact of response measures and to assess the impacts of response measures on individual countries. To this end, a specific chapter in the fourth assessment report of the IPCC must be dedicated to modeling the impacts of response measures on developing countries

In addition, in modeling and assessing the effects of policies, such factors as market approaches (taxes, subsidies, and cap-and-trade), regulations and research and development need to be included in simulation. The international research community needs to address the major constraint for assessing the above factors, i.e.:

- a. The incomplete data on specific policy information and a lack of methods to parameterize them properly
- b. The ambiguity of interactions among multiple policies - either within or across countries
- c. The inadequate details on the logic and data needs of individual models
- d. The inadequate assessment of technology development.
- e. The inadequate participation of developing country experts in preparation of the IPCC reports and assessment of modeling activities, and
- f. The testing of models against present day observations.

The Subsidiary Body for Science and Technological Advice should:

1. Develop, on a high-priority basis, methodologies to guide Annex I countries in implementing win-win policies and measures that would meet both the need to reduce emission and the need to minimize adverse social, environmental and economic impacts on developing country parties, especially those identified in Article 4, paragraphs 8 and 9 of the Convention. Future work should be done in a way that Parties, relevant organizations and practitioners could submit their views to the secretariat for compilation to be considered by the Subsidiary Body for Science and Technological Advice for the development of these guidelines.
2. Develop, in collaboration with International Organizations such as OPEC, methodologies to assess the impacts on developing countries of policies already implemented by Annex I parties. Hence, current models for evaluating the effects of response measures need to be expanded in their coverage of countries and of issues.
3. Develop, on urgent basis, methodologies to assist developing countries to examine their vulnerability to terms of trade and socio-economic impacts in order to improve the effectiveness of current activities for assessing the impact of implemented response measures in a portfolio of approaches. In addition, factors, such as market approaches (taxes, subsidies, and cap-and-trade), regulations and research and development also need to be included in the assessments in order to properly assess the effects of policies. It is crucial that Annex I Parties strive to minimize adverse effects, including the adverse effects of climate change, effects on international trade, and social, environmental and economic impacts on other Parties, especially developing country Parties and in particular those identified in Article 4, Paragraphs 8 and 9 of the convention when implementing policies and measures.
4. Promote the exchange of information on win-win type policies and measures where they can be effective in reducing greenhouse gases and at the same time effective in minimizing impact on developing countries.

The Subsidiary Body for Implementation should establish pilot or demonstration projects to show how adaptation planning and assessment for adverse effects of climate change and impact of response measures can be particularly translated into projects that would provide real benefit on the basis on information provided in the national communications from non-annex I parties and other relevant sources.

The international research community needs to:

1. Address conceptual modeling challenges, in order to determine the impact of response measures. It is necessary to address the following issues:
  - a. How to compare current economic conditions with those of an idealized world in which no measures are undertaken
  - b. How can we overcome the normative analyses of response measures the implications of policies not yet implemented for developed countries
  - c. What are the needed approaches to further improve existing models with regards to types of policy covered, the gases modeled and how to model trade policies and their effects, among others
2. Address the inability to fully disaggregate the impacts of a suite of climate change measures and mechanisms given the intricate linkages between national and international economies, the complexities among sectors and the transdisciplinary nature of such impacts. On the other hand, existing models may serve as a useful basis for future work in meeting the analytical needs of developing countries.
3. Address difficulties associated with the use of such models, relating to availability of comprehensive data sets, the validity of assumptions and the compatibility and applicability of these assumptions to the modeling exercise, verification, quantifying the economic impacts associated with the different policies and policy instruments (fiscal, monetary, regulatory) and separating climate policy consequences from consequences of other policies (energy, environment, social). Approaches to modeling should focus on the impact of individual policies but should also address packages of policies. At the moment, most approaches focus on a portfolio of policies covering all sectors.
4. Continue and promote research on improving model quality by building upon the work already compiled by the IPCC in the Third Assessment Report. The IPCC should increase the participation of developing country experts in the preparation of future IPCC assessments on modeling activities. Emphasis here should be given to the potential spillover effects due to climate change implemented response measures taken by Annex I countries. In addition, policy and measures should be done and implemented in a manner to take concerns of vulnerable parties, especially vulnerable parties under Article 4, Para 8 (H).

## **INSURANCE**

The Conference of the Parties should formulate a decision directing the Subsidiary Body for Implementation to establish a forum on insurance to address the specific needs and concerns of developing country parties arising from the adverse effects of climate change and from the impact of the implementation of response measures.

The Subsidiary Body for Implementation should formulate a task force to explore the establishment of stabilization funds (regional and international) and domestic savings funds to cushion domestic economies from the variations that may result from response measures in addition to variations in oil prices and revenues.

The Subsidiary Body for Science and Technological Advice should:

1. Develop a work program for insurance related activities for the impacts of climate change and the impact of the implementation of response measures at the Conference of the Parties at its 10<sup>th</sup> session.
2. Assess the international experience on insurance including international conventions
3. Promote case studies or pilot projects that would look at combinations of insurance-related tools that might best address the particular combinations of hazards that a particular country might face, including, *inter alia*, floods, droughts and cyclones
4. Explore public/private sector partnerships to assist in expanding the availability of insurance
5. Organize a workshop on micro-insurance to explore the potential for micro-insurance in the context of extreme weather events
6. Explore possible mechanisms or arrangements to provide international support for engaging the private insurance sector in the development of alternative risk transfer mechanisms for vulnerable countries and to provide reinsurance for public or national insurance schemes or national and regional disaster funds.
7. Invite parties to submit further views relating to the implementation of Decision 5/CP.7 in relation to the outcome of the workshop on insurance-related actions to address the specific needs and concerns of developing country parties arising from the adverse effects of climate change and from the impact of the implementation of response measures and consider these views and the written report of the workshop, with a view to preparing a draft decision, for consideration by the Conference of the Parties at its 10 session, on the implementation of insurance-related actions to meet the specific needs and concerns of developing country Parties arising from the adverse effects of climate change and impact of the implantation of response measures.

### **ECONOMIC DIVERSIFICATION**

The Conference of the Parties should initiate the establishment of funds, by Annex I Parties, for facilitating the efforts for economic diversification.

The Subsidiary Body for Implementation should:

1. Initiate programs to promote the integration of sustainable development with economic diversification.
2. Establish a mechanism for Annex I Parties to provide support through technical assistance to develop structural and institutional capacity and through improving market access and facilitation of technology transfer and capital inflow.
3. Support programs to promote the exchange of views on experience in economic diversification and lessons learned

4. Request the secretariat to coordinate with OECD-DAC, UNCTAD, national development assistance agencies and the private sector in developed countries on matters related to economic diversification. This involves, *inter alia*, creating favorable conditions for investment in developing countries, with a view to recommending actions to the Conference of the Parties at its 10<sup>th</sup> session.



PAPER NO. 5: UNITED NATIONS DEVELOPMENT PROGRAMME

*The SBI invites Parties and relevant international organizations to submit to the secretariat, by 15 May 2004, information on current and/or planned activities including, where appropriate, support programmes, to meet the specific needs and circumstances of developing country Parties arising from the adverse effects of climate change, implemented in support of the various provisions of decision 5/CP.7.*

**UNDP response to SBI 19 report, paragraph 44**

The UNDP provides support to developing countries to address the adverse impacts of climate change through capacity building, technical assistance, risk management activities, and the development of methods and tools.

Adaptation efforts are not likely to have an impact unless these interventions are closely linked with development efforts. Through its country offices, UNDP is integrating adaptation and other environmental issues, into national planning. We believe that adaptation efforts need to be part of a broad-based international effort through partnerships with other international agencies and institutions.

UNDP's support to countries is being provided through partnerships with the UNDP-GEF Capacity Development and Adaptation Cluster, the UNDP Dry Land Development Centre, the UNDP Energy and Environment Group, and the UNDP Bureau for Crisis Prevention and Recovery. External partnerships have also been formed with the World Health Organization, World Tourism Organization, Stockholm Environment Institute, and others.

1. Capacity building in support of vulnerability and adaptation (V&A)

The UNDP-GEF is supporting several capacity-building initiatives in the area of V&A:

- Climate change enabling activities in support of National Communications;
- National Adaptation Programmes of Action (NAPA); and
- Capacity Building for Stage II Adaptation in Central America, Mexico and Cuba

*Climate change enabling activities*

UNDP was the Implementing Agency for 107 non-Annex I Parties Initial National Communications, and is now preparing to assist countries with Second National Communications (SNC)<sup>4</sup>. Twenty Parties have already applied to UNDP for GEF funding to carry out self-assessments to prepare their enabling activity project proposals. One Party has applied directly for SNC funding.

One component of the National Communication is the V&A assessment. During project development, UNDP HQ, Regional Co-ordination Units and regional experts will assist countries to assess their V&A priorities in the context of National Communications. During project implementation, technical advisory services will be provided by the GEF/UNDP/UNEP National Communications Support Programme (NCSP).

---

<sup>4</sup> It is also anticipated that UNDP will implement up to four Initial National Communications and three Third National Communications.

### *National Adaptation Programmes of Action*

UNDP is the Implementing Agency for 30 NAPAs. There is dedicated NAPA staff in the UNDP Regional Co-ordination Units of South Africa, West Africa, Asia, and the Pacific, and regional experts were involved in the formulation of NAPA projects.

The UNDP organized a LDC Expert Group familiarization workshop on NAPAs in Bangladesh in September 2002 and held a one-day workshop on the back of a West African regional inventory workshop in August 2002. The UNDP was also involved as the Implementing Agency for a GEF/UNDP/UNITAR project in which four regional training workshops were undertaken (Samoa, March 2003; Ethiopia, June 2003; Bhutan, September 2003; and Burkina Faso, November 2003).

### *Capacity Building for Stage II Adaptation in Central America, Mexico and Cuba*

Under implementation since July 2003, the \$3.2 million three-year project aims to strengthen the adaptive capacity of priority systems to reduce vulnerability to the impacts of climate change in the region in two ways. Firstly, adaptive capacity will be strengthened for assessing vulnerability and adaptation, including the influence of climate variability and extreme events, through technical, social and economic analysis of systems. Secondly, national capacity to adapt will be reinforced through adaptation evaluations, prioritisation, and review of implementation. The selected priority systems are water resources, human health, agriculture, and coastal zones. The selected areas are midlevel watersheds and coastal zones.

The region will apply a range of methods and tools, some of which are listed in the Adaptation Policy Framework (APF) to prepare adaptation strategies, policies and measures under the project. As the APF is a flexible tool, other methods are also being used by countries according to their needs. The main outputs will be:

- National reports on current and future climate vulnerability for the selected priority systems;
- National reports with recommendations and strategies for adaptation, taking into account environmental, climatological, economical and socio-political dimensions;
- National plans to incorporate adaptation strategies in national and regional development policies;
- Development of national methodologies and frameworks to embark on multi-disciplinary studies, using the APF; and
- An evaluation of experiences in using the APF and other innovative and appropriate conceptual frameworks.

The project is executed by a regional institution, CATHALAC ([www.cathalac.org/adaptacion](http://www.cathalac.org/adaptacion)), with technical support from a regional technical support unit.

## 2. Technical support for vulnerability and adaptation (V&A)

The GEF/UNDP/UNEP National Communications Support Programme (NCSP) will begin implementation in the second half of 2004. The \$5.5 million programme, which will run for six years, will provide technical support to all non-Annex I Parties preparing National Communications. In the area of V&A, the NCSP will organize a series of regional workshops on adaptation, provide targeted technical assistance on a needs basis, and establish an adaptation knowledge network. This knowledge network will include a virtual library of resources, an electronic discussion group, to enhance cross-sharing and south-south exchange of expertise, and capture of best practices and lessons learned. For more information, go to [www.undp.org/cc/](http://www.undp.org/cc/).

### 3. Development of Methods and Tools

UNDP has been involved in the preparation of a number of methods and tools that can support Parties as they carry out their V&A assessments. These are briefly described below; more information can be found at [www.undp.org/cc/publications.htm](http://www.undp.org/cc/publications.htm) and [www.undp.org/cc/apf.htm](http://www.undp.org/cc/apf.htm):

*Adaptation Policy Framework (APF):* The APF provides a flexible approach to developing adaptation strategies, policies, and measures, which is described in a User's Guidebook and nine Technical Papers. As a framework, the APF lays out an approach to climate change adaptation that has benefits to sustainable development, rather than the other way around. It also facilitates the process of identifying, characterizing, and promoting "win-win" adaptation options. The underlying APF principle is that all activities should be compatible with a country's broader development context and the resources that are available. Applying the APF does not necessarily require an abundance of high-quality data, or extensive expertise in computer-based models. Instead, the focus is more on building adaptive capacity and ensuring a robust stakeholder process. Choice of methods is a national decision.

*Developing Socio-Economic Scenarios for Use in Vulnerability and Adaptation Assessments:* This Handbook provides a framework for developing integrated socio-economic scenarios that can function at the local, national, and regional and/or global levels. The handbook aims to improve the construction of socio-economic scenarios in two ways. First, it broadens the scope of factors to be included. Second, the handbook focuses on two sectors that are highly relevant for policy -- agriculture and water resources.

*Generating High Resolution Climate Change Scenarios Using PRECIS:* This Handbook is part of a package, developed in collaboration with the Hadley Centre, that includes a portable Regional Climate Model and a Technical Manual. The ultimate objective of the Handbook is to describe the steps required to generate high-resolution climate change scenarios using PRECIS, taking into account gaps in information and understanding.

*Using a Climate Scenario Generator for Vulnerability and Adaptation Assessments:* MAGICC and SCENGEN: This Handbook, developed in collaboration with the University of East Anglia, was disseminated with the global circulation model, MAGICC, and the scenario generator, SCENGEN, to facilitate the construction of national and regional climate scenarios. The Handbook also discusses many of the scientific and technical issues that are commonly encountered by national teams during climate scenario development.

PAPER NO. 6: UNITED NATIONS EDUCATIONAL, SCIENTIFIC AND CULTURAL  
ORGANIZATION, INSTITUTE FOR WATER EDUCATION (IHE),  
CO-OPERATIVE PROGRAMME ON WATER AND CLIMATE

**Contribution of  
Co-operative Programme on Water and Climate  
To  
UNFCCC  
COP 10**

International Secretariat  
Co-operative Programme on Water and Climate

This contribution is in response to the decision from the UN Framework Convention on Climate Change Conference of Parties in December 2003, which requested 'contributions from international organisations on current and/or planned activities to meet the needs of developing countries arising from the impacts of climate change'

This paper presents the efforts started under the Dialogue on Water and Climate (2001-2003) as well as the follow-up activities to be conducted under the Cooperative Programme on Water and Climate (started 2004-2007), an initiative of international organisations including WWC, GWP, UNESCO, WMO, IUCN, UNDP, Red Cross, etc. to create multi stakeholder partnerships on Water and Climate that enhance linkages between the meteorological, water and disaster communities for better adaptation in the water sector to changes in climate.

Henk van Schaik (hvs@unesco-ihe.nl)  
Coordinator  
International Secretariat  
Co-operative Programme on Water and Climate  
Westvest 7  
P.O. Box 3015  
2601 DA Delft  
The Netherlands

## Introduction

Variability has always been an inherent characteristic of the Earth's climate system. Through the ages, human beings have adopted behaviours and developed mechanisms to cope with climate variability. With growing human populations competing with ecosystems for limited space and finite natural resources, it is becoming progressively challenging to cope in a sustainable manner. Increasing climate variability adds yet another challenge to sustainable development.

**Box 0.1** Key issues in relation to climate and water in Third Assessment Report of the Intergovernmental Panel on Climate Change (IPCC, 2001)

*"Climate change will lead to an intensification of the global hydrological cycle and can have major impacts on regional water resources, affecting both ground and surface water supply for domestic and industrial uses, irrigation, hydropower generation, navigation, in-stream ecosystems and water-based recreation. Changes in the total amount of precipitation and in its frequency and intensity directly affect the magnitude and timing of runoff and the intensity of floods and droughts; however, at present, specific regional effects are uncertain".*

There is mounting evidence that the impacts of climate variability are increasing. Some observers, including ISDR, the International Red Cross, and private companies such as Munich Re, have been reporting massive economic and human losses as a result of extreme climatic events such as storms, floods and droughts. But climate variability is not only about extremes. Impacts resulting from slight changes in daily weather patterns or barely noticeable seasonal climate regimes may not make headlines, but over the medium and long term, these can have an even greater effect on the sustainability of human and natural systems. However, despite the mounting evidence that climate variability is increasing, most governments in developed and developing countries alike have been slow to respond.

The water sector is particularly vulnerable to climate variability. Any shift away from historical patterns of precipitation and runoff increases pressure on limited – and in many regions already stressed – water supplies. Worldwide, water sector practitioners, from high-level water managers to local end users such as farmers, have begun to notice changes in the hydrological cycle. Although people in the water sector are aware that changes are happening, in far too many cases, they are often unable to take concrete actions to mitigate against increasing climate variability. This is particularly true in developing countries, where the financial, human and ecological impacts are potentially greatest, and where water resources may be already highly stressed, but the capacity to cope and adapt is weakest

There are fundamental reasons for this lack of action. One relates to a relatively low level of technical capacity to develop practical solutions. For example, a survey among water professionals learned that there are no specific courses anywhere in the world covering the impacts and potential coping measures available to water managers for dealing with a changing climate. A second reason relates to political legitimacy to mainstream considerations of climate variability into developmental frameworks and water management in particular, at least partly due to the artificial divide in the policy debate between (anthropogenic) climate change and (non-anthropogenic) climate variability. Decision makers have been slow to invest in activities that would increase resilience in the water sector through structural and/or non-structural measures, and/or build the capacity of water practitioners to cope with today's increasing climate variability.

Launched in September 2001, International Dialogue on Water and Climate (DWC) was created to help bridge the information gaps between the water and climate sectors and to develop solutions for water managers to better cope with the impacts of increasing climate variability and change. Since January 2004, this wealth of information has begun feeding into the Co-operative Programme on Water and

Climate (CPWC), which is focused upon building the capacity needed to prepare and implement action plans for coping with the changing climate, in particular in developing countries.

### **Main Challenges to the Water Sector**

The social, environmental and economic losses due to variations in climate, including the increasing impacts of extreme events, demonstrate that the water sector is inadequately prepared to cope with the effects of current climate variability and future climate changes. These effects not only inhibit national development, they can even set a country's level of development back by several decades, as was the case after the floods in Mozambique (2000) or in Honduras after hurricane Mitch (2000). Bluntly stated, our inability to successfully cope with climate variability and change puts the Millennium Development Goals at risk.

As stated above, main challenges to the water sector are sluggish political legitimacy, ongoing build up of science based credibility, lack of technical and financial capacity, and slowly increasing awareness. The results of the DWC have shown that these challenges will have to be met in order for practical, sustainable solutions to be implemented.

The political and institutional dimension is most critical in coping with climate variability and climate change from a water resources management perspective. However, for water managers in developing countries, the impacts of changes in climate often appear minor when compared to some of the problems they are facing already. Population growth, urbanisation, land use changes and other drivers are just some of the causes of lack of access to water, over-abstraction, pollution of surface and groundwaters, as well as drying up of rivers and wetlands.

As a rule, there is a limit to the resilience of water related systems and to the capacity of water resources managers to plan for, and operate within, any 'surprises', which may occur in anticipated changes in the climate. The expected impacts on water resources should be neither under- nor overestimated, but should be assessed in a scientifically rigorous and realistic manner. Only then can management decisions and appropriate adaptation strategies be formulated.

Addressing strategies to adapt specifically to climate change may appear as an additional burden to water managers there, but may help reduce vulnerability to other changes. Few non-OECD countries can, therefore, presently afford actions to deal explicitly with impacts of climate change on water resources. At best, actions that address directly the more immediate water management problems are usually the only ones affordable to them. Planning for the future in lesser developed countries may thus require financial and other assistance from developed countries.

Adaptation and coping measures are scale-dependent and may vary from individual households to local communities to catchments, as well as from national to international scales. There is an impressive array of specific management measures, both structural and non-structural, that water managers already use routinely to accommodate present-day climate variability. These will also serve towards adaptation to any impact of enhanced climate variability and climate change. However, a single and universal adaptation approach or remedy, does not exist. In order to ensure that these tools be applied appropriately, a 'no regrets' approach to water resources planning and management is necessary. In particular, in light of climate change uncertainties, the application of the precautionary principle to water resources management should be promoted.

Adaptation to the impacts of climate upon the water system has been recognised as a key issue in multiple international fora, including WWF-3 and its Ministerial Conference (March 2003), the COP-8 (November 2002) and the IPCC (FAR, 2006) of UNFCCC, and the WSSD (August 2002). It has also been recognised that coping and adaptation are integral parts of the development process required to reach the Millennium Development Goals for 2015. However, because most of the discussions have focused on climate change, adaptation to currently increasing climate variability – a much more immediate concern to local water managers – has only received marginal attention.

The WSSD called for the preparation of national IWRM frameworks by 2005. These frameworks provide an important mechanism for mainstreaming adaptation to climate variability and change into the national management policies.

Successful tool application in different regions requires close co-operation between the tool developers and those seeking to apply them at the regional and local levels. This principle of demand-driven collaborative tool development exemplifies the support activities of the CPWC, which will seek to stimulate partnerships between different users and the support institutions. This approach goes beyond the knowledge transfer between North and South as called for in WSSD's Plan of Implementation by also providing a platform for inter-regional co-operation.

Furthermore, National Adaptation Plans of Action and National Communications for non LDC countries provide a useful mechanism and path to prepare coherent national strategies and implementation plans for action within the overall goals of development and sustainability including poverty and vulnerability reduction. To become more effective and relevant for the water sector, NAPAs should recognise the need for wide ranging local coping actions in the water sector which include protection, risk management, preparedness, forecasting and structural measures. NAPAs can also link up these water sector coping activities to global support facilities or other external financing mechanisms.

Finally, concerted action, effectively co-ordinated across the various water use sectors, is required to successfully meet the challenges of coping with climate variability. A number of institutional and organisational issues have been identified to strengthen the preparedness systems. These include enhancing co-ordination, as well as drawing up clear divisions of competence, tasks and responsibilities among different agencies acting in watersheds (rather than acting only in administrative divisions) and assuring participation of stakeholders in decision-making.

The second main challenge centres on increasing the ability of water managers to make the best decisions based upon the most current information available. Overall, a better understanding of the relationships between changing climate and water resources is required – particularly on the processes of the hydrological cycle in relation to the atmosphere, land use and the biosphere. Knowledge also needs to be enhanced on the preparedness and resilience of the water systems, including regarding risk assessment, watershed management (such as controlling flood generation in source areas) and increasing water storage efficiency to serve for both drought and flood protection.

Unfortunately, the outputs from Global and Regional Circulation Models (GCMs and RCMs) are unlikely to meet the expectations of water practitioners for several years to come, given the relatively detailed spatial and temporal scales at which water managers operate. Major headway is, however, being made in refining RCMs. Flood and drought forecasting skills also need to be improved over the entire range of time horizons of concern. This is where applied research and technology have a major role to play. Substantial developments in short- and medium- term weather forecasting, particularly quantitative precipitation forecasts, are needed for flood preparedness. Improving long-term predictability, based on climatic variability and sea surface temperature, is emerging as an important tool for drought preparedness.

In addition to long-term and seasonal climate forecasting, numerous initiatives are underway to develop tools for risk management, vulnerability assessment, early warning systems, coping and adaptation planning, and financial and technical support mechanisms. An example is the work of Japanese researchers who are developing a methodology to determine the future implications of climate change, including climate variability, on the runoff patterns of Japan's hydrological basins in order to determine their vulnerability to flooding under different developmental scenarios. The EU is sponsoring a similar study for European rivers, as are the Dutch for basins in The Netherlands. These and other initiatives are seeking to develop tools with flexible methodologies that can be readily adapted for application elsewhere, where the demand for such tools has been rising, but where technological capacity is often limiting.

Several observers have suggested that it is necessary to implement a global system, dedicated to addressing scientific issues, on assessing the 'intensification' of the hydrological cycle and for predicting and monitoring the effects of climate variability and change on water resources at the water manager's scale of operation. 'Hot spot' areas could serve as priority areas where society tries either to avert, or mitigate, climate-related risks. While our knowledge continues to increase about climate, water and vulnerability, we are still far from being able to reliably identify 'hot spot' areas of vulnerability. In order to make progress in identifying such areas, several tasks remain. These include clarifying the definition of 'hot spot' areas, specifying the thresholds of vulnerability, and developing a consistent framework for vulnerability assessment. The advantage of identifying 'hot spot' areas of potential and actual vulnerability is that society can devote its sparse scientific and policy resources to such limited areas.

#### **The CPWC Approach: Drawing on the successes of the DWC to build coping capacity**

Soon after the Dialogue on Water and Climate's (DWC) was officially launched at the end of 2001, some 18 stakeholder dialogues were established to assess and prepare responses to the water/climate situation in different parts of the world. Participants include water professionals, community representatives, local and national governments, NGOs, national and international knowledge institutions, researchers, climate specialists, and others sharing an interest in developing responses to climate-related threats. There were eight "Basin Dialogues", two "National Dialogues" and eight "Regional Dialogues" involving more than one country.

The partnership process proved to be a very successful mechanism for reaching consensus on both problems and potential solutions, enabling DWC to present a comprehensive synthesis report to the Third World Water Forum in Kyoto, Japan, in March 2003. That report – Climate changes the water rules – confirmed that "climate variability" is an urgent concern for everyone, irrespective of any possible link with long-term climate change. It demonstrated with stark examples that the gathering hydrometeorological storm threatens the Millennium Development Goals and national targets for poverty reduction and social justice. But the report was by no means all doom and gloom. The 18 Dialogues have shown the power of stakeholder partnerships, not just in diagnosing potential problems, but in developing strategies for adapting to the changing situation and in mobilising self-help initiatives to help cope with future extreme events.

DWC's mandate lasted only three years, but its recommendations for follow-up activities based on the partnership approach were well received. The Ministerial Conference at the Third World Water Forum (2003) pledged cooperation to minimise damage caused by disasters and encouraged "continuation of collaboration between scientists, water managers and relevant stakeholders to reduce vulnerability and make the best prediction and forecasting tools available to water managers". The *Cooperative Programme on Water and Climate* (CPWC) is the response to that Ministerial stimulation. DWC came into being because of an evident niche in the market. At global, regional and national level there had been a clear need to bring together water and climate professionals to address an increasingly



urgent situation. At the global level, DWC established itself as a bridge linking partners such as IUCN-Water and Nature Initiative, UNESCO-HELP and GWP Regional TACS into cross-sectoral activities. DWC became the channel for cross-sectoral advocacy, information exchange and impact assessment on water-and climate issues. In developing countries, the cross-sectoral linkages were many and varied, and these will continue to grow. The success of the global, regional and national activities, and particularly the momentum generated by the 18 DWC Dialogues means that the DWC “niche” as advocate can and should now be extended to action. CPWC is picking up that challenge. That transition from DWC’s preparation to CPWC’s action is well illustrated in the diagram below.

Figure 1: Categories of activities in DWC and in CPWC

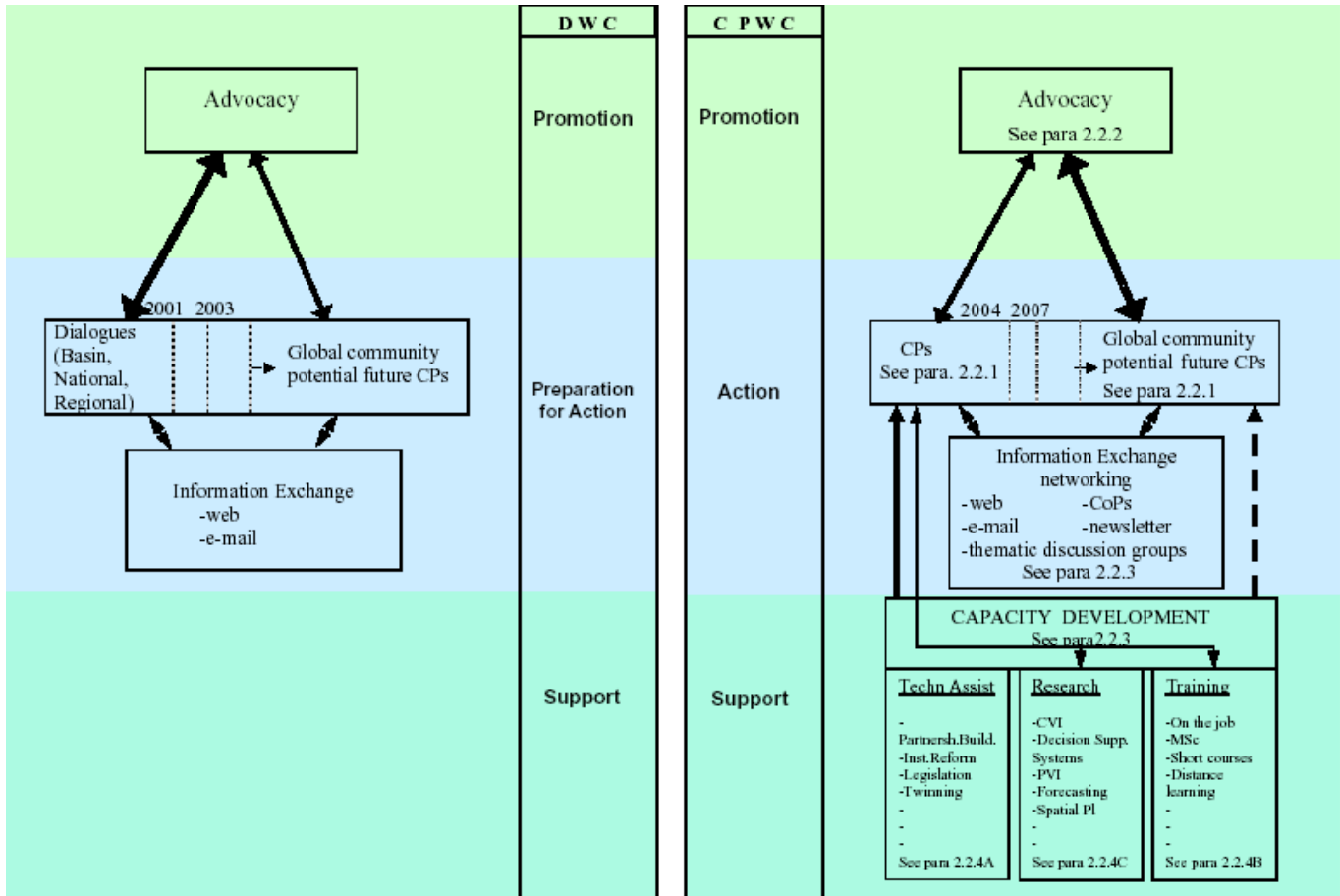


Figure 2: CPWC Multistakeholder Partnerships



Basing its *modus operandi* on the most successful elements of the 18 Dialogues and on the agenda of coping options presented in the DWC report to the Third World Water Forum, CPWC envisages a coordinated programme of linked activities, with knowledge and information shared among a global network of concerned agencies and individuals. The primary focus of the activities will be on helping countries to take action to adapt their water-management, land-use and disaster-preparedness strategies to the continuing increase in climate variability and the intensity of extreme storms, floods and droughts. A combination of global and local advocacy campaigns will convey the urgency of addressing climate issues to a wider constituency of water managers, the public and politicians throughout the world. Resulting local initiatives will be facilitated and supported by an international network of experts, resource centres, research and training institutes and financial support agencies, progressively building the capacity of water agencies and their partners to adapt to the changing climate threats.

CPWC's strategy (2004-2007) is focused on Action. At the core of everything will be adaptation activities planned and managed by multi-stakeholder partnerships modelled on the DWC Dialogues. A major advocacy programme will promote expansion of the partnership approach into more and more basins, countries and regions. Sharing of knowledge, experience and best practice in a growing information-sharing network will give water-and-climate converts access to the most up-to-date

approaches, techniques and tools. A significant advance from the advocacy and plan preparation support provided by DWC will be a major capacity-development component, ensuring that those seeking to implement adaptation programmes will receive technical assistance, supportive research and appropriate training or skills development.

The four programme components of the CPWC are:

*1) A global network of Coping Partnerships.*

Coping Partnerships (CPs) are seen as the powerhouses for adaptation action. The 18 DWC Dialogues are the models for the Coping Partnerships and many will themselves become CPs. The network will be expanded, as new partnerships are created based on river basins, national systems or regional (multi-national) interests. As with the Dialogues, a typical coping partnership may include some or all of these agencies/organisations: water professionals, community representatives, local and national governments, NGOs, national and international knowledge institutions, researchers, climate specialists, disaster-relief agencies, and others sharing an interest in developing responses to climate-related threats.

*2) Advocacy*

As the diagram on page 8 shows, CPWC has an important promotional role to play, which has evolved from DWC's successful awareness raising both in the Dialogue constituencies and among the water and climate professionals in the wider world. Now, CPWC's promotion activities have three main strands:

- Raising the profile of the Coping Partnerships at national level, so as to streamline the implementation of adaptation action plans and integrate them into national development planning.
- Converting more stakeholders in developing countries to the water-and-climate cause, so as to foster establishment of more Coping Partnerships and/or National Adaptation Programmes of Action (NAPAs).
- Mainstreaming of water-and-climate issues in the global development agenda.

*3) Information networks*

A great deal of research and development has gone on in recent years to improve forecasting, assess vulnerability, and produce tools and guidelines to facilitate adaptation planning. There are also plenty of individual coping actions being implemented by local communities, farmers' groups, etc, that make interesting case studies as potential models for others. CPWC has the contacts and the tools to make the information pool available to all those who can make use of it, and to do so in a structured way that will avoid "information overload" for those seeking very specific guidance or knowledge. The Coping Partnerships will be both producers and disseminators of practical experiences.

*4) Capacity development*

The capacity development support is aimed primarily at the Coping Partnerships, though some training and research activities will also benefit other members of the CPWC network. The capacity development has three strands:

- Technical assistance: The coping activities will be beyond the boundaries of their knowledge and experience of many water managers and their allies. CPWC's information network will make it easier to locate the necessary knowledge and skills, Twinning and staff exchanges between the Coping Partnerships and programmes in developed countries are seen as a very promising avenue for developing the capacity of water managers and their partners.
- Training: The training activities will be coordinated by UNESCO-IHE, in collaboration with Cap-Net and capacity-development partners in the North and in the South. The general approach will combine demand generation with supply of generic training materials and modules. The capacity-development partnership will work on both development and delivery of training activities and materials. The development of this training package is linked with research activities coordinated by Wageningen University. The applied research will result in methodologies and tools, which will be incorporated into the training package.

- Research: CPWC will establish a dynamic “matchmaking” system for applied research, bringing together researchers and practitioners to maintain a continuously updated responsive research agenda. The 18 DWC Dialogues have themselves generated a significant research wish list, creating the possibility of case studies and demonstration projects, as research partners produce the tools.

## **Conclusions**

The Co-operative Programme on Water and Climate is designed to contribute in a comprehensive way to coping with changing climate in the water sector through:

- raising the political legitimacy
- increasing scientific credibility
- raising the awareness
- increasing the technical and financial capacity to cope.

The mission of the Co-operative Programme on Water and Climate is to foster an action oriented network closely linked to international events such as the global and regional Water For a (including the 4<sup>th</sup> World Water Forum 4) and initiatives such as the IPCC process as well as the COPs where CPWC will organise special events, promote policy debates and produce reports on Water and Climate.

At the national, basin and regional level, CPWC encourages and assists partnership development to enhance local action to cope with the impacts of changing climate in the water sector.

Gaps in knowledge are addressed by:

- the CPWC partnership on (operational) research on Water and Climate (impacts, vulnerability, weather forecasting and coping measures including risk management, structural and non-structural measures, etc.).
- the CPWC partnership on capacity development (training, tool development/dissemination, etc.)
- the CPWC information base and awareness raising activities.

PAPER NO. 7: UNITED NATIONS EDUCATIONAL, SCIENTIFIC AND CULTURAL ORGANIZATION / WORLD METEOROLOGICAL ORGANIZATION, HYDROLOGY FOR THE ENVIRONMENT, LIFE AND POLICY

**HELP input to the UNFCC**

Background:

HELP is currently in the process of establishing a global network of basins based on the principles of HELP as set down by an interdisciplinary Task Force in late 1999. HELP is bridging scientific research with the needs of management and policy. Essentially it is taking on the major challenge of implementing integrated water resources management across a range of socio-cultural and socio-economic environments. A fulcrum point of HELP is establishing different *modus operandi* of dialogue with stakeholders using a 'bottom-up' approach to define research gaps as well as their involvement in the subsequent research process.

HELP received 30 unsolicited global expressions of interest to be involved in the programme. The International Steering Committee invited each of these 30 basins to submit full proposals based on a series of strict criteria in line with the HELP principles. Of these 30 basins, 25 responded and participated in a Pilot phase, 2001-2004. A mid-term HELP Symposium reviewed progress, and recommended formal solicitation of additional basins through Governments, NGOs, Research Institutions, management Agencies and Universities; including those connected with the IHP network. The Evaluation Committee (EC) of this global Call recently met; and from mid-2004 in excess of 65 basins will form part of the global network out of a total of 75 proposals received. The HELP EC has categorised these basins into: Demonstration, Operational, Evolving, Proposed and Associated Activities (which are not HELP basins in the integrated, disciplinary sense but contribute in selected specialised components of HELP; such as advancing experimental hydrology) (see <http://www.unesco.org/water/ihp/help> for more information on HELP).

Climate:

Water and Climate is one of the five policy issues on which HELP is based. Within the climate area there are a broad range of activities but they can be grouped into the following, *viz*:

- a better understanding of the impacts of scale linked with changes in land cover vis-à-vis climatic variability (and change) on high and low streamflows. This topic includes the impacts on hydrology of reforestation-afforestation of degraded land in the more humid tropics. Communities are impacted by floods as well as declining low flows and groundwater levels; but major gaps in research understanding still need to be addressed.
- The preceding point links with the use of the term 'vulnerable' basins. How does one define 'vulnerability' scientifically and socially in terms of enhanced flood and drought frequency in response to climatic variability and change, as a measure on the adverse impacts on communities? In contrast, how does one measure societal coping strategies to climatic extremes ?.

During the HELP Pilot phase, three basins: The San Pedro (USA-Mexico, transboundary), Thukela (South Africa) and the Murrumbidgee (part of the Murray-Darling, Australia) contributed to the Netherlands sponsored initiative Dialogue on Water and Climate. To coincide with the 3<sup>rd</sup> World Water Forum, the results were released in a Report: *Climate Changes the water Rules – How Water Managers can cope with today's climate variability and tomorrow's climate change*. Scanned copies of the outputs from the 3 basins are attached. Focus of attention was on stakeholder dialogue, the adverse impacts and coping strategies. Several items emerged:

- Self-help, bottom-up adaptations have shown some success based on the principle prevention is better than cure.

- Both ecosystem and human protection emerged as a priority.
- Mitigation is not always high on the coping agenda.
- In mixed commercial-European/subsistence-indigenous economies (e.g. Thukela) it is the water-poor rural communities which are very vulnerable to prolonged droughts and extreme floods. Considerable intra-basin competition (and potential conflict) emerged and the Climate Dialogue brought together all the stakeholders (technical service providers, scientists, managers, end-users, scientific know-how coupled with indigenous knowledge and biophysical scientists and human scientists). A follow up action was the continued modelling system for applications is risk management.
- The balance between ecosystem health and human protection is a key focus of research in the Murrumbidgee where water quality (salinisation) is a critical problem. Projected reductions in water allocation for irrigation to safeguard environmental river flows, against a backdrop of ENSO-induced climatic variability, still remains a major area of research. Farming communities have been brought into the decision-making process and are co-operating in adopting more efficient irrigation strategies linked with scientific outputs.
- The Climate Dialogue pointed to the need for better climate variability forecasting(probabilistic forecasting) as part of risk-based operational management for adjusting water allocations, crop selection, water trading (between basin stakeholders), and essential maintenance of ecosystem functions.
- In line with recent moves in the IHP, the Dialogue called for a more integrated science approach (cross-disciplinary) to resolve land-water management and societal concerns.

Apart from the continuation of the technical research outline above (linked with management and policy), HELP is now considering a further project led by CEH, Wallingford, UK; and other partners concerning the development of a climatic vulnerability.

Dr. Mike Bonell  
11/05/2004

-----