

Advancing work on adaptation to climate change

A UN system perspective

Draft Policy Brief

A N N E X E S

UN system resources and good practices in support of adaptation to climate change

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Integrated land and water management and enhanced food security through ecosystem-based adaptation

GENERAL

Ad Hoc Technical Expert Group (AHTEG) on biodiversity and climate change: The AHTEG on biodiversity and climate change was established in response to decision IX/16 of the Conference of the Parties to the Convention on Biological Diversity (CBD) to provide biodiversity-relevant information to the United Nations Framework Convention on Climate Change (UNFCCC) through the provision of scientific and technical advice and assessment on the integration of the conservation and sustainable use of biodiversity into climate change mitigation and adaptation activities. Findings from the first and second meetings of the AHTEG were compiled into a draft report accessible at: <http://www.cbd.int/climate/meetings/ahteg-bdcc-02-02/ahteg-bdcc-02-02-findings-review-en.pdf>

Global Green New Deal: Policy Brief, UNEP, March 2009
http://www.unep.org/pdf/A_Global_Green_New_Deal_Policy_Brief.pdf

Biodiversity and Ecosystems: Why these are Important for Sustained Growth and Equity in Latin America and the Caribbean, a regional initiative by UNDP in collaboration with the Secretariat of the Convention on Biological Diversity and ECLAC.
<http://www.iisd.ca/larc/vol01/larc0101e.html>

Convenient Solutions to an Inconvenient Truth: Ecosystem-based Approaches to Climate Change, Environment Department, World Bank, June 2009.
http://www-wds.worldbank.org/external/default/main?pagePK=64193027&piPK=64187937&theSitePK=523679&menuPK=64187510&searchMenuPK=64187511&cid=3001&entityID=000333037_20090708013334

Multiple benefits – Options and Issues for REDD: UN-REDD Programme, May 2009
http://www.unredd.net/index.php?option=com_docman&task=doc_download&gid=472&Itemid=53

International Ocean Carbon Coordination Project (IOCCP): Sponsored by UNESCO-IOC and SCOR, the project addresses the changes increased carbon deposition has on ocean chemistry and the marine biota. This could affect marine fisheries significantly.
<http://www.ioccp.org/>
<http://www.ocean-acidification.net/> [for policy brief on how marine ecosystems will respond and how societies and economies will be affected]

FOOD SECURITY

FAO, IFAD, UNDP, WFP and WMO have well established programmes that have supported **technology and knowledge transfer on crop, livestock, fisheries and forestry issues**. This experience is closely linked to the adaptation work that is needed for these sectors and to enhance food security. The practices more often promoted and supported include, among others, the dissemination and implementation of: sound agricultural technologies for soil and water conservation; improved crop and animal husbandry; strengthening of plant breeding capacity and seed distribution systems; sound water management; conservation agriculture; sustainable production intensification through an ecosystem approach; integrated pest management; risk reduction from extreme weather events through preparedness plans for drought and floods; building the capacity of pastoral groups to address climate change; recovering degraded areas, including grasslands and problem soils for agriculture; developing early warning systems and preparedness plans for both floods and droughts; diversifying livelihoods to reduce vulnerability, promoting a shift to off-farm activities (ecotourism, infrastructure development, post-harvest activities, etc).

The Global Information and Early Warning System on Food and Agriculture (GIEWS), facilitated by FAO, is an open forum for the exchange of information on food security. The system continually receives economic, political and agricultural information from a wide variety of official and unofficial sources. Since 1975, institutional links and information-sharing agreements have been established with several UN organizations, 115 governments, 4 regional organizations and 61 NGOs. Numerous international research institutes, news services, private sector organizations, and specialized government agencies also collaborate.

The Food Insecurity and Vulnerability Information and Mapping systems (FIVIMS): Facilitated by FAO, this programme supports knowledge sharing and good practice transfer for better understanding of food insecurity and vulnerability issues worldwide.

http://www.fivims.org/index.php?option=com_content&task=blogcategory&id=26&Itemid=88

Comprehensive Food Security and Vulnerability Analysis (CFSVA) is conducted by WFP in more than 30 countries. These multi-sectoral studies provide a pre-crisis, in-depth analysis of household food security and vulnerability in a given country. By looking into inter-related factors such as political, socio-economic and agro-ecological context, food supplies, markets, livelihoods, coping strategies, nutrition, health, education, CFSVAs help to identify the root causes of food insecurity and vulnerability.

The Global Forum on food security and nutrition (FSN), facilitated by FAO, is a global community of FSN practitioners with members in many countries across the world's five continents. Starting with 300 practitioners from various fields, the Forum helps bridge the knowledge divide among the different communities involved in Food Security and Nutrition, such as academics, researchers, development practitioners and policy-makers/implementers.

<http://km.fao.org/fsn/forum/en/>

Emergency Prevention System for Transboundary Animal and Plant Pests and Diseases (EMPRESS): The migration of agricultural pests and diseases can be catastrophic, leading to famines and sometimes triggering trade restrictions. Developing countries are frequently not able to react sufficiently quickly to such events and extensive emergency operations as well as international assistance becomes necessary. In 1994 FAO established EMPRES, which has worked with the prevention of several transboundary animal and plant diseases. The experience of EMPRES could be used to establish early warning systems to reduce agricultural losses due to the migration of pest and diseases caused by climate change.

Integrating food and agriculture perspective in adaptation programmes: FAO is facilitating the process of preparing NAPA priorities in food and agriculture through multi-stakeholder consultations in Nepal and preparation of Plan of Action for the Ministries and Extension departments to integrate

climate change adaptation and disaster risk management in Bangladesh, Nepal and Jamaica. The national climate risk management plans in agriculture provides guidelines for setting the baselines, assessment of damage and loss due to extreme climate events.

UNDP is implementing a **Community Based Adaptation** programme, which supports local-scale, community-driven climate change risk management projects aiming to enhance the capacity of communities in pilot countries to adapt to climate change including variability, and ultimately scale up community-based practices and lessons to local and national-level policies. Working across a large number of least developed and other developing countries, these small-scale interventions are often geared towards food security and livelihood issues, including crop diversification, livestock forage cultivation, grain banks, and development of sustainable agricultural practices.

Managing weather-induced risk, diversifying livelihoods to reduce vulnerability, promoting a shift to off-farm activities (ecotourism, infrastructure development, post-harvest activities, etc) are among IFAD's activities in support of farmers in developing countries. Other activities include: adoption of new agricultural technologies to promote soil and water conservation; improved crop and animal husbandry, conservation farming and small-scale irrigation; attention to the consequences of cyclones, floods and rising sea levels by transferring technologies, such as small embankments and drainage schemes, that strengthen the capacity of small farmers to cope with increased flooding, early and late floods, or early flood recession; increasing the resilience of livestock systems to changing climatic conditions by strengthening natural resources management, climate-proofing the pasture water supply and building the capacity of herders' groups to address climate change; recovering degraded and degrading areas, and to promote the sustainable use of natural resources; development of early warning systems and preparedness plans for both floods and droughts.

Managing Environmental Resources to Enable Transitions to More Sustainable Livelihoods (MERET): This WFP programme has facilitated the development and mainstreaming of a Government-owned, community-based approach to adaptation. The project in Ethiopia is an excellent example of a successful community-based solution to reverse environmental degradation and to increase long-term resilience to climate change. MERET has reached more than 1 million people and contributed to the rehabilitation of over 300,000 hectares of degraded land since the year 2000, regenerating vegetative cover to reduce the risk of drought and flooding.

<http://www.wfp.org/node/14481>

Through risk transfer mechanisms such as **Index-based Weather Insurance**, WFP helps transfer weather related disaster risk from vulnerable populations to public or private risk takers guaranteeing beneficiaries' timely, live-saving assistance. These risk transfer tools protect livelihoods by facilitating timely support and thereby limiting the economic damage of disasters. One example is an innovative, weather-based insurance pilot in Ethiopia which protects farmers against devastating shocks caused by severe drought. The first phase in 2006 demonstrated that Ethiopian rainfall data are accurate and timely enough to allow Ethiopian drought risk to be transferred to international re-insurance markets. Since 2007, WFP, the World Bank and DFID have continued to develop a comprehensive drought-risk financing scheme for the 5–8 million Ethiopians subject to transitory food insecurity.

In order to promote **food security and agricultural development in Africa**, ECA is carrying out activities to follow-up to its successful advocacy for articulating and strengthening the implementation of the AU/NEPAD Comprehensive Africa Agricultural Development Programme (CAADP) around the development of the value chains of strategic food commodities within a framework of regional integration. Special emphasis in this work is placed on supporting agribusiness and agro-industry development, in close partnership with FAO and UNIDO. In this regard, ECA is collaborating with FAO to champion the development of major agricultural and food products value chains in East Africa, and with UNIDO to promote agribusiness sector development.

<http://www.nepad-caadp.net/>

ESCAP has supported its member states in **addressing food insecurity** by convening a number of regional meetings and producing several analytical papers on the topic. For instance in December 2008, ESCAP and the Government of Indonesia convened the High-Level Policy Dialogue “The Food-Fuel Crisis and Climate Change: Reshaping the Development Policy Agenda.” The Commission decided that the theme topic for its sixty-fifth session in 2009 should be on food security and sustainable agriculture. For this occasion, ESCAP produced an analytical report containing a diagnosis and several recommended actions on “Food Security and Sustainable Agriculture.”

http://www.unescap.org/EDC/English/Commissions/E65/E65_15EA1.pdf

In southern Africa, WFP has worked with the Southern Africa Development Community (SADC) to strengthen the **vulnerability analysis and food security monitoring capacity** of its member states in order to improve member states' ability to respond to shocks. The project has improved the formulation of food security policies and the management of programmes, particularly social safety nets, and enhanced institutional capacity to undertake vulnerability assessments, livelihoods analysis, food security monitoring and general emergency preparedness. Moreover, WFP works with the Permanent Inter-State Committee for Drought Control in the Sahel (CILSS) to develop tools for exhaustively analyzing food security, which have in turn contributed to improve early-warning and response.

Adaptation to Climate Change in Western Asia and North Africa Marginal Environments through Sustainable Crop and Livestock Diversification: Implemented by the International Center for Biosaline Agriculture, this programme supports the development of salt-tolerant varieties/genotypes with better adaptation to climate change, many of which are fodder crops that can contribute to livestock production. The research and findings on the development of improved management practices (including irrigation techniques and management, soil management, fertilizer application, crop and field management, harvest techniques and utilization of forages), participatory assessments and the socio-economic studies, complement this research by contributing to greater understanding of the vulnerability of the targeted groups of farmers. An integrated modeling approach - combining climate change scenarios, social constraints (and local communities' perceptions on climate variability issues), and hydrological and economic models - will be used to understand the impact on people and identify those locations where developed technologies are needed most. More broadly, and in collaboration with IFAD-funded investment Projects and regional IFAD programmes (such as WADIMENA and KariaNet), this Programme shall support the mapping of assessed vulnerability into simulation models on the implications of climate change, thereby supporting policy makers and stakeholders in programming coping strategies that enable the rural poor to withstand the effects of climate change.

Drought tolerant crops will be an indispensable tool in adapting to the effects of climate change. Research on drought tolerance is already being conducted at research centres including those within the Consultative Group on International Agricultural Research (CGIAR) system (<http://www.cgiar.org/impact/global/climate.html>). For example, the International Maize and Wheat Improvement Center (CIMMYT) is investigating maize varieties that stall seed development during periods of drought in order to conserve water, or that are better at taking up water. Other varieties with drought tolerant characteristics are being selected to create varieties where the drought tolerant qualities are multiplied in effectiveness. Further varieties are able to accumulate sugars and salts to protect against water loss. Further investigation is underway at a molecular level into the physiological mechanisms by which plants adapt to extreme environments, in order to shed light on opportunities to improve drought and salt tolerance.

FAO is maintaining a wide range of **mapping and monitoring systems relevant for climate change and food security**, such as Global Agro-ecological Zones (GAEZ)
<http://www.fao.org/Ag/AGL/agll/gaez/index.htm>

WMO, at the request of 24 countries in eastern and southern Africa, in 1989 established two **Drought Monitoring Centres (DMCs)** in Nairobi, Kenya and Harare, Zimbabwe, with support from UNDP. More recently, WMO, in active collaboration with the UNCCD, established the **Drought Management Centre for South-eastern Europe (DMCSEE)** in Slovenia. The objectives of the Centres are to integrate input from the UNCCD focal points, National Meteorological and Hydrological Services, and independent drought researchers from each participating country to develop a sub-regional drought management strategy, implement an effective drought monitoring and early warning system, provide reliable and timely information to national decision makers, and share the information and lessons learned. UNCCD, WMO, and OSCE have been working jointly since 2007 to establish a Drought Management Centre for Central Asia, which will serve Kazakhstan, Kyrgyzstan, Tajikistan, Turkmenistan, and Uzbekistan.

<http://www.wmo.int/pages/prog/wcp/wcdmp/csm/html/csm.html>

<http://www.dmcsee.org/>

<http://www.ippac.net/>

<http://www.sadc.int/dmc/>

The African Centre of Meteorological Applications for Development (ACMAD) was established in Niamey, Niger, in 1993 and is sponsored by WMO, along with the Economic Commission for Africa. ACMAD is the focal point in fostering regional cooperation among the 53 African countries with the rest of the world in climate and environmental concerns with regard to sustainable social and economic development. The Centre coordinates the activities of the NMHSs of these countries in applying meteorological and hydrological information to important social and economic sectors, such as food production, water resource management, cash crops, pest control, and health. In addition, ACMAD provides operational products such as forecasts and early warnings to extreme climatic occurrences like drought and floods and assists in reducing their adverse impacts in Africa.

<http://www.acmad.net/>

The Roving Seminars on Weather, Climate and Farmers started as a WMO pilot project in Ethiopia and India in 2007. In 2008 and 2009, the State Meteorological Agency of Spain (AEMET) funded Roving Seminars in several West African countries. These seminars, with technical coordination from WMO, strive to secure rural farmers' self reliance in West Africa by informing them about effective weather and climate risk management and the sustainable use of natural resources for agricultural production. The seminars also provide crucial feedback from rural agricultural community to the National Meteorological and Hydrological Services so that they can improve their services and products to this important sector. This concept is being expanded to other parts of the world.

http://www.wmo.int/pages/prog/wcp/agm/roving_seminars/index_en.html

Key publications on climate change and food security include:

- *Climate Change and Food Security - a Framework Document*, FAO 2008.
<ftp://ftp.fao.org/docrep/fao/010/k2595e/k2595e00.pdf>, More:
<http://www.fao.org/climatechange/publications>
- *Climate Change and Risk of Hunger: The Scale of the Challenge and Required Response*, by Martin Parry, Alex Evans, Mark W. Rosegrant, Tim Wheeler (forthcoming), WFP 2009.

WATER SECURITY

UN-Water/Task Force on Climate Change: The Nairobi Work Programme on impacts, vulnerability and adaptation to climate change, has highlighted the need for comprehensive and cross-sectoral adaptation planning. The establishment of UN-Water's Task Force on Climate Change represents a response to this call for cross-sectoral collaboration. The Task Force provides an opportunity to discuss climate change and water linkages in their widest sense and supports the UN System as it prepares to meet the challenges posed by climate change. UN-Water is composed of representatives of 26 United Nations organizations. United Nations organizations include those responsible for major funds and programs, specialized agencies, regional commissions, United Nations conventions and other entities within the UN system. Other organizations outside of the United Nations are partners in UN-Water.

www.unwater.org

World Water Assessment Programme (WWAP) for development, capacity building and the environment: This is the flagship programme of UN-Water, hosted by UNESCO IHP, and publishes the World Water Development Report periodically. The 2009 report, "Water in a Changing World" and "Case Studies: facing the challenges", is entirely devoted to global change, including climate change.

<http://www.unesco.org/water/wwap/>

Support to national water monitoring systems and strengthening institutions for a "second generation" of **Integrated Water Resources Management (IWRM)**, linking different decision-making levels, is one of the programmatic actions on water and climate change adaptation of the United Nations Department of Economic and Social Affairs (UNDESA). Through its normative, analytical and capacity-building activities, the UNDESA helps Member States promote sustainable development, particularly in water, energy and climate change. Guided by the Commission on Sustainable Development, UNDESA support to member states includes improving management of water variability and other climate-driven changes. Programmatic initiatives include.

http://www.un.org/esa/dsd/dsd_aofw_wat/wat_index.shtml

Assessing impact of climate change on water supply and irrigation in major food production areas; enhancement of capacities for disaster risk reduction, and integration of climate change in trans-boundary water management are examples of FAO's programmatic actions on water and climate change adaptation. Other relevant FAO work includes long-term implications of changes in temperature and rainfall on crop yields; seasonal forecast and crop insurance; climate risk management and vulnerability reduction through community participation; and support to research on drought-, flood- and salt- tolerant crop varieties.

<http://www.fao.org/climatechange/home/en/>

<http://www.fao.org/nr/water/>

Groundwater Resources under the Pressures of Humanity and Climate Change (GRAPHIC) is a UNESCO-led global project aimed at improving the knowledge on the impacts of climate change and human activities on groundwater resources. GRAPHIC is carried out in the framework of UNESCO's International Hydrological Programme (IHP). The project operates a global network of groundwater and climate scientists and carries out case studies focusing on the identification of indicators of climate change impacts on groundwater resources and the evaluation of tools and methods that could contribute to adaptation measures. The project is expected to contribute to enhanced cooperation between groundwater and climate scientists and improved consideration of groundwater in climate adaptation.

<http://www.unesco.org/water/ihp/graphic/>

Supporting countries with reducing vulnerability to water stress and/or scarcity of clean water and/or strengthening capacity of water sector institutions and communities to respond to climate variability and change are among UNDP's contributions towards climate change adaptation and

water security. Key results that are sought through these activities include (a) Water demand and supply management improved through climate-resilient policies and plans; (b) Institutional capacity strengthened to integrate climate change information into water resources management, including strengthened channels for cross-sectoral/ministerial communication and management; and (c) Local level capacity enhanced to cope with climate change impacts on water resources (e.g. adopting better-adapted water management practices).

<http://www.adaptationlearning.net/>

“Vision 2030: The resilience of water supply and sanitation in the face of climate change”:

WHO’s Vision 2030 study compiled evidence from climate change projections, trends in technology application and knowledge about the adaptability and resilience of drinking-water and sanitation. This booklet contains a summary of key conclusions and policy implications that further our understanding of how climate changes will affect the drinking-water and sanitation situations, and the possible adaptation measures to reduce the ensuring health impacts. The WHO Water, Sanitation, Hygiene and Health programme plans an active follow-up with contextual studies in specific countries that should lead to policy change.

Water Safety Plan (WSP) Manual: Step-by-step risk management for drinking-water suppliers to identify, manage and mitigate risks associated with climate change: The WHO Water Safety Plans (WSP) Manual provides detailed guidance on a comprehensive risk assessment and risk management approach that encompasses all steps in water supply from catchment to consumer to strengthen the resilience and adaptation planning of water supply and sanitation infrastructure for climate change. Going forward, WHO is working with donors (AusAID) and strategic partners (IWA) to actively pursue capacity building efforts on WSPs. Building on this WSP Manual, a document has been developed to apply WSPs to risks associated with climate change. It provides detailed guidance on how the WSP approach can help assess, identify and mitigate potential climate-related risks. Through case-studies of utilities from developed and developing countries it draws out the key lessons to provide a better understanding on potential climate risks facing water supply utilities, and how WSP can be an effective adaptation tool to mitigate these risks.

http://www.who.int/water_sanitation_health/publication_9789241562638/en/index.html

The **Water Policy Advocacy Framework** of UNCCD aims to highlight for advocating to governments of affected countries and cooperation partners to pay special attention to the impacts of desertification / land degradation and drought on the availability, accessibility and sustainable management of water resources, in particular in already water-scarce ecosystems, in the light of:

- (a) Potential future global water crisis associated with climate change,
- (b) Current and emerging challenges – poverty eradication, food insecurity, forced migration from drylands, changing and varying climatic patterns, increasing water scarcity, etc. as they relate to the MDGs,
- (c) The importance of water resources in improving the livelihoods of populations and the conditions of affected water-scarce ecosystems (the drylands) given the implications of climate change imperatives.

UNCCD Water Policy Advocacy Framework (2009)

<http://www.unccd.int/publicinfo/pagi/docs/EnhancingwaterresourcesprotectionDraftpolicydocument.pdf>

Climate change, adaptation, water and biodiversity are major inter-linked themes under the Convention on Biological Diversity. Climate change impacts on ecosystems and human well-being are occurring mainly through changes in the hydrological cycle (ref. IPCC) and water is central to human welfare. A detailed science based policy review concludes that key adaptation opportunities are water/ecosystem related. The next (2010) Conference of the Parties, an intergovernmental policy platform, will consider strengthening attention to using and restoring natural infrastructure, by

managing land, water use and wetlands together, to sustain the ability of ecosystems to protect people from increasing water scarcity and risk. CBD decisions are binding and implemented nationally.

Watershed management is a sound approach to help mitigate the effects of climate change and to support communities to adapt to the impacts of climate change. FAO has a long tradition of work in watershed management. In close collaboration with many partners world-wide, FAO has recently completed a global review of watershed management experiences. The recommendations from this global review, which were published in a resource book entitled "the new generation of watershed management programmes and projects", are currently being applied in many field projects across the world.

At the regional level, the UN Regional Commissions are assisting Member States on the preparation of methodologies to assess the vulnerability of water resources to climate change in the different regions. Adaptation measures include actions on both water supply and water risks, such as protecting water supply infrastructure and traditional water supply sources, developing flood ponds, water harvesting, improved irrigation, desalination, non-water-based sanitation and improved watershed and trans-boundary water resource management. **Integrated water resource management (IWRM)** provides the accepted framework for such actions.

<http://www.escwa.un.org/divisions/otherdetails.asp?id=105>

<http://www.unece.org/env/water/cooperation/area422.htm>

<http://www.unescap.org/esd/water/iwrn/index.asp>

<http://www.eclac.cl/DRNI/proyectos/samtac/progasoc.asp>

http://www.uneca.org/unregionalconsultations/INFRASTRUCTURE/infrastructure_water.asp

Regional projects include:

- The Arab states are some of the most critically affected by water scarcity. ESCWA, in collaboration with UNEP/ROWA, UNDP and other organizations is assisting these states in the preparation of a methodology for assessing the vulnerability of water resources to climate change in the Arab region. **The Arab Integrated Water Resources Management Network (AWARENET)** is a network of water stakeholders in the Arab region. The network Secretariat is hosted by ESCWA. To promote the network and south-south cooperation on climate change impacts on water resources, the Climate Change Working Group has been established in a meeting of ESCWA members on 29-30 July 2009.
<http://www.awarenet.org/>
- Under the UNECE Water Convention a **Guidance on water and adaptation to climate change** has been elaborated to offer step-by-step advice on how to develop an adaptation strategy: how to assess impacts of climate change on water quantity and quality, how to perform risk assessment, including health risk assessment, how to gauge vulnerability, and how to design and implement appropriate adaptation strategies. The Guidance has a special focus on the transboundary level and on health aspects. It underlines the benefits of cooperation in adapting to climate change in transboundary basins: sharing the costs and benefits of adaptation measures, better managing uncertainty through the exchange of information, broadening the knowledge base, and enlarging the range of measures available for prevention, preparedness and recovery. On the basis of the Guidance, a number of projects will be implemented in 2010-2012; the Water Convention will also establish a platform for the exchange of experience in this area.
<http://www.unece.org/env/water/water.and.climate.htm>
http://www.unece.org/env/documents/2009/Wat/mp_wat/ECE_MP.WAT_30_E.pdf
- ECLAC is working with policy-makers and academic community **in Latin America** to help modernize water legislation so as to provide for appropriate institutional responses to promote adaptation to the impacts of climate change. Given the uncertainty of these impacts at the local

level, attention is centred on adaptation in the framework of integrated water management (availability of information, allocation rules under water scarcity, water reallocation, response plans to floods and droughts, redefining the extent of water rights and use or discharge permits, coordination forums, etc.).

<http://www.eclac.cl/DRNI/proyectos/walir/homee.asp>

- Climate change is expected to worsen impacts of natural disasters **in Asia-Pacific**, the most vulnerable region of the world. To promote synergy, ESCAP works with partners to address climate change adaptation through: supporting policy initiatives; capacity building; developing guidelines. These initiatives are ongoing in cooperation with Asia-Pacific Knowledge Hub on water and climate change (<http://www.nahrim.gov.my/wkh/>), Asian Development Bank, Asia-Oceania Geoscience Society, CapNet/UNDP (AquaJaring)
<http://www.unescap.org/esd/environment/cap/>
- Within the framework of implementation of the ECA-SADC Multiyear Programme (MYP), the Southern Africa Office of ECA is currently working on the development of a field project to facilitate the operationalisation of a basin-wide institution for **integrated water resources management in the Zambezi river basin** with activities around climate adaptation, including the enhancement of early warning systems (seasonal outlook prediction, real-time basin-wide hydrological forecasting system, and remote sensing/GIS for floodplain inundation mapping and land use monitoring), and small scale afforestation and reforestation projects that qualify for CDM and voluntary carbon markets financing within the framework of the Kyoto Protocol. The early warning systems will seek to improve the data collection network and infrastructure within the Zambezi basin and facilitate the linkage between climate outlook predictions and real-time hydrological forecasting at basin scale. ECA's interventions are geared towards mobilizing the support of SADC and the eight riparian States of the Zambezi river basin, development partners, donor countries and international organizations in establishing river basin cooperative arrangements for the planning and development of the resources of the basin for their mutual benefits; and in mitigation and adaptation activities for climate risk reduction. Other partners include AUC, SADC, eight countries of the Zambezi basin, WMO, FAO, WFP, and others.
<http://www.zaraho.org.zm/zacpro.html>

CEO Water Mandate: Launched by the UN Secretary-General in July 2007, the UN Global Compact's CEO Water Mandate is focused on developing corporate strategies and solutions to contribute positively to global water issues. The Mandate is a call-to-action to business everywhere, and provides a strategic management framework covering six areas: direct operations, supply chain and watershed management, collective action, public policy, community engagement and transparency:

http://www.unglobalcompact.org/Issues/Environment/CEO_Water_Mandate/index.html

The **Associated Programme on Flood Management** of WMO and its *Helpdesk* is supporting countries in developing integrated flood management, thereby improving their national flood prevention and preparedness.

An **online training course on water and climate change** is offered by UNESCO-IHE Institute for Water Education and partners. The course covers Integrated Water Resources Management in relation to climate change, the relation between the hydrological and climate cycles, dealing with risk and uncertainty and adaptation. <http://www.unesco-ihe.org/Education/Short-courses/Online-courses/Water-and-Climate-Change>

Disaster risk reduction and risk management

Good practices can be identified in all of the priority areas identified in the Hyogo Framework for Action. These include measures to make disaster risk reduction a priority, know risks and take action, build understanding and awareness, address underlying risk factors and being prepared and ready to act.

UNDP supports national efforts to identify risk and risk reduction options

UNDP's Bureau for Crisis Prevention and Recovery and Bureau for Development Policy have developed a joint Climate Risk Management Technical Assistance Support Project that is currently being implemented in four countries across four continents – Indonesia (Asia), Mozambique (Africa), Armenia (Europe/ CIS) and Ecuador (Latin America & Caribbean). In all four countries, the project has strengthened capacities of national meteorological services to undertake climate analysis, especially in using statistical tools for data quality, analysis of extremes control, derivation of extreme indices and statistical downscaling. This was achieved through a hands-on training of participants from the four countries, undertaken in collaboration with the Indian institute of Tropical Meteorology (IITM), Pune, India and University of Cantabria, Spain. The project has also been successful in identifying climate risks and options at a practical level, leading to practical measures and solutions for climate risks by linking science to institutions and society. In Indonesia, based on demand expressed to evolve practical climate change adaptation measures, the project has developed locally appropriate, district level climate change adaptation project designs for NTT and Band Aceh provinces.

World Food Programme leads development of multi-hazard monitoring and forecast tool

In central America, one of the most disaster prone regions of the world, WFP has been leading the development of a sophisticated web-based, multi-hazard monitoring and forecast tool called SATCA (Spanish acronym for Sistema de Alerta Temprana para Centro America). The system, which uses state of the art technology and provides precise, real-time information for on-going and forecasted natural hazards, supports the work of existing regional emergency preparedness and relief response institutions, and promotes capacity development and enhanced cooperation among partners in the Central America region. SATCA functions as a one-stop-shop for disaster preparedness and has become a very popular source of information among practitioners. Now entering its second phase of development, this demand-driven tool is in the process of strengthening its monitoring and information analysis capacities in areas such as food security monitoring and climate variability and change.

World Meteorological Organization works with Partners to document good practices in Multi-Hazard Early warning Systems and develop training programmes in this area linked to development projects at national and regional levels

Through two International Experts' Symposiums on Multi-Hazard Early Warning Systems" (MHEWS-I & II) WMO, in collaboration with 12 UN and other international agencies, has identified criteria for good practices in multi-hazard early warning systems and identified four cases of "good practices" including: i) Bangladesh Cyclone Preparedness Programme; ii) Cuba Tropical Cyclone Early Warning System; iii) France Vigilance System; and iv) Shanghai Multi-Hazard Emergency Preparedness Programme. These cases have been documented through a multi-agency process at the national level and analyzed to develop the first guidelines on "Capacity Development in Multi-Hazard Early Warning Systems with focus on Institutional Coordination and Cooperation." Based on these materials, a training programme has been developed targeted at directors and high-level officials from National Meteorological and Hydrological Services (NMHSs) and disaster risk management agencies and other national stakeholders. Seven other good practices are being documented with focus on Standard Operational procedures among various agencies in Multi-hazard early warning systems.

World Bank (GFDRR), ISDR, World Meteorological Organization and UNDP are initiating projects to strengthen Disaster Risk Reduction capacities in different countries and regions

These coordinated projects were first modeled in South East Europe and are being expanded to Central Asia and Caucasus, and South East Asia. They involve capacity development in three areas: (1) Strengthening of disaster risk management programmes and capacities; (2) Strengthening of the National Meteorological and Hydrological Services, (3) Development of financial risk transfer markets.

World Meteorological Organization works with partners to improve Africa's weather monitoring network

The World Meteorological Organization, Global Humanitarian Forum, Ericsson, mobile telecommunications company Zain and the Earth Institute at Columbia University undertake a public-private initiative, dubbed “Weather info for all”, to radically improve Africa’s weather monitoring network in the face of the growing impacts of climate change. The initiative aims to deploy 5 000 automatic weather stations at new and existing mobile network sites throughout the continent, bringing information which is crucial to saving lives increasing economic opportunity to tens of millions of people. Mobile networks provide the necessary connectivity, power and security to sustain the weather equipment. Mobile applications will help communicate weather information provided by National Meteorological and Hydrological Services (NMHSs) via mobile phones. Mobile operators will maintain the automatic weather stations and assist in the transmission of the data to NMHSs. The initial deployment focuses on the area around Lake Victoria in Kenya, United Republic of Tanzania and Uganda. The first 19 automatic weather stations installed will double the current weather monitoring capacity of the region.

Food and Agriculture Organization supports Nepal's efforts to map risk

FAO is assisting the Government of Nepal in developing localized hazard, vulnerability and risk mapping using primary and secondary data. The primary data source includes information collected from the local communities at the Village Development Committee using participatory risk identification techniques. The secondary data sources are from various district level organizations and institutions. The quantitative and qualitative approaches were used to characterize frequency and intensity of hazards and community level socio-economic and livelihood profiles. The hazards were measured with the presence of the indicators and the vulnerability measured with the weighted indicators. Zero to one scoring transformation method was used to standardize the indicators and then to compute the composite indices. The local and community perception of risks were also used in the risk assessment as a product of hazard and vulnerability. The spatial risk maps are produced to guide decision making on suitable disaster risk management and adaptation practices.

United Nations Environment Programme works to build capacity of coastal zone managers

Mangroves for the Future initiative (MFF) is a multi agency (IUCN, UNDP, CARE International, FAO, UNEP, Wetlands International, NORAD and Sida) multi country (India, Indonesia, maldives, Seychelles, Sri Lanka and Thailand) initiative which aims at strengthening the environmental sustainability of coastal development and at promoting sound investment and action in coastal ecosystems management. Through contributing to enhanced and more integrated coastal zone management, including consideration of climate change adaptation and disaster risk reduction, MFF is also working to promote community resilience to natural hazards. Recognizing the potential impacts of climate change on coastal areas, MFF is mainstreaming criteria and considerations of adaptation in the initiative as a whole and in all its related projects. In collaboration with MFF, UNEP is undertaking the building of capacities of coastal zone managers and enhancing their cooperation with the disaster risk reduction sector, to support the design and implementation of projects that enhance the protection of lives and livelihoods while improving environmental quality and protecting ecosystem services.

Community adaptation to Climate Change in Southern, Central and Eastern Africa (WFP)

In Southern, Central and Eastern Africa, WFP is operating on the frontline of complex humanitarian crises, fighting hunger and helping to strengthen the preparedness and response capacities of households, communities, local institutions and national governments. Targeted food for asset programmes help strengthen community coping capacity both by supporting individual families and by building community assets. Recent activities include supporting water harvesting and storage for run-off retention in Tanzania, and the rehabilitation of shallow wells, dams and flooding control points along the Shabeelle River in Somalia or irrigation and drainage ditch rehabilitation in Zambia. Activities to support land rehabilitation for agricultural production in Somalia, Rwanda, Ethiopia and Burundi as well as land reforestation project in Zambia, Burundi and Uganda can achieve both mitigation and adaptation benefits. WFP has developed six Project Idea Notes which will lay the foundation for WFP to place its' integrated food-for-work and carbon credit projects on the global carbon credit market for potential funding. Participating countries include: Kenya, Tanzania, Rwanda, Uganda and Ethiopia.

Addressing the Impact of Climate Change on Pastoralism in Central and East Africa (UN-OCHA)

Due to their reliance on natural resources, pastoralist communities are particularly vulnerable to natural and human-caused disasters. UN-OCHA has been working to facilitate partnerships across a variety of sectors to develop a more suitable mechanism for bringing together existing and new thinking on pastoralism. Since January 2009, consultations and assessments have been carried out with pastoralists from Uganda, Kenya, Ethiopia, Tanzania and Southern Sudan; Members of Parliament from pastoralist constituents in these countries; and a range of other stakeholders to look at how improved coordination and advocacy might underpin improved action to support adaptation in pastoralist areas. Strategies highlighted to date include forging regional partnerships on climate change, migration and cross-border conflict to promote pastoralists' cross-border mobility needs as a climate change adaptation strategy; and stepping up advocacy for reconciliation of regional cross-border security and pastoralists' livelihood including cross-border access to water and pasture. Scaling up successful pilot based community-based adaptation projects to ensure documentation and rapid replication particularly with regards to improved drought preparedness planning, disaster management structures and risk reduction will also be particularly important for effective adaptation.

Financing investments in climate resilient development plans (World Bank)

The Pilot Program for Climate Resilience is the first programme under the World Bank's Strategic Climate Fund. It aims to provide incentives for scaled up action and transformational change in integrating consideration of climate resilience in national development planning consistent with poverty reduction and sustainable development goals. It will provide additional financial resources to help fund public and private sector investments identified in climate resilient development plans. <http://web.worldbank.org/WBSITE/EXTERNAL/TOPICS/ENVIRONMENT/EXTCC/0,,contentMDK:22107896~menuPK:5933274~pagePK:210058~piPK:210062~theSitePK:407864,00.html>

Promoting science, knowledge and education for disaster preparedness and mitigation, and enhancing national and regional coping capacities, as well as public awareness on these topics (UNESCO)

Through several programmes dealing with the study of natural hazards (landslides, floods, storm surges, droughts) and the mitigation of their effects, UNESCO is assisting countries to reduce their vulnerability to natural hazards and build their capacity to cope with disasters. UNESCO disaster risk reduction programmes provide a platform for enhancing cooperation in knowledge-sharing, policy advice and education for disaster preparedness and mitigation, and for supporting the development of risk reduction networks as well as monitoring and assessment measures, with particular emphasis on promoting regional hazard monitoring and warning systems including tsunami early warning systems and regional flood alert systems. Specifically, UNESCO provides intergovernmental coordination, advice to governments and policy support for the establishment and operation of monitoring

networks and early warning and risk mitigation systems for natural hazards including those directly related to climate change.

Regional initiatives on disaster risk reduction and preparedness

ECLAC, “Handbook for Estimating the Socio-Economic and Environmental Effects of Disasters”: This handbook describes the methods required to assess the social, economic and environmental effects of disasters, breaking them down into direct damages and indirect losses and into overall and macroeconomic effects. The handbook focuses on the conceptual and methodological aspects of measuring or estimating the damage caused by disasters to capital stocks and losses in the production flows of goods and services, as well as any temporary effects on the main macroeconomic variables. It also contemplates both damage to and effects on living conditions, economic performance and the environment. The handbook describes a tool that enables one to identify and quantify disaster damages by means of a uniform and consistent methodology that has been tested and proven over three decades.

<http://www.gdrc.org/uem/disasters/disenvi/eclac-handbook.html>

ESCAP: Multi-Donor Trust Fund for Tsunami, Disaster and Climate Preparedness: The Fund was established by the United Nations Economic and Social Commission for Asia and the Pacific (ESCAP) in late 2005, to strengthen capacities of Indian Ocean and Southeast Asian Governments in setting up effective end-to-end early warning systems through a multi-hazard approach. The Fund has launched a new Strategic Plan to provide guidance to Fund governance, organizations submitting proposals to the Fund, prospective donors and other stakeholders. The Fund also periodically commissions a Report on Regional Unmet Needs in Early Warning Arrangements.

http://www.unescap.org/pmd/tsunami_index.asp

ESCAP: Framework for Regional Cooperation on Space Technology Supported Disaster Reduction Strategies in Asia and the Pacific: Study report prepared for the Meeting of Experts on Space Applications for Disaster Management.: The use of space-based information and services to help reduce the risk of disasters in the Asia-Pacific region is promoted through a collaboration agreement between the Japan Aerospace Exploration Agency (JAXA) and the United Nations Economic and Social Commission for Asia and the Pacific (ESCAP). Representatives of the two organizations signed a Memorandum of Understanding which will see them expand their cooperation and collaboration in promoting the use of space-based information and services - such as satellite imagery, remote sensing and satellite-based communications - for disaster risk reduction and disaster management in Asia and the Pacific.

<http://www.unescap.org/publications/detail.asp?id=1241>

ECA: ClimDev is an African development programme to integrate Climate Risk Management into pertinent policy and decision processes throughout the continent. It is implemented under the direction of the Joint AUC-ECA-AfDB Secretariat with support from a number of sources. ClimDev-Africa aims to enhance economic growth and progress towards the MDGs through mitigating the vagaries of climate variability and climate change, and to ensure that development achievements already gained are climate resilient in the longer term. It is a 3 phase programme over an 11 year period.

http://www.uneca.org/eca_programmes/sdd/events/climdev.pdf

ESCWA coordinates with the League of Arab States and UNEP/ROWA to address climate change issues in the region through the Arab Climate Change Framework Strategy. As the secretariat of the Regional Cooperation Mechanism (RCM), ESCWA encouraged the establishment of a thematic working group on Climate Change for the Arab Region to ensure coordination between different UN agencies working on this issue in the region.

<http://www.escwa.un.org/divisions/teams.asp?teams=Water%20Resources&division=SDPD>

The ECE has a Working Group on Environmental Monitoring and Assessment under the Environment for Europe process, which helps countries in the region to build their environmental information and observation capacities and harmonize their approaches with those used by the European Environment Agency.

<http://www.unece.org/env/welcome.html>

UN Country Team in partnership with the Government of Mozambique

In a country as vulnerable to climate change as Mozambique, the consequences of disaster depend largely on the capacity of communities to bounce back. In a context of increasing frequency and intensity of disasters disaster risk reduction activities, as part of a country led strategy to adapt to climate change are increasingly relevant. UN country team efforts in support of the Government's National Institute for Disaster Management have helped contribute to a marked improvement in Mozambique's disaster preparedness and response capacity over the past decade. Clear leadership, improved coordination mechanisms and new social structures, such as community disaster management committees, have been instrumental in strengthening Mozambique's capacity to respond to natural disasters. They have particularly invested in strengthening local capacity and in training in local communities, training of volunteers, and the creation of local disaster management committees. All the actors - government, civil society, UN agencies - are involved in developing contingency plans and disaster simulation exercises, and strengthened humanitarian coordination mechanisms have produced improved way of working together; not only in terms of sharing information, but also in terms of sharing resources. For example if the a UN agency, the Red Cross or other actor has relief supplies, they can draw on WFP logistics and transport support, or UNICEF warehousing capacity. The combination of preparedness and awareness at community level, and improved coordination and clear definition of roles and responsibilities leading to strengthened response has had a direct impact. During the floods and cyclones in 2007 and 2008 , in the places where investments have been made in strengthening preparedness, there has been a direct impact on saving lives and livelihoods both during and after a disaster.

Identification and management of strategic groundwater bodies for emergency situations

Groundwater for Emergency Situations (GWES), led by UNESCO IHP, promotes the identification and management of strategic groundwater bodies to be used for emergency situations as a result of extreme hydrological and geological events and in case of conflicts. In emergency situations deep, resistant groundwater resources unaffected by natural and man-made calamities are the most reliable source of drinking water. Such groundwater resources need to be identified, investigated, safeguarded and developed as they serve as a strategic resource of drinking water in case of catastrophic events. In this context, the GWES project develops methodologies for the identification of groundwater resources of low vulnerability to extreme events and provides guidelines for the identification, investigation, development and management of strategic groundwater to water managers and decision makers.

ILO and World Bank Joint Statement on Disaster Risk Reduction and Recovery

The aim of the joint statement is to work more closely on global disaster risk reduction and livelihoods¹: Both organizations aim to reinforce their collaboration to address the consequences of natural hazards and rebuild livelihoods in the aftermath of disasters as well as intend to further promote innovative joint initiatives at the field level to help disaster prone countries to reduce the risk of loss of livelihood due to disasters, accelerate the transition to post-disaster recovery, and prepare livelihood adaptation measures in view of climate change challenges. These organizations work together to support national capacities for disaster risk management by training government officials and social partners representing workers and employers, as well as other country

¹ (http://www.ilo.org/global/About_the_ILO/Media_and_public_information/I-News/lang--en/WCMS_108493/index.htm)

stakeholders that include non-governmental organization and representatives of private sector organizations.

http://www.ilo.org/global/About_the_ILO/Media_and_public_information/I-News/lang--en/WCMS_108493/index.htm

Consulting Unit on Biodiversity and Tourism for Tsunami Affected Countries

In 2006, UNWTO, with financial support of the German Government, set up its Consulting Unit for Tourism and Biodiversity in Bonn, Germany. The Unit implements projects with Indonesia and Thailand to elaborate Tourism Management Plans and to develop biodiversity based participatory tourism products in two model areas in West Java and at the Andaman Coast, both areas being hit by tsunamis. Biodiversity conservation through sustainable use is one goal of the model projects, also those ecosystems (mangroves, coral reefs) that contribute to disaster impact reduction of tsunamis and to CO2 storage in ecosystems that otherwise would be converted into recreation areas.

Biodiversity oriented tourism development is an incentive to maintain protected areas for using their ecosystem services for tourism development rather than converting them into low carbon storage ecosystems. The tourism management plans include references to a low carbon hotel industry derived from the PEEK project (Programme on Energy Efficiency in Kho Khao) mentioned above. The Unit cooperates with the Tsunami Early Warning System in order to reduce the risks of tsunami impacts. Outputs are toolboxes for participatory development of tourism and biodiversity and guidelines for biodiversity based tourism product development and packaging.

<http://www.unwto.de>

Additional websites and publications

Disaster risk reduction in the United Nations 2009

<http://www.preventionweb.net/english/professional/publications/v.php?id=9866&pid:21>

Background and options for reducing disaster risks

http://www.unisdr.org/eng/risk-reduction/climate-change/docs/Supporting_BAP_1_c_%20ii&iii.pdf

Disaster Risk Reduction Tools and Methods for Climate Change Adaptation

<http://www.unisdr.org/eng/risk-reduction/climate-change/docs/DRR-tools-CCA-UNFCCC.pdf>

Websites with a diverse range of tools, methods and good practices:

PREVENTIONWEB: www.preventionweb.net

FAO DRM guide <ftp://ftp.fao.org/docrep/fao/010/ai504e/ai504e01.pdf>

IASC report, “Addressing the Humanitarian Challenges of Climate Change”:

www.humanitarianinfo.org/iasc/downloaddoc.aspx?docID=4862

Health and nutrition

Health 8 (H8): The Leaders of the H8 (Bill & Melinda Gates Foundation; GAVI Alliance; Global Fund; UNFPA; UNAIDS; UNICEF; WHO; World Bank) have formed an informal group aimed at stronger coordination and collaboration across agencies’ working in global health. The H8 recognizes that with the changing aid environments; the many new initiatives and partnerships, it is critical to work more closely together; building on synergies and complementarities in support of Global Health and specifically in advancing the Health MDGs.

Health 4 (H4): The H4 is formal partnership to intensify the harmonized support of four Agencies (UNFPA, UNICEF, World Bank and WHO) to countries in their work to achieve Millennium Development Goals 4 & 5, with a focus on maternal, reproductive and newborn health. Enhanced support is initially being provided to 25 high mortality countries with a view to provide enhanced support to all 60 high maternal mortality countries over the next five years. Over the past few months the H4 team has finalized a joint work plan. This Work Plan aims to harmonize approaches to improve maternal and newborn health/reproductive health at country level.

International Health Partnership (IHP+): UNFPA, WHO, UNICEF, World Bank, UNAIDS, GAVI, Global Fund, BMGF, UNDP, EC, AfDB, DFID, NORAD, SIDA, AusAID and France, are actively engaged in the IHP+ and related initiatives² that place emphasis on country-focused, country-led implementation to achieve improved results. The partnership fosters inter-agency cooperation, reduce transaction costs, improve aid effectiveness, strengthen predictability of aid and increase domestic and external resources for the health sector in support of national health plans and strategies. It recognizes that strengthening health systems (Human Resources; Financing; Logistics, Infrastructure; M&E) is critical to improving health outcomes, including maternal health. While at the same time it also addresses mutual accountability, demand creation (innovative financing) and strengthening harmonization and alignment.

Harmonizing Health for Africa (HHA): UNFPA (together with AfDB, UNAIDS, WHO, UNICEF and the World Bank) is part of the HHA, formed in 2007. It is the regional contribution to support country ownership and leadership towards achieving the health related Millennium Development Goals, as well as country coordination, harmonization and alignment. The HHA aims at both facilitating timely, high quality, harmonized technical support to countries on demand, and strengthening the sharing of ideas, experiences, and thinking across agencies, countries, institutions groups and individuals.

World Health Organization Programme on Climate Change and Human Health: The programme has recently been restructured and expanded in response to a resolution of the World Health Assembly in 2008. It works through WHO headquarters, regional and country offices, and in partnership with other UN agencies, to support advocacy, intersectoral partnership building, generation of science and evidence, and health system strengthening. Key resources produced in 2009 include a global research agenda for climate change and health, a training course for public health professionals, revised guidance on health vulnerability and adaptation assessment for climate change, and pilot projects on health adaptation to climate change across 14 Member States.
<http://www.who.int/globalchange/en/>

Concept note “Climate Change and HIV: possible scenarios and actions”: Prepared by UNAIDS in collaboration with the International Centre for Migration and Health (ICMH), the concept note outlines the possible linkages between climate change and HIV, illustrating why we have to pay attention to the potential exigencies that may arise, paying attention to the country and regional level contexts and ensuring appropriate linkages are established. Despite the investment made in developing national and international responses to the HIV epidemic, the continuing spread of the disease remains a cause for alarm. HIV and HIV related diseases such as TB continue to present major challenges to development in spite of the considerable progress made on AIDS treatment and HIV prevention,. Climate change in many parts of the world could significantly worsen the situation and contribute to the spread of HIV. Although countries everywhere are being affected by the HIV

² Eight Countries signed the IHP in September 2007: Burundi, Cambodia, Ethiopia, Kenya, Mozambique, Nepal, Zambia and Mali. At the World Health Assembly in May, another two countries signed: Madagascar and Nigeria. A number of other countries remain interested in the process: Benin, Burkina Faso, Ghana and Niger.

Eight Multilateral Agencies, The Gates Foundation and the African Development Bank are involved. Eleven Bilateral Agencies: UK, Norway, Germany, France, Italy, Portugal, Netherlands and more recently Australia, Finland, Spain and Sweden.

epidemic, it is developing countries that are suffering the most, and it is these same countries that are now likely to be affected the most by both the direct and indirect impacts of climate change.

The “HIV and AIDS in Emergency Situations” synthesis report: A collaborative research activity by UNAIDS, WFP and the Overseas Development Institute (ODI) to look more closely at the impact that different types of emergency situations have on people living with HIV, on HIV-related services and on vulnerability to new HIV infections. During the first phase of the research project, a literature review was produced, in which existing materials on the various aspects of HIV and emergency situations were compiled and reviewed, and key gap areas were identified. During the second phase, five field studies were carried out in different emergency settings: Haiti, Mozambique, northern Kenya, Central African Republic and Sri Lanka. In the third phase, the results from the first two phases were consolidated to develop an overall conceptual framework for HIV in Emergency situations and a typology, which can help to develop more context-specific responses to HIV in emergency situations.

Gender perspectives

Participatory & Gender-Balanced Planning and Implementation of all climate programmes and projects:

Disaster Risk Reduction and Early Warning:

Good practices in DRR need to promote gender-sensitive risk reduction as a core and essential part of poverty reduction strategies; sustainable agriculture, facilitating women's empowerment and gender mainstreaming of all DRR programmes and projects at global, national, and local levels. A good example of gender in DRR may be observed in the UNDP Pacific Centre work on gender DRR and climate change, and have conducted a study on this topic that may be found in the reference section. Various other studies have shown that involving and educating women on early warning systems, achieves positive results such as a recent study by the London School of Economics analyzed disasters in 141 countries, which showed decisive evidence that gender differences in deaths from natural disasters are directly linked to women's economic and social rights. When women's rights are not protected, more women than men will die from disasters. The study also found the opposite to be true: in societies where women and men enjoy equal rights, disasters kill the same number of women and men.³

Agriculture:

In the agricultural sector, rural women in developing countries are the primary producers of staple food, a sector that is highly exposed to the risks that come with drought and uncertain rainfall. Good practices in agriculture are those that target to empower women by building their capacity to adapt to changing climate in their agricultural practices, building upon their existing indigenous knowledge in the same. WFP's Food for Work and Food for Training programmes are community-based adaptation solutions serving the world's poorest and most vulnerable. Responses to climate change are designed using a participatory approach that takes into account the different needs of women, men, young people and the elderly. Women, for example, have achieved greater access to training through Food-for-Training (FFT) schemes. Moreover, WFP's Purchase for Progress (P4P) is using specifically tailored activities to help them achieve empowerment as producers, traders and agricultural extension workers to enhance the local food production, reducing also gender disparity.

³ Neumayer, E. and Plümper, T. 2007. *The Gendered Nature of Natural Disasters: The Impact of Catastrophic Events on the Gender Gap in Life Expectancy, 1981–2002*. Annals of the Association of American Geographers, 97/3:551-566

Water:

Increased water stress and water insecurity in many countries means that women and young girls have to walk further to collect water, in Kenya for example fetching water may use up to 85% of a woman's daily energy intake; in times of drought a greater work load is placed on women's shoulders, some spending up to 8 hrs a day in search of water.⁴ Good practices in community water resource management necessitate the equally involvement women in decision making and management of the water resource, as well as empower them through capacity building in basic management skills and operation and maintenance of the water facilities.

Desertification:

Rural regions in developing countries have been impacted by land degradation in several ways and the consequences have affected women and men differently because of their unequal access to land, water and assets such as credit, extension services and technology. Subsequently when land degradation pushes men to migrate, it is women who end up in charge of nurturing the land where food and cash crops are grown, as well as collecting firewood, fetching, water and taking care of the elderly, youngsters and children. Therefore, the role of women will take on ever-increasing importance in combating and coping with desertification, land degradation and drought (DLDD) in drylands. Halting and reversing DLDD entails a prerequisite, which should be targeted at the traditional values, knowledge and experience women possess as far as local environmental services are concerned. In this context, the objective of increasing sustainable livelihoods in local communities has necessarily to address issues targeted towards gender equality.

The United Nations Convention to Combat Desertification (UNCCD) fosters a bottom-up approach that targets gender issues as well as rights-based policies. The UNCCD's strategic approach calls for collaboration with national and international institutions, organizations and civil society to address women's challenges in the drylands. Collaborating towards a bottom-up approach involves working with those in the field, realizing that those directly affected need direct support. The UNCCD National Action Programs serve as the frameworks within which fundamental public policies on gender are grounded. Addressing women literacy, numeracy and health issues, for example, are essential elements in any policy to combat land degradation. Traditional knowledge held by women in particular as regards to plants, medicines, food, water should be promoted. This knowledge is a valuable asset as it is passed from mother to daughter throughout many generations.

<http://www.unccd.int/knowledge/docs/Desertificationandgender.pdf>

Fuel and Energy:

Good practices need to adopt new innovative approaches that are not dependent on fossil fuels but rather leverage green renewable energy sources such as solar, wind, hydro technologies, and pedal power resources to create green jobs which provide energy solutions in the transport, agriculture, and health care sectors of rural developing communities. The key role of women in household energy calls for women's empowerment and equal access to new knowledge, technology and resources in the energy sector.

REDD and LULUCF:

Forests provide global food security and resources, food, fodder, fuel and medicine for most of the 1.2 billion people living in extreme poverty, 60% of whom are women.⁵ The way people use and manage forests depends on the socio-economic and socio-cultural factors, age and gender. Men are more likely to be involved in extracting timber and non-timber forest products (NTFPs) for commercial purposes, while women typically gather forest products for fuel, fencing, food for the family, fodder for livestock and raw materials to produce natural medicines, all of which help to increase family income. Good practices in REDD are those that promote forest policies that recognize women as key agents in forest related climate change processes, having respect for the

⁴ (Duncan, Kirsty, 2007).

⁵ UNFPA 2008. State of World Population 2008; and The Global Gender Gap Report 2008

rights of women to their traditional uses of the forest. Gender sensitive practices will provide women with new assets, increase biodiversity, and improve ecological conditions. As a result women will spend less time obtaining fuel wood, have access to cleaner energy sources, increase crop yields, improve land conditions, increase food security, and improve their socio economic livelihoods. There are various ongoing UNDP initiatives that are mainstreaming gender in their initiatives including the cross practice team initiatives for capacity development for climate-resilient human development in vulnerable developing countries, and energy access for the poor. Further, the UNDP Community Based Adaptation programme which often addresses issues of adaptation to climate change in agriculture and water scarcity, and the UN-REDD Programme are both actively collaborating with the Gender Team to integrate and address gender considerations in adaptation programmes.

Green Jobs: Improving the climate for gender equality too!: The ILO as part of its work on Green Jobs, has tackled the different impacts that women face due to climate change and has included the gender dimension of climate change as part of its Gender Equality at the Heart of Decent Work Campaign in 2008-2009. Different materials developed as part of this campaign highlight the impacts of climate change on women. They are increasingly being seen as more vulnerable than men to the effects of climate change because they represent the majority of the world's poor and are proportionally more dependent on threatened natural resources

http://www.ilo.org/gender/Events/Campaign2008-2009/lang--en/WCMS_101466/index.htm

Important websites and publications on gender and climate change include:

- *Budgeting for Women's Rights; Monitoring Government Budgets for Compliance with CEDAW— A Summary Guide for Policy-Makers, Gender Equality and Human Rights Advocates*, UNIFEM and UNFPA, 2008
- *Claiming the Millennium Development Goals: A human rights approach*, Office of the United Nations High Commissioner for Human Rights (OHCHR), 2008
- *Climate Change Connections*, UNFPA with the Women's Environment and Development Organization (WEDO)
<http://www.unfpa.org/public/site/global/lang/en/pid/4028>
- *Climate Change, Impacts, Vulnerabilities, and Adaptation in Developing Countries*, United Nations Framework Convention on Climate Change (UNFCCC), 2007
- *Climate Change and Water*; Intergovernmental Panel on Climate Change; IPCC Technical Paper VI (2009) [Recognizes women as integral in water management systems and therefore must be included in policies]
- *Climate Resilient Cities; A Primer on Reducing Vulnerabilities to Climate Change Impacts and Strengthening Disaster Risk Management in East Asian Cities*, World Bank, ISDR & Global Facility for Disaster Reduction and Recovery, 2008 [Especially chapter on Information Exercise: Creating a City Information Base]
- *Disaster Preparedness for Effective Response Guidance and Indicator Package for Implementing Priority Five of the Hyogo Framework*, UN-ISDR, 2008
- *Discrimination against Women: The Convention and the Committee, Fact Sheet No. 22*,), Office of the United Nations High Commissioner for Human Rights (OHCHR)
<http://www.ohchr.org/Documents/Publications/FactSheet22en.pdf>

- *Energy and Gender in rural sustainable development*, FAO, 2006
- *Gender in Agriculture Sourcebook*, World Bank, FAO & IFAD, 2008
- *Gender and Desertification*, UNCCD thematic fact sheet series No. 4, 2009
<http://www.unccd.int/knowledge/docs/Desertificationandgender.pdf>
- *The Gender/DRR/Climate Publication from the Pacific*
http://www.hazards-climate-environment.org/yahoo_site_admin/assets/docs/GenderDisasterClimateChange_Anderson_UNDP-PC_AusAID.131112806.pdf
- *Gender and Energy for Sustainable Development: A Toolkit and Resource Guide*, UNDP in collaboration with ENERGIA
<http://www.undp.org/energy/genenergykit/>
- *Gender and Equity Issues in Liquid Biofuels Production. Minimizing the risks to maximize the opportunities*
<ftp://ftp.fao.org/docrep/fao/010/ai503e/ai503e00.pdf>
- *Gender Handbook in Humanitarian Action: Women, Girls, Boys and Men: Different Needs – Equal Opportunities*, Inter-agency Standing Committee (IASC)
- *Gender Responsive Budgeting in Practice: A training Manual*, UNIFEM and UNFPA, 2006
- *Gender: The Missing Component of the Response to Climate Change*
<http://www.fao.org/docrep/010/i0170e/i0170e00.htm>
- *Gender Perspectives: Integrating Disaster Risk Reduction into Climate Change Adaptation; Good Practices and Lessons Learned*, UN-ISDR, 2008
- *Gender Perspective: Working Together for Disaster Risk Reduction; Good Practices and Lessons Learned*, UN-ISDR, 2007
- *Gender, Water and Sanitation: A Policy Brief*, prepared by the IANGWE Interagency Task Force on gender and water
<http://www.unwater.org/downloads/unwpolbrief230606.pdf>
- *Guidance Tool for Monitoring Cross-Cutting Issues in the Hyogo Framework for Action: Indicators and Strategies for Change*, UN-ISDR and UNIFEM
- *Meeting the MDG Drinking Water and Sanitation Target; The Urban and Rural Challenge of the Decade*, WHO and UNICEF, 2006
- *Population Dynamics and Climate Change* – book to be launched at COP15 based on the results of the UNFPA IIED Expert Group Meeting on population dynamics and climate change, 24-25 June 2009, London (<http://www.unfpa.org/public/ccpd>)
- *Report on the relationship between climate change and human rights* (A/HRC/10/61), Office of the United Nations High Commissioner for Human Rights (OHCHR), 2009

- *Resource Guide on Gender and Climate Change*, UNDP in collaboration with the Global Gender and Climate Alliance (GGCA), 2008
<http://www.undp.org/women/publications.shtml>
- *State of the World Population 2009 – Facing a Changing World: Women, Population and Climate*, UNFPA, 2009
- *Thematic guidelines – Integrating a gender perspective into Vulnerability Analysis*, WFP, 2005
- *WFP Gender Policy: Promoting Gender Equality and the Empowerment of Women in Addressing Food and Nutrition Challenges*, WFP, 2009
<http://documents.wfp.org/stellent/groups/public/documents/communications/wfp203758.pdf>
- *Training Manual on gender and climate change*, UNDP in collaboration with the IUCN and the Global Gender and Climate Alliance:
http://cmsdata.iucn.org/downloads/training_of_gender_total.pdf
- *UNEP Gender Plan of Action*, UNEP, 2006

Education

The United Nations Decade of Education for Sustainable Development (DESD): As lead agency for DESD and as task manager for Chapter 36 (Promoting Education, Public Awareness and Training) of Agenda 21, UNESCO is leading the global process to reorient education in support of sustainable development, notably in critical fields such as environmental education and the integration of climate change into national curricula as well as into lifelong learning programmes. UNESCO and UN partner agencies are providing technical assistance and capacity-building to Member States to improve the integration of ESD into tools for sector-wide planning and management. Specifically, UNESCO is (i) facilitating policy dialogue on climate change education, (ii) documenting innovative experiences and good practices in this respect, (iii) promoting the exchange of best practices in educational policies and curricula, (iv) supporting the reviews of existing tools, materials and practices in climate change teaching and learning, and (v) developing teaching guidelines, curriculum support tools, and learning materials on climate change education and related issues. UNESCO is working on the development of global policy frameworks and guidelines for curriculum and programme development in areas of concern for ESD such as education on global sustainability challenges (climate change, natural resources, etc.) or citizenship education. UNESCO will also continue to develop and disseminate teaching, training, learning and resource materials on climate issues, including guidelines to assist teacher education institutions in mainstreaming education for climate change in order to ensure the full integration of climate change considerations into learning and teaching processes. At the country level, technical assistance is provided to Member States to develop more specific learning content and curricula in different areas of concern to ESD, including climate change, as part of early childhood care and education as well as primary and secondary school.

<http://www.unesco.org/en/climatechange>

The UNESCO Associated Schools Network is used for pilot testing of prototype materials and awareness-raising tools, and for providing information to educators, teachers and students worldwide. Support for higher education institutions is provided through the UNESCO Chairs programme and the UNITWIN network to increase local, national and regional capacities to make

informed decisions about climate change, enable full participation in international debates, develop local adaptation and mitigation strategies, and develop capacities to take full advantage of opportunities for economic development, technological innovations and market incentives that may arise from mitigation actions, resource management practices and international conventions.

Within the framework of the 2008 Madrid Action Plan, the **World Network of Biosphere Reserves** is used for education and public awareness regarding innovative combinations of afforestation, reforestation, avoided deforestation, rural energy and infrastructure development and urban planning and constitutes a suitable platform for UN system cooperation. UNESCO provides a platform for fostering cooperation in knowledge-sharing, policy advice for disaster preparedness and mitigation, and for enhancing education and public awareness on these topics in the context of regional hazard monitoring and warning systems, including tsunami warning systems and regional flood alert systems.

<http://www.unesco.org/en/climatechange>

Employment

The Green Jobs Programme: ILO is endeavouring to become the recognized international organization for dealing with the impact of climate change, of policies related to it and of other environmental challenges and opportunities in the World of Work. To this end, it is working to deepen its expertise in analysis and policy advice on the formulation and implementation of policies and measures which contribute to recovery from economic crisis in the short-term and to promoting fair globalization and the development of sustainable enterprises and economies which are efficient, socially just and environmentally sound in the medium to long term. The Green Jobs Programme currently concentrates on five priorities: (1) tools with which to diagnose labour market impact to inform policies; (2) practical approaches to the greening of enterprises; (3) promotion of green jobs in waste management and recycling; (4) green jobs in renewable energy and energy efficiency; and (5) job creation and enterprise in the adaptation to climate change.

http://www.ilo.org/integration/resources/pubs/lang--en/docName--WCMS_107815/index.htm

The social and decent work dimensions of a new Agreement on Climate Change: A Technical Brief: The brief contains summaries of the state of knowledge about climate change, the mechanisms and the effects and of the repercussions for the world of work. It introduces salient features of the present international climate regime such as the UN convention and the Kyoto Protocol and of the current negotiations to arrive at a new global agreement in Copenhagen in December 2009.

http://www.ilo.org/integration/resources/briefs/lang--en/docName--WCMS_107814/index.htm

Climate Resilient Farming Communities in Agusan del Norte through Innovative Risk Transfer Mechanisms. Coping Mechanism improved through pilot schemes with national up-scaling potential of the “MDG-F Joint Programme on Strengthening the Philippines’ Institutional Capacity to Adapt to Climate Change”. The Project’s two-fold objectives are:
(1) To develop and test financial safety nets for vulnerable populations, especially women; and
(2) To develop the capacities of vulnerable populations to participate and avail of the benefits under economic diversification and a democratized governance system.

http://www.ilo.org/global/About_the_ILO/Media_and_public_information/Feature_stories/lang--en/WCMS_114422/index.htm

The ILO Green Jobs Course: The ILO Green Jobs course provides information about the link between climate and environmental change and transitions in the world of work. It gives examples of how enterprises, workers and governments contribute to cleaner and greener production and consumption patterns through green jobs in both mitigation and adaptation policies and measures.

Participants are empowered to contribute to national policy making on the social and employment aspects of climate change. The focus is on the social dimensions of relevant environmental and economic policies, including the workplace, enterprise development, incomes and poverty, and the labour market, in particular employment and skills development.

As part of this course a platform has been developed. This green jobs platform is the knowledge sharing platform of the International Training Center from ILO (ITC ILO) on green jobs.

<http://greenjobs.itcilo.org/>

ILO Bureau of Statistics: The ILO Bureau of Statistics as the focal point within the United Nations system for labour statistics is responsible for providing other international organizations with data that are as reliable and timely as possible. These data are part of the whole range of socio-economic information which needs to be matched with meteorological information in order to properly design and effectively implement adaptation policies and measures. The ILO Bureau of Statistics assists the economic sectors in identifying their data needs, collaborates with them on the gathering of information from countries, and advises them on the use of data for specific purposes and therefore play an essential role in the efforts of member States to achieve decent work for all and for the ILO's support of these efforts.

<http://www.ilo.org/stat/lang--en/index.htm>

The UN system and adaptation

The UN system Chief Executives Board for Coordination (CEB), in its decision of 28 April 2008, identified adaptation as one of five areas of focus for UN system-wide work on climate change, in response to the UNFCCC negotiation process and in pursuance of the broader mandates and capabilities in the UN system.

Work related to adaptation is already being carried out under a number of sectors identified at earlier stages of the CEB coordination exercise, including agriculture and fisheries; disaster risk reduction; education; forestry; health; information and communication technologies; oceans; land degradation and desertification; population and human settlements; tourism; water. Adaptation is also to some extent addressed by work done under other CEB focus or cross-cutting areas, such as capacity building; finance; supporting global, regional and national action; climate knowledge; and public awareness raising (see above).

The HLCP Working Group on Climate Change is collectively responsible for convening/ coordinating the overall collaborative work of the UN system relating to Adaptation at the programme level, while the UN Development Group (UNDG) is expected to advance relevant country-level operational activities. The UN Regional Commissions bring together stakeholders and advance common understandings and relevant work at the regional level. Guidance is provided by the UNFCCC Secretariat, with respect to concrete implementation actions called for by the Parties through existing agreements and as the negotiations progress. The process occasionally leads to identification of gaps and further requirements in activities, mandates and/or resources in important areas of relevance to adaptation, which would need to be conveyed to the Parties to UNFCCC for their consideration and possible action in the context of their common but differentiated responsibilities.

LIST OF ACRONYMS

CBD - Convention on Biological Diversity
CDM - Clean Development Mechanism
CEB - United Nations System Chief Executives Board for Coordination
COP - Conference of the Parties
FAO - Food and Agriculture Organization of the United Nations
GCOS - Global Climate Observing System
GEF - Global Environment Facility
HLCP - High Level Committee on Programmes of the CEB
IAEA - International Atomic Energy Agency
ICAO - International Civil Aviation Organization
IFAD - International Fund for Agricultural Development
ILO - International Labour Organization
IMO - International Maritime Organization
IMF - International Monetary Fund
IPCC - Intergovernmental Panel on Climate Change
ITU - International Telecommunication Union
LDCs - Least Developed Countries
MDGs - Millennium Development Goals
NAPAs - National Adaptation Programmes of Action
OHCHR - Office of the High-Commissioner for Human Rights
REDD - Reduction of emissions from deforestation and degradation
SIDS - Small Island Developing States
UN - United Nations
UNAIDS - Joint and Co-sponsored UN Programme on HIV/AIDS
UNCCD - UN Convention to Combat Desertification
UNCNG - UN Communications Group
UNCTAD - United Nations Conference on Trade and Development
UN-DESA - UN Department of Economic & Social Affairs
UNDG - UN Development Group
UNDP - United Nations Development Programme
UN-ECE - UN Economic Commission for Europe
UN-ECA - UN Economic Commission for Africa
UN-ECLAC - UN Economic Commission for Latin America and the Caribbean
UNEP - United Nations Environment Programme
UN-ESCAP - UN Economic and Social Commission for Asia and the Pacific
UNESCO - United Nations Educational, Scientific and Cultural Organization
UN-ESCWA - UN Economic and Social Commission for Western Asia
UNFCCC - UN Framework Convention on Climate Change
UNFPA - United Nations Population Fund
UN-HABITAT - UN Human Settlements Programme
UNHCR - Office of the United Nations High Commissioner for Refugees
UNICEF - United Nations Children's Fund
UNIDO - United Nations Industrial Development Organization
UNIFEM - United Nations Development Fund for Women
UNISDR - UN International Strategy for Disaster Reduction
UNITAR - United Nations Institute for Training and Research
UN-OCHA - UN Office for the Coordination of Humanitarian Affairs
UNRWA - United Nations Relief and Works Agency for Palestine Refugees in the Near East
 UNU - United Nations University
UNWTO - World Tourism Organization
UPU - Universal Postal Union
WB - The World Bank
WFP - World Food Programme
WHO - World Health Organization
WIPO - World Intellectual Property Organization
WMO - World Meteorological Organization
WTO - World Trade Organization