

**Compilation of submissions received from relevant organizations on  
Information on adaptation approaches, strategies, practices and technologies  
at the regional, national and local levels in different sectors, as well as on  
experiences, needs and concerns**

**(Submissions referred to in FCCC/SBSTA/2007/MISC.11)**

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PAPER NO. 1: SECRETARIAT OF THE CONVENTION ON BIOLOGICAL DIVERSITY

**SUBMISSION OF THE CONVENTION ON BIOLOGICAL DIVERSITY TO THE UNITED NATIONS  
FRAMEWORK CONVENTION ON CLIMATE CHANGE:  
ADAPTATION PLANNING AND PRACTICES**

1. The Subsidiary Body for Scientific and Technological Advice (SBSTA) of the United Nations Framework Convention on Climate Change (UNFCCC) invited Parties and relevant organizations to provide structured submissions, by 31 May 2007, on adaptation approaches, strategies, practices and technologies for adaptation at the regional, national and local levels in different sectors, as well as on experiences, needs and concerns.
2. Since climate-change adaptation is integrated into all of the programmes of work of the Convention on Biological Diversity (CBD), with the exception of the programme of work on technology transfer, in response to the request from SBSTA, the Executive Secretary of the CBD has prepared this document on adaptation activities within the framework of the CBD and its programmes of work and cross-cutting issues.
3. Information for inclusion in this document was derived from national reports submitted by Parties to the CBD, the reports of the Convention's Ad Hoc Technical Expert Group on Biodiversity and Climate Change, and a review of the implementation of relevant programmes of work and cross-cutting issues of the CBD.
4. Information in the requested table format is presented in section I below however, please note that the status of all adaptation activities is "ongoing" and, as such, this column is excluded from the table. Additional information on experiences and lessons learned is presented in section II and on needs and obstacles in section III. Section IV contains additional resources available from the Secretariat of the Convention on Biological Diversity.

**I. MANDATED AND ONGOING ACTIVITIES UNDER THE CONVENTION ON BIOLOGICAL DIVERSITY ON APPROACHES, STRATEGIES, PRACTICES AND TECHNOLOGIES FOR ADAPTATION**

Type of adaptation action	Decision containing adaptation actions	Mandate under the Convention on Biological Diversity on adaptation	Example of experiences from Parties and partners
<b>Regional</b>			
<b>Approaches and strategies</b>	Programme of work on inland waters biodiversity  Decision VII/4	“The programme of work should pay particular attention to the impacts of climate change and the role of inland waters in mitigation of and adaptation to climate change. In this process, the programme of work should consider, support and collaborate with ongoing and/or new initiatives in these areas and in particular those related to the conservation and sustainable use of peatlands.”	<b>Stress reduction in the Andean Paramos</b> The IUCN Netherlands Committee facilitated, through the Global Peatland Initiative, funding of the Grupo Paramo regional network for promoting the wise use and conservation of the paramos in the Andes. The regional project ‘Conservation of the Biodiversity of the Paramo in the Northern and Central Andes’, funded by the Global Environment Facility (GEF) was implemented to ensure the conservation and sustainable use of the Paramos biodiversity.
<b>Approaches and strategies</b>	Programme of work on traditional knowledge, innovations and practices  Decision VIII/5 B, para. 6	“Notes...the specific vulnerabilities of indigenous and local communities... concerning the impacts of climate change and accelerated threats...to traditional knowledge, innovations and practices, and requests further research be conducted, subject to the availability of resources, into highly vulnerable indigenous and local communities, with a focus on causes and solutions...”	<b>Arctic Climate Impact Assessment</b> The ACIA was produced by the Arctic Council and the International Arctic Science Committee (IASC) to evaluate and synthesize knowledge on climate change and its consequences including a focus on adaptation planning among indigenous people.

Type of adaptation action	Decision containing adaptation actions	Mandate under the Convention on Biological Diversity on adaptation	Example of experiences from Parties and partners
<b>Approaches and strategies</b>	<p>Biodiversity and climate change cross cutting issue</p> <p>Decision VIII/30, para. 7</p>	<p>“Invites Parties to consider the needs of the most vulnerable regions and ecosystems, and their indigenous and local communities... in order to enhance understanding, design and communication of synergies in the national implementation of the three Rio conventions... Ramsar... the World Heritage Convention, the Convention on Migratory Species, and other multilateral environmental agreements, and to support the preparation of adaptation activities and plans, including... financial resources, technology transfer, education and outreach, capacity-building, research and systemic observation, and harmonized reporting.”</p>	<p><b>Canada Northern Ecosystem Initiative</b></p> <p>The NEI supports projects that address climate change science and capacity-building needs throughout the Canadian North. These projects are led by or involve partnerships with Aboriginal organizations, communities, universities, northern colleges and research institutes, non-governmental organizations, as well as government and international agencies.</p>
<b>Technologies</b>	<p>Biodiversity and climate change as a cross-cutting issue</p> <p>Decision VIII/30 Para. 5</p>	<p>“Invites Parties, other Governments, relevant organizations and research institutions, to address... the research gaps... summarized in paragraph 3 of recommendation XI/14 of SBSTTA and to promote research on climate change response activities related to biodiversity... in order to further facilitate the incorporation of biodiversity considerations into... activities aimed at the mitigation and adaptation of the impacts of climate change...”</p> <p>“Encourages Parties, other Governments, relevant organizations and research institutions to develop rapid assessment tools for the design and implementation of biodiversity conservation and sustainable use activities which contribute to adaptation to climate change...”</p>	<p><b>Web-based guidance on the integration of biodiversity in adaptation planning</b></p> <p>A number of examples of research activities and assessment tools are summarized in the associated document databases of the web-based guidance.</p> <p>The web-based guidance is available in English, French and Spanish at:  <a href="http://adaptation.cbd.int">http://adaptation.cbd.int</a>.</p>

Type of adaptation action	Decision containing adaptation actions	Mandate under the Convention on Biological Diversity on adaptation	Example of experiences from Parties and partners
Technologies	Global Taxonomy Initiative  Decision VIII/3, para. 17	“Mobilization and augmentation of specimen and observational-level data pertaining to species to allow modelling of current distributions and distributions under different models of climate change and of other biotic and a biotic changes (e.g. land-use change, invasive species).”	<b>Norway National Centre for Biosystematics</b> The NCB examines Arctic flora in response to climate change. Deliverables include a new revision of 'Lid's flora' and the completion of a draft version of the first consensus checklist for all arctic countries ('The Panarctic Flora checklist').
<b>National</b>			
Approaches and Strategies	Programme of work on protected areas  Decision VII/28, annex Programme element 1. Goal 1.4.	“Integrate climate change adaptation measures in protected area planning, management strategies, and in the design of protected area systems.”	<b>World Heritage Convention</b> Published Case-studies on Climate Change and World Heritage examining expected impacts, vulnerabilities and adaptation options in natural and cultural World Heritage sites.
Practices	Programme of work on mountain biodiversity  Decision VII/27 Programme element 1. Goal 1.2	“Develop and implement programmes...in order to enhance the capacity of mountain ecosystems to resist and adapt to climate change, or recover from its negative impacts including, <i>inter alia</i> , by establishing corridors and taking appropriate measures to maintain ecological functions of natural corridors, where appropriate, to enable vertical migration of species, ensuring minimal viable population sizes to enable genetic adaptation to changing environmental conditions.”	<b>Australia National Biodiversity and Climate Change Action Plan of Australia 2004-2007</b> Objective 5: To minimise the impacts of climate change on native terrestrial species, communities and ecosystems.  Strategy 5.2. Reviewing reserve acquisitions to strengthen the capacity of the reserve system to act as refuges for vulnerable terrestrial species and integrate reserve planning and management with broader landscape protected area networks to allow the movement of species across bioclimatic gradients.



Type of adaptation action	Decision containing adaptation actions	Mandate under the Convention on Biological Diversity on adaptation	Example of experiences from Parties and partners
		<p>regional and national levels;</p> <p>Promote the maintenance and restoration of biodiversity in forests in order to enhance their capacity to ...adapt to climate change;</p> <p>Promote forest biodiversity conservation and restoration in climate change mitigation and adaptation measures;</p> <p>Assess how the conservation and sustainable use of forest biological diversity can contribute to the international work relating to climate change.”</p>	
<b>Practices</b>	<p>Programme of work on inland water biological diversity</p> <p>Decision VII/4, annex programme element 1.</p>	<p>“Integrate into land-and water-use management approaches appropriate adaptive management and mitigation responses to combat, and prevent where possible, the negative impacts of climate change... on the biodiversity of inland water ecosystems.”</p>	<p><b>Cambodia National Adaptation Programme of Action to Climate Change</b></p> <p>A number of high priority projects address land-and water-use management approaches including the development and improvement of community irrigation systems and the rehabilitation of:</p> <ol style="list-style-type: none"> <li>1. A multiple-use reservoir in Takeo Province;</li> <li>2. Upper Mekong and provincial waterways; and</li> <li>3. Multiple-use canals in Banteay Meas District, Kampot Province.</li> </ol>
<b>Practices</b>	<p>Programme of work on island biodiversity</p> <p>Decision VIII/1, annex</p>	<p>“Integrate climate change adaptation measures when establishing networks of island protected areas.”</p> <p>“Resilience of the components of biodiversity to adapt to climate change in islands maintained and enhanced</p> <p>Research and implement adaptation and mitigation measures in land-use and coastal zone planning and strategies to strengthen local-level biodiversity resilience to climate</p>	<p><b>Samoa National Adaptation Programme of Action</b></p> <p>Project Profile 8: Establishing conservation programs in highly vulnerable marine and terrestrial areas of communities project.</p> <p>Action: To establish and or strengthen community-based conservation programs for the protection of highly vulnerable terrestrial and marine biodiversity.</p>



Type of adaptation action	Decision containing adaptation actions	Mandate under the Convention on Biological Diversity on adaptation	Example of experiences from Parties and partners
		<p>change</p> <p>Identify species (e.g., corals) that are resilient to climate change in order to use those species for restoration.</p> <p>Reduce chemical and physical degradation of coral reefs to facilitate recovery from climate-induced bleaching.</p> <p>Create where feasible viable national systems of protected areas that are resilient to climate change.”</p>	<p><b>Maldives National Adaptation Programme of Action</b></p> <p>Project 16. Increase resilience of coral reefs to reduce the vulnerability islands, communities and reef-dependent economic activities to predicted climate change.</p> <p>Activity 2.1. Develop a coral-reef management framework that enables relevant institutions to designate zones, uses and Marine Protected Area (MPA) systems.</p> <p>Activity 4.2. Review the effectiveness of designated MPAs and recommend ways and means to strengthen MPA management.</p>
<b>Practices</b>	<p>Programme of work on marine and coastal biodiversity</p> <p>Decision VII/5 Research priorities - priority 2.3</p>	<p>“Develop methods for adapting marine and coastal protected areas management in response to possible changing species and habitat distribution patterns, which may result from climate change.”</p>	<p><b>Australia National Biodiversity and Climate Change Action Plan of Australia 2004-2007</b></p> <p>Strategy 4.2. Identifying and integrating into marine, coastal, and estuarine management strategies (particularly Marine Protected Areas-MPAs), activities that minimize the impacts of climate change and sea level change on vulnerable marine, coastal and estuarine species and ecosystems.</p> <p>Strategy 4.5. Consider the impacts of climate change on marine, estuarine and coastal biodiversity when selecting new MPAs and management planning and monitoring regimes.</p>

## II: EXPERIENCES AND LESSONS LEARNED

5. The following section provides experiences and lessons learned from the application of broad approaches to the integration of biodiversity considerations into adaptation planning. These approaches range from adaptation plans for biodiversity, to approaches aimed at minimizing the negative impacts on biodiversity from adaptation planning, to adaptation plans which mainstream biodiversity considerations.

***Adaptation options to reduce the negative impacts of climate change on biodiversity***

6. Biodiversity can be negatively impacted by climate change through: shifts in suitable climatic conditions (towards the poles or upwards in elevation or along precipitation gradients); increased die-offs and extinctions of species and ecosystems; and changes in body size, timing of life cycles, and distribution and abundance of species. In fact the Fourth Assessment Report of the Intergovernmental Panel on Climate Change (IPCC) revealed that approximately 20-30% of plant and animal species assessed so far are likely to be at increased risk of extinction if increases in global average temperature exceed 1.5-2.5°C above pre-industrial levels.

7. Planned adaptation for biodiversity aims to maintain and restore ecosystem resilience. Such activities entail three components: (i) maintain adequate space, structure and environmental conditions for ecosystems, species and individuals to respond to climate change; (ii) limit stresses that amplify the impacts of climate change, and (iii) employ adaptive management to allow for the testing of different approaches while implementation is under way.

8. As such, options to reduce the negative impacts of climate change on biodiversity include:

- Reducing other pressures on biodiversity (habitat conversion, over-harvesting, pollution, invasive alien species, etc.);
- Establishing biological corridors to counter fragmentation and facilitate migration poleward, upward, or along precipitation gradients;
- Conserving genetic and habitat heterogeneity and regenerative populations; and
- Maintaining clear monitoring and evaluation programmes to facilitate adaptive management under changing climatic conditions.

***Lessons learned***

9. There has not been a comprehensive evaluation of adaptation options to reduce the negative impacts of climate change on biodiversity, however, some lessons have been learned from individual projects including:

- The importance of comprehensive baseline information;
- The need for clear monitoring and evaluation systems to facilitate adaptive management;
- Clear targeting of the most vulnerable species; and
- Preserving intact habitats so as to facilitate the long-term adaptation of biodiversity is a very cost-effective option.

***Minimizing the negative impacts of adaptation planning on biodiversity***

10. Planned adaptation activities are already being implemented that have positive, negative or neutral impacts on biodiversity. Understanding these impacts can facilitate the design and implementation of adaptation planning choices that have minimal negative impacts on biodiversity, in the worst case, and maximum positive benefits for biodiversity in the best case.

11. For example, concrete coastal protections will likely have a negative impact on biodiversity, such as nesting sea turtles, while packed-earth coastal protections will likely have a neutral or positive impact on biodiversity, while delivering the same adaptation benefits.

*Lessons learned*

12. Adverse consequences to biodiversity can be minimized, and positive benefits enhanced if biodiversity considerations are incorporated formally and routinely into adaptation planning through the use of tools such as environmental impact assessments and the valuation of biodiversity resources.

13. Including traditional and local knowledge in adaptation planning is also very useful for the systematic incorporation of biodiversity considerations.

***Mainstreaming biodiversity into climate change adaptation planning***

14. Biodiversity resources contribute to many ecosystem services including the provision of food and fodder, nutrient cycling and maintenance of hydrological flows. As such, ensuring that biodiversity is able, to the extent possible, to adapt to climate change is an important component of adaptation planning.

15. Likewise, biodiversity resources such as land races of common crops, mangroves and other wetlands and vegetative cover can form an integral part of adaptation plans for many regions and sectors including agriculture, fisheries and traditional livelihoods.

16. At its eighth meeting, the Conference of the Parties to the CBD requested that Subsidiary Body on Scientific, Technical and Technological Advice (SBSTTA), while respecting the mandate of the UNFCCC, develop draft guidance on how to integrate relevant climate change impacts and response activities into the programmes of work of the Convention

17. The proposed guidance entails four main steps:

- (a) Identification of vulnerable regions, subregions and ecosystem types including vulnerable components of biodiversity within these areas;
- (b) Assessment of the threats and likely impacts of climate change on biodiversity in the identified vulnerable areas;
- (c) Identification of climate change adaptation and mitigation options and evaluation of their impacts on biodiversity; and
- (d) Implementation and monitoring of the selected adaptation and mitigation plans.

*Lessons learned*

18. In order to develop the guidance on climate change impact and response activities within the programmes of work of the Convention, a number of case-studies on climate change adaptation planning were examined. A review of these case-studies revealed four key lessons on the design and implementation of climate change impact and response activities:

- Importance of ensuring stakeholder participation;
- Developing adequate technical and informational capacity;
- Considering the long-term sustainability of activities; and
- Developing an appropriate policy framework.

### III. NEEDS AND OBSTACLES

19. The report of the Ad Hoc Technical Expert Group on Biodiversity and Climate Change was published in 2006 as CBD Technical Series No. 25. This Group identified a number of obstacles, challenges and gaps on biodiversity and climate change adaptation planning. These obstacles are relevant for all approaches and types of adaptation planning.

#### *Tools and data needs*

- (a) Need for baseline data and systematic monitoring to assess biodiversity response to climate change and adaptation activities;
- (b) Development of predictive models and decision support tools to guide the design and selection of adaptation strategies at different scales (biome, local, sub-national, national, regional; landscape/seascape);
- (c) Development of scenarios of likely future changes in drivers, status and condition of ecosystems, and biodiversity outcomes, reflecting both scientific and traditional knowledge; and
- (d) Strengthening expertise and institutional capacity in developing countries and indigenous communities for all the above.

#### *Research*

- (e) Need for improved understanding of how biological and physical systems will respond to climate change and how their interactions influence outcomes on ecosystems. Discerning these complexities represents one of the largest uncertainties for projecting future biodiversity;
- (f) An analysis of the impacts on biodiversity of existing and planned adaptation activities in response to climate change and improved understanding of ecosystem/species adaptations to *current* environmental change as it can provide important information for designing future options;
- (g) An improved understanding of the biological factors and ecosystem processes that contribute to resilience and natural adaptive capacity;
- (h) A critical analysis of the use of key indicators and other methodologies, such as risk assessments, for assessing biodiversity status and trends;
- (i) Improved sophistication, robustness, downscaling and coupling of climate and ecosystem models and improved capacity for simulating effects of multiple drivers and pressures (climate and non-climate) on biodiversity, distinguishing anthropogenic and natural climate impacts;
- (j) Long-term monitoring of key biophysical parameters so to provide time-series data for developing baselines as climate changes. Monitoring success of adaptation is equally important;

(k) Developing research agendas that reflect priorities for vulnerable communities such as local and indigenous populations and those with limited capacity for adaptation.

*Participation and collaboration*

(l) Need to incorporate both scientific and traditional knowledge to facilitate adaptation planning and implementation, and collect traditional knowledge prior to its disappearance;

(m) Ensure participatory approaches and partnerships for planning and implementing adaptation strategies;

(n) Document case-studies of adaptation in ecosystems and their limits in conjunction of the records of the present climate variability and extremes as a basis for designing adaptation options;

(o) Synthesize information derived from top-down and bottom-up approaches leading to the development of planned adaptations for biodiversity.

*Communication*

(p) Need for cooperation, networking, and large-scale (bio-geographical) approaches for documenting present distribution and future shifts in ecosystems and species ranges across political boundaries;

(q) Collection, systematic analysis, and dissemination of information and lessons learned from adaptation activities through the clearing-house mechanism under the Convention on Biological Diversity and similar approaches at national, subnational and local levels, including dissemination of information describing the effectiveness of impact assessment tools.

**IV. ADDITIONAL RESOURCES**

Convention on Biological Diversity, Technical Series No. 10 – Interlinkages between Biological Diversity and Climate Change: <http://www.cbd.int/doc/publications/cbd-ts-10.pdf>

Convention on Biological Diversity, Technical Series No. 25 – Guidance for Promoting Synergy among Activities Addressing Biological Diversity, Desertification, Land Degradation and Climate Change: <http://www.cbd.int/doc/publications/cbd-ts-25.pdf>

Convention on Biological Diversity, Web-based Guidance on the Integration of Biodiversity Considerations within Climate Change Adaptation Planning: <http://adaptation.cbd.int>

## **Adaptation Planning and Strategies**

### **FAO Contribution to**

#### **“The Nairobi Work Programme (NWP) on impacts, vulnerability and adaptation to climate change”**

On invitation of SBSTA to submit to the secretariat, by 31 May 2007, information on the relevant programmes, activities and views on the issues listed under item 44 of the Conclusions of the Nairobi work programme on impacts, vulnerability and adaptation to climate change

#### **Context and mandate of FAO to work on adaptation planning and strategies**

One of the Governing Bodies of FAO, the Committee on Agriculture (COAG), has stressed the need for the Organization to continue to be a neutral and technical forum on the issue of Climate Change and to contribute to the debate, focusing on such issues as data, definitions and methodologies related to agriculture and climate change.

COAG supported the development of an integrated climate change programme based on current activities, within FAO Regular Budget provisions, and consistent with the legal and political framework of the UN Framework Convention on Climate Change (UNFCCC) and the technical work of the IPCC. This includes the promotion of practices for climate change mitigation, the adaptation of agricultural systems to climate change, the reduction of emissions from the agricultural sector as far as it is carefully considered within the major objective of ensuring food security, the development of practices aimed at increasing the resilience of agricultural production systems to the vagaries of weather and climate change, national and regional observing systems, as well as data and information collection and dissemination.

The Committee called on FAO to assist Members, in particular developing countries, which are vulnerable to climate change, to enhance their capacities to confront the negative impacts of climate variability and change on agriculture. In 1998, an Interdepartmental Working Group on Climate Change was established and mandated to coordinate FAO's cross departmental, multi-disciplinary work on climate change.

The issues of climate change mitigation and adaptation has been specifically addressed and prioritized as a key area of future work by FAO's governing bodies at the Committee on Agriculture (COAG), the Committee on Food Security (CFS), the Committee on Forestry (COFO). In the context of FAO's internal reform 2006/2007, a new division “Environment, climate change and bioenergy” (NRC) was created reflecting the importance given to the subject.

Another SBSTA submission on “Methods and Tools” made by FAO outlines the set of tools and methodologies that FAO is able to deploy in support of climate change adaptation processes. The effective use of these information resources is contingent upon effective development facilitation. It is proposed that the country and region specific experience and capacity that FAO has acquired in the course of its rural development, extension and technology transfer activities could prove valuable in supporting climate change adaptation.

#### **FAO submission to SBSTA**

According to the outline provided by UNFCCC this submission reports on FAO programmes and activities relating to the sub- heading provided by SBSTA under the main topic “Adaptation Planning and Strategies” with the objective of contributing to the sub-themes:

- (i) “Collecting, analysing and disseminating information on past and current practical adaptation actions and measures, including adaptation projects, short- and long-term adaptation strategies, and local and indigenous knowledge”, and
- (ii) “Facilitating communication and cooperation among and between Parties and relevant organizations, business, civil society, and decision makers, and other stakeholders”.

Activities in this area can contribute to:

1. Exchange information on experiences, lessons learned, constraints and barriers of past and current adaptation measures and actions, and the implications for sustainable development;
2. Promote different ways and means for information sharing and for the enhancement of cooperation among Parties and relevant sectors, institutions and communities, including in the areas of disaster risk reduction and management;
3. Promote understanding of response strategies, including early warning systems and local coping strategies, and of lessons learned that can be applied elsewhere;
4. Assess ways and means to support adaptation, and address barriers and constraints to its implementation.

It should be noted that FAO recently initiated a process that will lead to the formulation of an Organization-wide climate change adaptation strategy and workplan. It is anticipated that this strategy and workplan will provide greater clarity on how FAO intends to address the issue of climate change adaptation. This submission outlines the current extent of FAO’s involvement in adaptation strategies and its evolving contribution to this need.

It might be useful to clarify some concepts and language such as:

1. Adaptation (in human systems) is a process of social learning using information on vulnerability, hazards and risks to make decisions in anticipation of climate change in the context of other planning concerns and faced with the 'deep uncertainty' about future climate, social, environmental and political conditions that will influence the outcome of adaptation planning. As a result adaptation strategies and actions should be robust against a wide variety of future conditions; rather than assuming we can predict future impacts and provide climate proofing measures.
2. The adaptation process recognises often competing stakeholder goals and processes and uses information at various levels and in many ways.
3. Adaptation is specific processes of stakeholder decision making, in specific contexts, related specifically to threats and opportunities generated by climate change. It is a generic solution that can be adopted from other contexts such as rural development or water security.
4. The aim is to integrate climate change and climate change adaptation in 'good enough' practice in risk management; rather than expecting decision makers to adopt new perspectives and analytical tools and to differentiate between decision making for current issues and longterm sustainable development.
5. Adaptation may lead to a reduction in future climate impacts—but this is not necessary, and it is not possible to predict those future reductions with certainty for most sectors and regions.

6. An essential element of adaptive capacity – the ability to undertake adaptive processes – is the use of climate and climate impact information:
- Sound information on exposure to current climate conditions (from the use of climate as a resource to adverse impacts of extreme events);
  - Understanding of trends in present climate and range of future climates to be experienced at the relevant scale;
  - Understanding the exposure—the view of present and future climate from its influence on specific exposure units, whether plants, livelihoods or rural economies.

FAO is developing a conceptual map from vulnerability to adaptation, as well as the capacity to engage its key intermediate steps. Understanding this process is critical to converting FAO's considerable data resources into adaptation strategy. Provisionally it seems the key steps in this process are:

- Defining a baseline (FAO data is crucial to this step);
- Defining the nature and location of vulnerability based on possible perturbations of the baseline (FAO tools are essential in this step);
- Identifying the options for adaptation and weighing up these options (FAO's credibility and extension experience is valuable to this step and understanding of "livelihoods" is crucial to this step);
- Communicating the option set and the relative merits and demerits of the options (FAO's extension is important to this step);
- Screening out "good enough" options – perhaps with the aid of decision support;
- Implementing the adaptation measure (FAO's traditional competency);
- Monitoring and evaluating the adaptation measure;
- Redefining the baseline.



Type of adaptation action <sup>1</sup>	Title of adaptation action, including projects	Status of adaptation action - ongoing - under implementation - under development - under consideration	Needs in order to successfully implement the adaptation action	Concerns/ Barriers	Experiences/ Lesson learned	References i.e. publications, websites etc.
<b>Scope of adaptation action</b> <i>Regional level</i>						
<b>Approaches / strategies</b>	Observing networks for terrestrial essential climatic variables (ECV), development of terrestrial framework and observational standards	Ongoing, global with international organizational participation (requested by the UNFCCC and endorsed by GEO).	National adoption of proposed standards.	Support for individual observing sites required. Capacity building of national staff to use the data.	harmonization, data compatability and access are essential in developing the outputs required for climate change monitoring and prediction.	<a href="http://www.fao.org/gtos/topcFRAME.html">www.fao.org/gtos/topcFRAME.html</a> <a href="http://www.fao.org/gtos/topcECV.html">www.fao.org/gtos/topcECV.html</a>

<sup>1</sup> Please be aware of the degree of adaptation within activities:

- Some activities are undertaken specifically to adapt to climate change, e.g. increased water storage capacity, development of new crop varieties.
- Some activities include a component of climate change adaptation, e.g. infrastructure replacement incorporating higher flood standards
- Some activities, such as preserving biodiversity, restored wetlands, are carried out in order to provide protection against climate change (biodiversity protects the options available as food sources under altered climate scenarios and wetlands offer some protection against storm surges, for example).

<b>Practices</b>	Title as above	Ongoing; in situ and satellite observations being undertaken	Funds and national support to ensure complete observational coverage.	Data compatibility and data access for the development of regional and global data sets.	Need for common standards and protocols required to meet objectives. Full participation of national staff to ensure individual countries reap the benefits.	As above
<b>Technologies</b>	Title as above	Ongoing. Various depending on terrestrial ECV	As above	As above	As above	As above
<b>Approaches/ strategies</b>	Global Land Cover Network (GLCN) harmonized land cover and environmental databases. At global, regional, national and local level.	On going at the regional and national level in Africa, Asia and South America.	Build the required capacity of national staff to generate and use data products for climate change activities including adaptation.	Access to in situ and satellite data. Coordination and use of comparable and harmonized methodology	Full methodologies and implementation activities developed.	<a href="http://www.glcn.org/news/">www.glcn.org/news/</a>
<b>Practices</b>	National and regional support networks for land cover mapping	Ongoing, many national	Adequate awareness and capacity	Funding and data access of over stakeholders after	As above	<a href="http://www.glcn.org/news/">www.glcn.org/news/</a>

	activities	networks and projects underway: e.g. Argentina, Libya, Morocco, Uruguay, etc.	building programmes for national government staff.	completion of activities.		
<b>Technologies</b>	Land Cover Classification System (LCCS), GeoVIS, database tools.	Ongoing, software and methodologies constantly being updated to meet the requirements of stakeholders.	Greater awareness of stakeholders on the need of common standards and compatible data sets.	Land cover, land cover change data and other environmental data is a key requirement of national and regional stakeholders to develop adequate monitoring, policy and activities related to climate change.	Tools and methodologies developed are a major asset for national institutions, similar methodologies now have to be developed to allow greater use of the data.	<a href="http://www.glcn.org/news/">www.glcn.org/news/</a>
<b>Approaches/strategies</b>	Awareness raising and advocacy on implications of Climate Variability and Change to AG sectors	ongoing	policy advice			Publication on CC and Food Security
<b>Practices</b>	assessing policy options and instruments to promote (a) autonomous and (b) planned adaptation in AG sectors, including trade					

Technologies						
<i>National level</i>						
<b>Approaches/strategies</b>	Increased resilience of land management systems to withstand drought and strong winds as well as excessive rainfall and high temperatures.	On-going in some Latin American countries.	Knowledge.	Low knowledge base.	Promotion to build up a local knowledge base leads to exponential expansion	<a href="http://www.fao.org/ag/ca">www.fao.org/ag/ca</a>
<b>Practices</b>	Conservation agriculture and other soil, land and water conservation/management practices	On-going in some Latin American countries	Technical assistance	Training needs at technical level are high	Farmer to farmer training and technology development is important	Coping with water scarcity Watershed Management brochure <a href="http://www.rlc.fao.org/foro/forta/pdf/nueva.pdf">http://www.rlc.fao.org/foro/forta/pdf/nueva.pdf</a>
<b>Technologies</b>	No-tillage farming technologies	On-going in some Latin American countries	Availability of equipment	Access to equipment is limited in many regions	Private commercial sector has to be involved at an early stage	
<b>Technologies</b>	Other soil, land and water conservation/management technologies such as slope stabilization , river bank protection; terracing , water catchment management etc					
<b>Approaches/strategies</b>	Gender mainstreaming for CCA (in tools can ensure that gender-specific vulnerabilities	Under development.	Gender-disaggregated data. Empirical	Lack of gender-disaggregated data to understand differences in men's		Lambrou, Yianna & Piana, Grazia, 2005. Gender: The Missing Component in the Response to Climate Change. FAO. UNEP gender and environment website, climate

	and coping mechanisms (adaptive capacities) are taken into account in design of adaptation strategies. These tools include: gender analysis, gender impact assessment, gender budgeting, gender sensitive vulnerability assessment, promoting women in decision making.)		evidence demonstrating (a) the gender differences in climate impacts and adaptive capacities, and (b) the positive effects of using gender analysis on the choice of investment in adaptation projects. Inclusion of gender experts in policymaking. Awareness-raising/training on (a) gender dimension of climate change and (b) how to conduct gender mainstreaming.	and women's vulnerabilities and coping mechanisms. Participation: Incorporating women's knowledge into policies.		change page www.unep.org/gender_env/Environmental_Issues/Climate_Change/index.asp
<b>Practices</b>						
<b>Technologies</b>						
<b>Approaches/strategies</b>	Linking existing systems related to Climate change adaptation, Disaster risk Reduction, Natural Resource Management and development	Ongoing in some countries (BGD)  Under development	Technical assistance & Policy advice	Uncoordinated sectoral mandates and inter-institutional competition	Donor policies and financial resource allocation practices hamper the	ftp.fao.org/docrep/fao/008/af967e/af967e00.pdf ftp.fao.org/docrep/fao/009/a0820e/a0820e.pdf www.fao.org/sd/dim_pe4/pe4_050201a1_en.htm The Role of Local Institutions in Reducing Vulnerability to Recurrent Natural Disasters ➤ Case Study Iran: ➤ Case Study Philippines

		in some countries			process of better integration	<ul style="list-style-type: none"> <li>➤ Case Study Mozambique</li> <li>➤ Case study Viet Nam</li> <li>➤ Case Study South Africa</li> <li>➤ Case Study Honduras</li> <li>➤ Consolidated report on case studies, workshop findings and recommendations</li> </ul>
<b>Practices</b>	<p>Institutional and technical capacity building within line agencies to coordinate and integrate different perspectives;</p> <p>Facilitation of multi-stakeholder dialogue</p> <p>Communication strategy development</p>	<p>Ongoing in some countries (BGD)</p> <p>Under development in some countries</p>	Technical assistance &	<p>Sectoral/approaches and thinking hampers coordination; New paradigms for coordinated action are needed to efficiently address cross cutting issues such as CC.</p> <p>Availability of capacity building approaches and materials</p>	Starting within one sector is a beginning.	<ul style="list-style-type: none"> <li>➤ Bangladesh: Developing institutions and options for livelihood adaptation to climate variability and change in drought-prone areas (2006) ftp.fao.org/docrep/fao/009/a0820e/a0820e.pdf:</li> <li>➤ Disaster Risk Management Systems Analysis: a guide for missions (in progress)</li> </ul>
<b>Technologies</b>	Integrated, action & contingency planning (starting from decentralized levels); technical workshops; testing/demonstration of risk reducing technologies (refer to Ag sector and NRM) which serve all of the three purposes	<p>Ongoing in some countries (BGD)</p> <p>Under development in some countries</p>	Technical assistance &	Integration of “bottom up” and “top down” planning paths; At which level to best integrate?	At farmers level CCA DRM and NRM fall together, no distinction is made; this facilitates integrated work at local level;	<ul style="list-style-type: none"> <li>➤ Grenada: Assistance to Improve Local Agricultural Emergency Preparedness in Caribbean Countries Highly Prone to Hurricane Related Disasters (2007) in progress</li> <li>➤ Hazard Risk Preparedness in Agriculture: Good Practice Examples from South and South East Asia (2007) in progress</li> </ul>
<i>Local (community) level</i>						
<b>Approaches/</b>	Increased resilience of	On-going in	Knowledge.	Low knowledge base.	Promotion to	www.fao.org/ag/ca

<b>strategies</b>	land management systems to better withstand drought, untimely water supply, excessive rainfall, high temperatures, strong winds.  (same as at national level)	pilot areas in African and Asian countries.			build up a local knowledge base leads to exponential expansion.	
<b>Practices</b>	Conservation agriculture.	On-going in pilot areas in African and Asian countries.	Technical assistance.	Training needs at technical level are high.	Farmer to farmer training and technology development is important.	
<b>Technologies</b>	No-tillage farming technologies.	On-going in pilot areas in African and Asian countries.	Availability of equipment.	Access to equipment is limited in many regions.	Private commercial sector has to be involved at an early stage.	
<b>Approaches/ strategies</b>	Mainstreaming gender into stakeholder analyses, livelihoods analyses and multi-criteria decision tools.	Under development.	Awareness-raising. Community-based involvement. Gender training of management planners, project developers.	Gender differences in access to information and technology. Gender differences in participation in decision making.		
<b>Practices</b>	Providing local climate					

	<p>information for decision making, targeting both men and women.</p> <p>Working with rural women's networks and groups. Using participatory methods to gather information, and working with them to disseminate information and strategies.</p>					
<b>Technologies</b>						
<b>Approaches/strategies</b>	<p>Improve and optimize tactical decision-making at farm level, based on the quantitative observation and analysis of local environmental factors.</p>	Under development.	Technical assistance.	Availability of equipment.	Analysis of climate variability at farming level is a prerequisite to assess the impact of climate change.	<a href="http://www.fao.org/nr/climpag/index_en.asp">www.fao.org/nr/climpag/index_en.asp</a>
<b>Practices</b>	<p>Determine current environmental conditions, especially to capture uppermost possible benefits from unusually favourable and/or non favourable climatic (rainfall, temperature, radiation, wind, etc.) conditions.</p>	Under development.	Technical assistance.	Availability of equipment.	Analysis of climate variability at farming level is a prerequisite to assess the impact of climate change.	



<b>Technologies</b>	Dynamic Farming Optimization (DFO).	Under development.	Technical assistance.	Availability of equipment.	Analysis of climate variability at farming level is a prerequisite to assess the impact of climate change	<a href="http://www.fao.org/nr/climpag/index_en.asp">www.fao.org/nr/climpag/index_en.asp</a>
<b>Approaches/strategies</b>	Promoting community resilience against impacts of climate variability and change on productive sectors	On-going in pilot areas in Asian countries and Caribbean.	Technical assistance ; through TOT approach with national NGOs and /or extension -		Today's exposure to natural hazard risk is the entry point to address adaptation to longer-term climatic trends at community level	<ul style="list-style-type: none"> <li>➤ Grenada: Assistance to Improve Local Agricultural Emergency Preparedness in Caribbean Countries Highly Prone to Hurricane Related Disasters (2007) in progress</li> <li>➤ Hazard Risk Preparedness in Agriculture: Good Practice Examples from South and South East Asia (2007) in progress</li> <li>➤ Bangladesh: Developing institutions and options for livelihood adaptation to climate variability and change in drought-prone areas (2006) <a href="http://ftp.fao.org/docrep/fao/009/a0820e/a0820e.pdf">ftp.fao.org/docrep/fao/009/a0820e/a0820e.pdf</a>:</li> <li>➤ China: Pastoral risk management in Qinghai Province (2005) <a href="http://ftp.fao.org/docrep/fao/009/ag386e/ag386e00.pdf">ftp.fao.org/docrep/fao/009/ag386e/ag386e00.pdf</a></li> <li>➤ Mongolia: Managing Pastoral Risk - A plan of Action (2003) in progress</li> </ul>
<b>Practices</b>	Climate risk Risk and vulnerability assessments & mapping	On-going in pilot areas in Asian countries and	Technical assistance ; through TOT approach with	CCA, DRR and even CBDRM approaches often do not address agricultural issues.	Highest impacts for rural people will be felt in	<ul style="list-style-type: none"> <li>➤ Bangladesh: Developing institutions and options for livelihood adaptation to climate variability and change in drought-prone areas (2006)</li> </ul>

	Promoting Community based Disaster Risk Management approaches and livelihoods diversification	Caribbean.	national NGOs/exetnsion		AG sectors	<ul style="list-style-type: none"> <li>➤ Grenada: Assistance to Improve Local Agricultural Emergency Preparedness in Caribbean Countries Highly Prone to Hurricane Related Disasters (2007) in progress</li> <li>➤ Hazard Risk Preparedness in Agriculture: Good Practice Examples from South and South East Asia (2007)</li> </ul>
<b>Technologies</b>	<p>Improved local Early warning systems (climate and market related) and linked with national and Global EWS</p> <p>GIEWS; AGROMET; CLIMagrimed GTOS etc</p> <p>Community level capacity building; community level action and contingency planning ; livelihoods diversification promotion;</p>	On-going in pilot areas in Asian countries and Caribbean.	Technical assistance ; through TOT approach with national NGOs and/or extension			<ul style="list-style-type: none"> <li>➤ Bangladesh: Developing institutions and options for livelihood adaptation to climate variability and change in drought-prone areas (2006)</li> <li>➤ Grenada: Assistance to Improve Local Agricultural Emergency Preparedness in Caribbean Countries Highly Prone to Hurricane Related Disasters (2007) in progress</li> <li>➤ Hazard Risk Preparedness in Agriculture: Good Practice Examples from South and South East Asia (2007)</li> </ul>

<i>Sectoral level<sup>2</sup></i>						
<i>Agriculture</i>						
<b>Approaches/ strategies</b>	Strengthen AG extension systems (in LDCs ) to integrate & address CCA and DRR	On-going in pilot areas and in some cases at national level in all continents	Technical assistance	Focal points/units to address CCA are rare/absent at operational level and need to be institutional ized	Existing extension methods and tools are suitable to address CCA issues, if capacities are built. Most extension systems have the advantage that they link all levels and reach down to/have a capacity at local level.	
<b>Practices</b>	Institutional capacity assessment & restructuring  Technical capacity building of key extension staff	On-going in pilot areas and in some cases at national level in all continents	Technical assistance	Extension systems are often under-resourced and not well equipped	Farmers expect advice on CAA through extension and public communication means; there is no need to establish another, new organizational vehicle	
<b>Technologies</b>	Existing extension methods and tools	On-going in pilot	Technical assistance		Private sector could play a	

<sup>2</sup> The sectors below are given as examples. Please provide information on any other sectors which you consider important and have examples to share.

	such as FFS, Fairs, demonstration etc are suitable for capacity building in the context of CCA	areas and in some cases at national level in all continents			complementary role; Many agricultural technology options (e.g new crop varieties; CA; cropping systems etc) which are catalytic for this strategy , are available and suitable to promote awareness and scope for adaptation; new options are under development	
<b>Approaches/ Strategies</b>	Enhanced technological adaptation options in agriculture, forestry and fisheries	ongoing in many countries  Under development in some countries	Knowledge  Technical assistance	financial resources  lack of awareness about the emerging  lack of exact knowledge how CC will modify weather/ ecosystems	start awareness creation on available options on the basis of applying no harm technologies and in the context of autonomous adaptation	

<b>Practices</b>	Promoting research, testing validation and introduction of adaptation options (including indigenous & new technologies)	ongoing in many countries  Under development in some countries	Knowledge  Technical assistance	institutional barriers and capacity limitations to set up coherent systems which to coordinate and guide the whole process	“indigenous”/local technologies are under valued and under researched	
<b>Technologies</b>	Breeding/cropping systems. New crop varieties/species; livestock, fodder and grazing management; agro-forestry use of inputs	ongoing in many countries  Under development in some countries	Knowledge  Technical assistance		Farmers are well placed to select adaptation options which suit them; it is risky to plan adaptation at a large scale at present to come due to limited know how on location specific impacts	
<b>Approaches/ Strategies</b>	Increase organic matter levels in soils for better soil structure, moisture retention, erosion stability and water infiltration.	Experiences at pilot areas and larger watershed level areas existing.	Knowledge	Low knowledge base.	Promotion to build up a local knowledge base leads to exponential expansion..	<a href="http://www.fao.org/ag/ca">www.fao.org/ag/ca</a>
<b>Practices</b>	Conservation agriculture.	On-going in pilot	Technical assistance.	Training needs at	Farmer to farmer training and	

		areas and in some cases at national level in all continents		technical level are high.	technology development is important.	
<b>Technologies</b>	No-tillage farming technologies.	On-going in pilot areas and in some cases at national level in all continents.	Availability of equipment.	Access to equipment is limited in many regions.	Private commercial sector has to be involved at an early stage.	
<b>Approaches/ Strategies</b>	Development of cereals genotypes with good and stable productivity, and high quality potential for use in the food industry.	On-going at national level in Africa.	Technical assistance.	Availability of equipment.	Promotion of south-south collaboration.	
<b>Practices</b>	Development of guidelines of cereals germplasm improvement for increased productivity and quality.	On-going at national level in Africa.	Technical assistance.	Availability of equipment.	An important step to build-up south-south collaboration.	
<b>Technologies</b>	Vulnerability assessment of agricultural areas and crops to climate variability. Development of	On-going at national level in Africa.	Availability of local data.	Training needs at technical level	An important step to build-up south-south collaboration.	

	climate risk indices. Production of climate risk maps for agriculture.					
<i>Water resources</i>						
<b>Approaches/ Strategies</b>	Increase water infiltration capacity of soils for recharge of aquifers and reduction of runoff; increase water efficiency of cropping systems for reduced water consumption	Experiences at pilot areas and larger watershed level areas existing	Knowledge	Low knowledge base	Promotion to build up a local knowledge base leads to exponential expansion	<a href="http://www.fao.org/ag/ca">www.fao.org/ag/ca</a>
<b>Practices</b>	Conservation agriculture	On-going in pilot areas and in some cases at national level in all continents	Technical assistance	Training needs at technical level are high	Farmer to farmer training and technology development is important	
<b>Technologies</b>	No-tillage farming technologies	On-going in pilot areas and in some cases at national level in all continents	Availability of equipment	Access to equipment is limited in many regions	Private commercial sector has to be involved at an early stage	

<b>Approaches/ Strategies</b>	Watershed and sustainable Land management					
<b>Practices</b>						
<b>Technologies</b>						
<i>Health</i>						
<b>Approaches/ Strategies</b>	Reduce drudgery in agricultural work through labour saving technologies	Experiences at pilot areas and larger areas existing	Knowledge	Low knowledge base	Promotion to build up a local knowledge base leads to exponential expansion	<a href="http://www.fao.org/ag/ca">www.fao.org/ag/ca</a>
	Reduce dust and smoke emissions from agricultural lands	Experiences at pilot areas and larger areas existing	Knowledge	Low knowledge base	Promotion to build up a local knowledge base leads to exponential expansion	<a href="http://www.fao.org/ag/ca">www.fao.org/ag/ca</a>
<b>Practices</b>	Conservation agriculture	On-going in pilot areas and in some cases at national level in all continents	Technical assistance	Training needs at technical level are high	Farmer to farmer training and technology development is important	
<b>Technologies</b>	No-tillage farming technologies	On-going in pilot areas and in some cases at national level in all continents	Availability of equipment	Access to equipment is limited in many regions	Private commercial sector has to be involved at an early stage	



<b>Approaches/ Strategies</b>	GIS poverty mapping, with environmental, climatic and socioeconomic integration and analysis	On-going, projects mainly South America and Asia	Availability of data at the local level required	Availability of data, national capacity to interpret and use GIS applications		<a href="http://povertymap.net/">http://povertymap.net/</a>
<b>Practices</b>						
<b>Technologies</b>						
<i>Coastal zones (settlements)</i>						
<b>Approaches/ Strategies</b>	GTOS Coastal activities (C-GTOS). coastal observing system and management and conservation of coastal areas	On going activity (pilots in Nile Delta and Mediterranean)	Knowledge and financial support.	Need for active participation of developing countries	Full international partnership in place to develop a coordinated response	<a href="http://www.fao.org/gtos/C-GTOS.html">www.fao.org/gtos/C-GTOS.html</a> <a href="http://www.igospartners.org/Coastal.htm">www.igospartners.org/Coastal.htm</a> <a href="http://www.fao.org/gtos/tems/mod_coa.jsp">www.fao.org/gtos/tems/mod_coa.jsp</a>
<b>Practices</b>						
<b>Technologies</b>						
<i>Others (please provide information about other relevant sectors)</i>						
<b>Approaches/ Strategies</b>	Forest sector					"Adaptation of forest ecosystems and the forest sector to climate change". FAO Forests and Climate Change Working Paper 2. 2005. <a href="http://www.fao.org/forestry/site/climatechange/en">www.fao.org/forestry/site/climatechange/en</a>
<b>Practices</b>						
<b>Technologies</b>						

PAPER NO. 3: SECRETARIAT OF THE UNITED NATIONS INTERNATIONAL  
STRATEGY FOR DISASTER REDUCTION

**Submission from the ISDR system to the UNFCCC secretariat on  
adaptation approaches, strategies, practices and technologies  
for adaptation**

As requested by the SBSTA, the ISDR system is providing herewith its submission on adaptation approaches, strategies, practices and technologies for adaptation at the regional, national and local levels in different sectors, as well as on experiences, needs and concerns.

This submission begins with two sources of relevant information. It is then divided into two sections. Section I of the document consists of relevant examples taken from a publication of the 'Global Network of NGOs for Disaster Risk Reduction' entitled '*Building Disaster Resilient Communities: Good practices and lessons learned*', June 2007 (see [www.unisdr.org](http://www.unisdr.org)).

Section II provides references to further information on relevant adaptation practices. The documents referred to also contain information for the NWP submission request on assessment methodologies and tools. Even though they are not presented in the suggested format they are structured along the same headings.

Relevant Publications:

The following publications are of interest to the topic and are available from the CRID database (Centro Regional de Información sobre Desastres América Latina y el Caribe [www.crid.or.cr](http://www.crid.or.cr))<sup>1</sup>.

1. "*El fenómeno de El Niño : ¿Cómo adaptarnos?*" in Spanish available at <http://www.crid.or.cr/digitalizacion/pdf/spa/doc14703/doc14703.htm> by Costa Rica. Comisión Nacional de Prevención de Riesgos y Atención de Emergencias (CNE). San José, CR; s.f. The document contains practical advice by sectors on how to adapt to El Niño. Sectors addressed include agriculture, breeding, fishery, forestry and protected areas and energy.

2. "*El cambio climático en América Latina y el Caribe*" by UNEP. Programa de las Naciones Unidas para el Medio Ambiente (PNUMA). Oficina Regional para América Latina y el Caribe; México. Secretaría de Medio Ambiente y Recursos Naturales (SEMARNAT). Section 5, part A of the document is relevant as it provides examples of projects carried out in the region on adaptation.

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<sup>1</sup> CRID - The Regional Disaster Information Center is an initiative sponsored by six organizations that decided to join efforts to ensure the compilation and dissemination of disaster-related information in Latin America and the Caribbean. CRID promotes the development of a prevention culture in the Latin American and Caribbean countries through the compilation and dissemination of disaster-related information, and the promotion of co-operative efforts to improve risk management in the Region.

## SECTION I

### **El Salvador: Children and Youth at the Centre of Disaster Risk Reduction Plan International**

#### *Abstract*

*Children represent more than a third of disaster victims, yet the humanitarian sector generally restricts their role in disasters to that of passive victims. Yet, involving children directly in disaster risk reduction (DRR) activities enables them to develop skills to be prepared for any threat. Furthermore, the emphasis on rights-based approaches to humanitarian work brings forward the right of children and youth to be protected from hazards and vulnerabilities through their participation in disaster-related decisions and efforts.*

*Plan International has mobilized children and youth in El Salvador, Central America, to play a significant role in environmental resources management and disaster risk reduction. The children and youth have worked with their communities in developing risk maps, designing community emergency plans, setting up early warning systems, and implementing response, mitigation and risk reduction plans, among other activities. Plan International's experience in El Salvador has already been replicated in other Central American countries.*

#### **The Initiative**

This project evolved from an initial disaster preparedness intervention targeting communities affected by Hurricane Mitch in 1998, two earthquakes in 2001, and more recently by Hurricane Stan in 2005. Earlier response and preparedness work has since been extended to disaster risk reduction. Plan International's disaster management interventions in the targeted Salvadorian communities began in 2002, in response to the impacts of Hurricane Mitch in 1998. The DRR phase of the work began in January 2006 with December 2010 as its completion date.

The project is implemented in 12 municipalities of three departments (La Libertad, Chalatenango and San Salvador) in El Salvador, Central America. Fifty-six targeted communities and youth groups involved in the project as partners first came together in response to Hurricane Mitch in 1998 and the 2001 earthquakes. Stakeholders include: local and national authorities (Health Ministry, Education Ministry, Environment Ministry, the Department of Civil Defence, the National Service for Territorial Studies); CSO/NGOs concerned with disaster management; community leaders and volunteers' organizations; the National University's Faculty of Medicine; the Central American University; ACISAM (Association for Training and Research for Mental Health); El Salvador Red Cross; the Centre for Tropical Agriculture Research and Education (CATIE); and Maquilishuat Foundation.

The targeted beneficiaries are: 56 communities; 56 youth groups (1,120 girls and boys); community emergency committees that were formed and trained at community and municipal levels (1,740 women and men); and 50 schools that received disaster prevention training. The different phases of the project have been funded by the Canadian International Development Agency (CIDA), the European Commission, the UK Government's Department for International Development (DfID) and Plan International.

#### **Goal and Objectives**

The project's main goal is to reduce the impact of disasters on the targeted communities, especially on children and youth. The project's purpose is to strengthen the capabilities of 56 communities in El Salvador to withstand disasters, developing replicable disaster risk reduction practices centred on children in their communities, thus contributing to positive changes in local, national, and international policies and practices.

With children representing more than a third of disaster victims, the humanitarian sector can no longer restrict children's role in disasters to that of passive victims. Providing children the opportunity to be directly involved in DRR activities enables them to develop skills to be prepared for any threat. Furthermore, the emphasis on rights-based approaches to humanitarian work brings forward the right of children and youth to be protected from hazards and vulnerabilities through their participation in decision making and efforts to address disaster management and risk reduction. This is in line with the international legal framework set under the UN Convention of the Rights of the Child, which upholds children's rights to protection (Article 6) as well as participation (Articles 12, 13).

### **Outcomes and Activities**

Interventions have expanded to cover training and capacity building on risk reduction and mitigation through tools such as: participatory vulnerability assessments; risk vulnerability and capacity mapping; preparation of community plans; coordination and mobilization of groups with municipal governments, schools and CSOs. Support has also been provided for micro-projects defined by youth groups (to raise awareness of risk reduction and assist an expanding range of small disaster prevention projects) and to strengthen inter-institutional networks to ensure children's voice in these.

As a result, the following outcomes have been achieved:

- Increased community, CSO/NGO and government capacity to manage child-centred DRR processes, through the integration of child and youth participation in planning, implementation and evaluation.
- Partnership established with the Education Ministry to integrate and scale up "School Protection Plans" which ensure DRR mainstreaming into school infrastructure, teacher training and curriculum integration, and the implementation of complementary projects on environmental management and risk reduction.
- Increased knowledge, among policy makers and other national and international actors (international humanitarian NGOs, academics, media, etc.), of the importance of child and youth participation in DRR.
- Strengthening of risk management actions and DRR by youth in communities, schools and municipalities.
- Incidence in public policies for the reduction of disaster risk with the participation of children.
- Communication and dissemination of child-centred DRR learning material.
- 50 schools have designed hazard maps and mobilized resources to implement their own disaster management plans to address identified risks in their communities.
- School-based emergency committees are now functional in 56 most vulnerable communities.
- Regular meetings and interaction between 56 local emergency committees, school-based committees, health units, municipal disaster preparedness task forces and other stakeholders.
- Youth have advocated for greater attention and action on disaster prevention by authorities.
- Children's participation in the following areas: managing evacuation centres, protecting river banks, protecting their families and communities, and implementing environmental management projects<sup>2</sup>.

### **The Good Practice**

This project is a good practice because of its emphasis on integrating children and youth in disaster management. In particular, it argues for the need for inclusion of their voice and agency in ensuring a holistic approach to disaster management (including preparedness and mitigation), and supports the value of a rights-based approach to child-centred DRR.

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<sup>2</sup> For instance, youths from 45 communities have participated in a waste recycling project, whereby tons of plastic waste have been collected and sold to a recycling company.

The innovative elements of the Project include the targeting of children as actors and agents of change – whereby child-focused risk reduction can tangibly help reduce disaster threats and impacts. In particular, the Project offers implications for conceptual approaches to risk communication and how this might influence the design of early warning systems and community mitigation planning.

Successes have been observed, with noted added-value in supporting the children's and youth's roles in risk communication, education/awareness raising, advocacy and practical risk reduction activities. The key success factors are: (1) The communities' trust in an outside agent helping support the organisation of youth groups; (2) The communities' strong sense of social cohesion; and (3) The communities' support for the establishment of an environment that is conducive to child participation.

### **Lessons Learned**

The key lessons learnt from this practice include:

- Not only do children and youth have unique needs in disasters, they also offer a potential role as a resource or receiver of information.
- Young people can act as informants within unofficial communication networks which evolve within a community setting as the need arises, and thus have an important role in information dissemination.
- In communities with high poverty indices (i.e., where parents are illiterate, do not have the time to attend training/meetings, share a strong sense of apathy or subordination, or do not have access to information sources), children and youth already play a major role as interpreters and relays of messages to their households and communities.
- In all community and household settings, there is a need to promote greater awareness of the value of listening to children. In many societies, neither parents nor teachers believe that children have a useful role or have relevant things to say.
- Children are able to convey messages with a meaning shared by their families and friends, and they are generally trusted by message recipients. As the child is embedded within the family structure, this relationship means risk information and mitigation actions may be continually reaffirmed, whereas external messages rely on small windows of opportunity to convey information and influence action.
- Risk maps carried out with youth groups show that children understand and can respond constructively to and communicate effectively about the risks they recognize<sup>3</sup>.
- Children recognize the wider nature of risk reduction (e.g. how seemingly unrelated external factors such as abuse and lack of love can greatly influence their vulnerability). This points to the need for a holistic approach to DRR – addressing vulnerabilities related to health, environment, education, religion, household economic security and other sectors, which together impact on a community and individual's wellbeing.
- Children offer immense creativity and the will to reduce risk. When given the resources and the opportunity to take action, children can become catalysts of simple yet significant strategies to make their communities safer.
- Children are able to participate beyond a disaster preparedness role, into taking action in risk reduction and even disaster prevention work. This includes taking charge of their risk environment, acting to control it, and through their actions obliging not only their parents and peers to take notice but also promoting changes in local government policies<sup>4</sup>.
- Direct involvement in disaster management work gives children a better sense of community and civic consciousness while they are still young.

### **Major challenges faced by this initiative include:**

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<sup>3</sup> These studies demonstrate that children have a clear and uncluttered view about risks. They recognize environmental hazards alongside social and economic threats, and are able to understand both the logical linear links between cause and effect and the more complex interplays between hazard and vulnerability.

<sup>4</sup> For example, youth groups have carried out environmental protection campaigns, cleanliness campaigns in communities, reforestation, water source protection, the implementation of compost pits, etc.

- The existing gap between stated positions and the practice of humanitarian agencies on applying adult participation in itself; with most agency representatives dismissing child participation as impractical and marginal compared to other DRR stakeholders<sup>5</sup>.
- As power and authority on disaster management is being increasingly granted to technical and sectoral agencies, non-participatory practices are undermining the ability of local communities to respond (including children and youth who form up to 50 per cent of vulnerable populations).
- In El Salvador, one of the Project's key humanitarian partners was at first quite sceptical about engaging children and youth in disaster management and mitigation. However, the Project has provided evidence to them that children bring with them dynamism to add to adult experience, and the partner now believes that "working with children and youth in communities leads to sustainability; adults have certain taboos and will accommodate to disasters but children are more prepared to change and develop a culture of prevention and mitigation". The local humanitarian partner had never originally planned or appreciated the need to work with children, but this project has shown them that children bring with them dynamism to add to adult experience.

### **Potential for Replication**

With appropriate capacity building on child protection and child participation skills as well as a conducive policy environment whereby stakeholders (those in authority – including parents and teachers) are appreciative and supportive of children and youth participation, the practice of child-centred disaster risk reduction can be replicated elsewhere and in different contexts.

The Project's outcome to date has benefited from Plan International's operational programme approach centred on child participation in community development being implemented in the localities. Therefore, Plan International's overall work has provided a platform for carrying out the child-centred disaster risk reduction initiative.

Plan International is working on developing replicable tools for implementing child and youth-centred DRR as a way to contribute to positive changes in local, national, and international disaster management policies and practices.

Meanwhile, Plan International's experience in El Salvador has already been replicated in other Central American countries affected by Hurricane Mitch and other natural hazards. Lessons learnt from El Salvador's experience in child-centred DRR have also been adopted in Plan International's disaster management interventions in Asia and Africa.

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<sup>5</sup> Agencies attribute the constraints of engaging with children as: the difficulties experienced in an emergency, the culture of the society experiencing the disaster, as well as the attitudes and approaches of other external stakeholders.

## **Haiti: Community Members Design and Implement Information Campaigns for their Communities**

### **Oxfam UK**

#### *Abstract*

*Haiti is known for its extreme vulnerability to natural hazards. In 2004, innovative community-based information campaigns were developed in the northern Haiti town of Cap-Haitian, as part of a “Community-Based Disaster Preparedness Project”. The approach to communication and public awareness allowed 22 newly created Local Civil Protection Committees (LCPCs) to design and implement their own information campaigns for their communities. Each of the 22 local committees was given technical support and project funding to design and implement its own disaster risk reduction campaign.*

*Because the local actors were asked to develop their own campaigns, the communication methods used were genuinely adapted and “acceptable” and proved to be effective. Final evaluations of the project showed that the approach to risk communication contributed significantly to developing a “culture of safety” among the 22 communities targeted. It modified the risk-related attitude and behaviour of the people at risk and stimulated community participation in disaster mitigation.*

#### **The Initiative**

The project was a community information and awareness sub-component of a larger project called “Community-Based Disaster Preparedness Project”.

The information campaigns were carried out in 22 high-risk outlying settlement areas of the northern Haiti town of Cap-Haitian. Some of the communities targeted (nine of them) were located on the precarious mountainside overlooking the town, while the others were in the lowlands along the banks of Haut-du-Cap River. The total population of the 22 settlements in 2004 was between 124,900 and 368,600 people. Such a big difference between the two figures was due to constant migration and the difficulty of conducting census surveys in the areas. Twenty-two newly created Local Civil Protection Committees (LCPCs) were involved in the planning and implementation of the information campaign, which amounts to some 550 people as each committee had about 25 members. Also involved was the local Oxfam GB team which developed and supervised the initiative, including a project coordinator, a project officer and six promoters.

The project was funded by the Directorate-General of the European Community Humanitarian Office - Disaster Preparedness (DG ECHO - DIPECHO).

#### **Goal and Objectives**

The larger project’s goal was to reduce the vulnerability to natural disasters of some 80,000 people living in the most high-risk outlying settlement areas of the northern Haiti town of Cap Haitian. The larger project was implemented between the second half of 2003 and October 2004. The planning of the information campaign began in June-July 2004 and the information campaigns culminated in August-September 2004. The larger “Community-Based Disaster Preparedness Project” was only the first of a series of projects that are part of Oxfam GB’s overall disaster risk reduction strategy in Haiti. From October 2004 to 2007, this disaster preparedness project was followed up by several other projects and was replicated in 15 other municipalities. Nevertheless, the specific community-based information campaign component, successful though it may be, has not been replicated per se yet.

Among the expected results of the larger project were: (1) Improved disaster preparation and mitigation for 22 high-risk urban settlements; (2) Improved awareness and knowledge of and attitude in relation to risks and disasters among the targeted communities.

#### **Outcomes and Activities**

First, workshops on the communication and information campaigns were conducted with members of the 22 Local Civil Protection Committees (LCPCs). During the workshops and follow-up meetings, the LCPCs planned and developed their campaign activities. As a general pattern, they all decided to combine

two communication methods that are very popular in Haiti: festive event/community assembly and information billboard.

To implement these activities, each LCPC received a grant worth 5,000 gourdes (about 150 USD) under a funding protocol. (Each LCPC also raised at least an additional 150 USD from LCPC members themselves and from other community members). To motivate further the LCPCs' commitment to developing good quality campaigns, it was decided that an incentive would be awarded to the best campaign – in the form of cash toward a community disaster fund worth about 2,000 USD. Indicators were also developed and shared with LCPC members to evaluate the campaigns.

As a result, 22 two-sided billboards were set up and strategically positioned in the communities, and 22 half-day community assemblies/events were held, each time gathering over 400 people. To gather people, the events usually started with a soccer match and ended with a dance party. In all the settlements, big decorated podiums were installed with complete sound systems where the Committees organized disaster quiz with small prizes, rescue demonstration, short drama plays as well as formal presentation of the Committee members and their roles, the community warning system and evacuation system, the contingency plans, etc. Some of the LCPCs also invited local singers and dance groups for some traditional performance.

Finally, because of the high quality of the campaigns, each Committee received a prize. The eight best campaigns received 20,000 gourdes (about 600 USD) for their community disaster funds; the rest received 10,000 gourdes (about 300 USD) also for their community disaster funds. Most of the committees used their funds to complete their disaster response kits (rescue, clearing and communication equipment); others used them to organize and duplicate more training (specifically on water rescue - with support from City Council fire-fighters and the Red Cross) or open bank accounts to support their operating costs.

### **The Good Practice**

This was a good practice because it served successfully two purposes - public awareness and capacity building – and it effectively helped enhance the safety of the population at risk.

An innovative aspect was real optimization of local knowledge and local resources by local stakeholders, as well as significant mobilization of the creative and innovative energies of local actors (including local artists – Haiti is well known for its paintings - and local traditions to facilitate community assemblies – where local voodoo groups presented traditional dances, etc.). These resulted in genuine ownership by and empowerment of local actors and groups.

At the end of the project, two types of evaluation were carried out: (1) A traditional evaluation; (2) A Knowledge, Attitude and Practice (KAP) survey. Both showed similar findings: In terms of social vulnerability/capacity, the larger project facilitated and encouraged the creation of a new social dynamics where people shared values and behaviours towards cooperation amongst themselves but also a proactive responsibility towards the community. Regarding individual attitudes and behaviours, a more responsible and proactive conduct was observed as the population was keener to evacuate preventively. Indeed, it was the first time that people in Cap Haitian evacuated willingly, with their belongings, before it started raining heavily. The presence of about 430 families (2,550 people) from the most high-risk areas was recorded in LCPC-managed evacuation centres the night before Hurricane Jeanne struck.

A key success factor of this initiative was the combination of two main communication modes: (1) A permanent one - the billboard (most of the billboards were still standing and visible two years after the end of the project); (2) A one-off one - the festive event/assembly.

### **Lessons Learned**

Key lessons learnt from this practice were:

- It is essential that public awareness activities on preparedness and risk reduction are carried out on a sustained basis with the active participation and implication of local actors. One-off public awareness and information campaigns have little positive impact on risk reduction. However, even though the campaigns were a one-off activity, they were followed by several other interventions (more traditional ones like the use of broadcast media, radio soap opera especially designed for Cap-Haitian, print brochures, calendars, celebration of the international Day for Disaster Reduction, etc.). These interventions were also combined with labour intensive low-cost



mitigation activities as demonstrative measures to reduce risks (cleaning and rehabilitation of drainage, evacuation stairs, protection walls, etc.). Now in 2007, the Committees and the population have remained actively mobilized and engaged in disaster risk reduction.

This said, several **difficulties were encountered** during the project, including:

- To be able to provide adequate support to the development of the campaigns, the project team needed to have good knowledge and experience in two disciplines: communication and disaster risk management.
- The information campaign initiative was very time-consuming and the project team had to deploy lots of efforts and demonstrate tenacity (in supervision and support) to ensure a good quality campaign and good financial management by the Committees.

### **Potential for Replication**

As this practice is driven exclusively by local practices and local resources, it has a great potential for replication.

## **Peru: Disaster Prevention and Emergency Response with Native and Mestizo<sup>6</sup> Communities in the Amazonas Region of Peru**

**German Agro Action** (In Partnership with ITDG - Soluciones Practicas)

### *Abstract*

*Some native and mestizo communities in Peru are extremely vulnerable to natural hazards such as floods, landslides and sludge avalanches. As their vulnerability is mainly due to poor economic conditions and lack of disaster prevention and response mechanisms and services, German Agro Action and ITDG - Soluciones Practicas<sup>7</sup> embarked on an innovative disaster prevention and response capacity building project involving the communities. The project aims to enhance their capacity to respond to disasters and reduce their vulnerability through a participatory process.*

*Even though winning the support and participation of the communities was a major challenge, the project finally took off with the help of local Civil Defence Committees formed by community members themselves. The establishment of the local Civil Defence Committees had a positive catalytic effect on general participation. Native elders and leaders, women's and men's representatives (families), teachers and students, as well as local government officials joined the project, discussing disaster issues, devising risk reduction plans, assessing flood damage, promoting disaster prevention on local radio stations, integrating the topic into schools, establishing an educational network, identifying pilot projects, etc. The project, launched in March 2006, will be completed in June 2007.*

*Even though this is a first disaster prevention initiative with native and mestizo communities in Peru, it has achieved impressive results over its first 12 months of implementation. Better still, it can easily be replicated in communities with participatory decision making processes – provided that their “political” commitment is secured.*

### **The Initiative**

This is a disaster response and prevention capacity building project aimed at enhancing the capacity of native and Mestizo communities in three provinces of San Martin Department, Amazonas Region (Peru), to respond to disasters and reduce vulnerability to natural hazards through a participatory process including training and various activities.

The project kicked off on 1st March 2006 and will end in June 2007. Being a DIPECHO project, it cannot be extended but experiences, results and lessons from the project can be transmitted to other disaster-prone and vulnerable regions. The project is under way in Peru in three provinces of San Martin

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<sup>6</sup> *Mestizo* : Half-caste, of mixed race (white and Indian)

<sup>7</sup> ITDG - *Soluciones Practicas* : Intermediate Technology Development Group – Practical Answers (to Poverty)

Department, Amazonas Region, targeting about 8,150 direct beneficiaries among native Awajun, Kechua and Mestizo communities in El Dorado, Rioja and Moyobamba provinces.

These communities live in areas at high risk of flood, landslide and sludge avalanche, and are extremely vulnerable due to poor economic conditions and lack of disaster prevention and response mechanisms and services. Involved in the project are members of the communities – including native elders and leaders (apus), women’s and men’s representatives (families), teachers and students from 21 schools - as well as municipality officials. The project is being implemented by ITDG - Soluciones Practicas with funding from DIPECHO and German Agro Action.

### **Goal and Objectives**

As mentioned above, this project is aimed at enhancing the capacity of native and Mestizo communities to respond to disasters and reduce vulnerability to natural hazards.

### **Outcomes and Activities**

The following project impacts and results have been observed:

- Establishment and training of native communities’ Civil Defence Committees and implementation of disaster prevention activities.
- Evaluation of flood damage by members of the Civil Defence Committees following the above-mentioned training.
- Disaster prevention mainstreamed into schools and learning activities.
- Training of local communicators to propagate the risk reduction activities on local radio stations.
- Educational material (stories, posters, puzzles) developed to support school learning process.
- Educational network formed and owned by teachers to promote topics related to disaster prevention.
- Native communities’ Civil Defence Committees entered in local government budget and given premises at town council headquarters.
- Pilot projects identified by communities and implemented by the Civil Defence Committees.

### **The Good Practice**

The project is a good practice because:

It has achieved activity coordination between schools and communities.

The civil defence committees have been created and trained and are able to provide technical assistance to civil defence groups in schools.

Students have formed learning circles for risk management which are part of the project’s group of communicators.

The above-mentioned civil defence groups are operational and provide assistance to community based mitigation work.

The project also includes innovative elements such as:

- Working with native communities and forming native promoters of disaster prevention.
- Producing educational material in the native Awajun and Kechua languages.
- Forming students’ working groups which facilitate the learning process and help promote DRR activities in the communities.

The project activities are being implemented through a participatory process supported by local elders and leaders. Beneficiaries are integrated into the learning process, the development of risk reduction plans and the prioritization of activities to reduce vulnerability to natural hazards.

A **key success factor** is people’s awareness of the disaster risks and their awareness of the fact that they need to reduce their vulnerabilities.

### **Lessons Learned**

Key lessons learned from this practice are:

- Work coordination and activity identification among schools and communities have enhanced people’s participation.

- Local involvement and local “political” commitment are fundamental to the success of risk management processes. From the outset, local decision makers, elders, leaders and officials were integrated into the process and into the development of risk reduction plans.

One of the **major challenges** of this project was how to win the support of the native communities. Native communities had to be convinced that the process was genuinely participatory and that community members would make their own decisions on how the risk reduction process would proceed and what activities to implement. The communities have been reassured that their social systems and cultures would be respected.

### **Potential for Replication**

The project is easy to be replicated in communities with participatory decision making processes. One precondition is the local “political” commitment of all the individuals and organizations involved.

## **Kenya: Linking Relief and Development through the Drought Cycle**

### **Management Approach**

**Catholic Organization for Relief and Development Aid (CORDAID)** (In Partnership with CODES, PISP and CIFA)

#### *Abstract*

*The people who live in the arid and semi-arid areas of the Horn of Africa are subjected and vulnerable to many risks, the most obvious one being drought. Whenever a disaster strikes, emergency appeals will lead to a coordinated effort to respond to the situation to try and save lives. Conventional responses to disaster are not always sufficiently effective though, and it is often observed that development interventions and emergency responses in a certain area are treated as separate issues and that development activities are halted, while there are costly delays in putting the disaster responses in place. It is more effective to combine development and relief and thus plan for long-term investment to reduce risks and at the same time protect people’s acute needs when necessary.*

*This is the essence of Drought Cycle Management (DCM) and Community Managed Disaster Risk Reduction as practised by the Catholic Organization for Relief and Development Aid (CORDAID) and local partner organizations in parts of Kenya, Ethiopia and Uganda. These community-based approaches aim to strengthen people’s livelihoods throughout normal, alert, emergency and recovery stages, matching realities on the ground, i.e. doing the right things at the right time.*

*During the drought that affected parts of Kenya in 2005/2006, CORDAID and partner organizations CODES (Community Organization for Development Support), PISP (Pastoralist Integrated Support Program) and CIFA (Community Initiative Facilitation and Assistance) responded to the emerging disaster as part of their Drought Cycle Management Programme strategy with additional funding by ECHO (European Community Humanitarian Office). This Drought Emergency Intervention Programme (DEIP 2006) was evaluated by Acacia Consultants Ltd. This case study looks into the concept of Drought Cycle Management in relation to an emerging disaster like the drought of 2005/2006 and what lessons can be learnt in order to be better prepared for a next drought.*

### **The Initiative**

The Drought Emergency Intervention Programme (DEIP) was a response to a developing emergency situation after a long period of alert. DEIP was implemented in Samburu, Marsabit and Moyale districts in northern Kenya between March and August 2006, co-funded by ECHO and CORDAID. The programme was implemented in the wider context of CORDAID’s long-term Drought Cycle Management programmes in the three districts.

The purpose of DEIP was to improve access to water and animal protein in order to reduce the impact of drought and ensure livelihood security in Samburu, Marsabit and Moyale districts. DEIP was implemented through three local partners: the Community Initiative Facilitation and Assistance (CIFA), Community Organization for Development Support (CODES) and the

Pastoralist Integrated Support Programme (PISP) in Moyale, Samburu and Marsabit districts respectively.

### **Goal and Objectives**

People living in arid and semi-arid areas in the Horn of Africa are subjected and vulnerable to many hazards, the most obvious one being drought. It is often observed that development interventions and emergency responses in a certain area are treated as separate issues and that development activities are halted, while there are costly delays in putting the disaster responses in place. It is more effective to combine development and relief and thus plan for long-term investment to reduce risks and at the same time protect people's acute needs when necessary. This is the essence of drought cycle management and community-managed disaster risk reduction as practised by CORDAID and local partner organizations in parts of Kenya, Ethiopia and Uganda.

In particular, DEIP was implemented in Moyale, Marsabit and Samburu districts in northern Kenya from March through August 2006, as a logical and integrated part of the wider Drought Cycle Management Program that was ongoing. DEIP aimed to improve access to water for 162,375 drought-affected pastoralists and sedentary people comprising 86,059 women and 76,316 men, as well as 297,000 tropical livestock units (TLUs). In addition, the project was to improve access to animal protein for 34,800 people (from women-headed and destitute households, orphans and school-going children) and ensure livelihood security for the target populations. The indirect beneficiaries from the catchment's population were estimated at 78,187 pastoralists, 41,439 women and 36,748 men. Other categories of beneficiaries were expected to be local institutions, district steering committees and national/local drought management groups/teams.

### **Outcomes and Activities**

Two different sectors were covered (i.e., water and food security) by the three projects in the respective districts. The water sector aimed to improve access to water by human and livestock populations while the food security aimed to provide animal feeds and de-stocking that went hand in hand with provision of animal protein to vulnerable segments of the population.

The evaluation carried out by Acacia Consultants Ltd. concluded that DEIP was relevant (the most crucial needs of the communities were addressed), and as result of the interventions, lives and livelihoods were saved. The programme was judged to be effective as the planned results were realized. The cost-benefit analysis indicates that the input-output ratios were also favourable. Finally, the interventions were related to and form an integrated part of longer-term development in the areas, like for instance the making of water pans and livestock marketing.

### **The Good Practice**

As indicated by the headline, the practice of DCM aims to link relief and development. Droughts and other emergencies normally trigger responses that are separated from ongoing development efforts. When applied in isolation from ongoing development efforts, relief aid may save lives but may not necessarily save livelihoods. In fact, the opposite may happen:

1. People may become dependent on relief supplies.
2. Free handouts interfere with local market mechanisms.
3. Relief distorts traditional coping mechanisms and does not help reduce vulnerabilities.
4. Relief distribution centres encourage inappropriate settlement.
5. Relief is expensive, while money may be better spent on reducing people's vulnerabilities.
6. Relief responses by external actors normally come late, while early warnings often do not trigger timely responses.

Innovative concepts like "Community-Based Drought Cycle Management" and "Community Managed Disaster Risk Reduction" will not only be cheaper than dealing with the ensuing emergencies. By supporting livelihoods, the effects of disaster may be reduced as well as the consequences of a next drought or flood. Here follow principles of these concepts, which could indeed prove to be more efficient and effective in dealing with recurrent disasters:

1. They are participatory in process and content.

2. Activities are responsive to the community's felt and real needs.
3. The approach is integrated and activities are not implemented in isolation from the community's environment.
4. The approach is proactive and emphasizes preparation and prevention.
5. The concepts are comprehensive and holistic and include "hardware" as well as "software" activities.
6. They are also multi-sectoral and multi-disciplinary.
7. Communities are empowered as their capacity and control to response increase.
8. The concepts are developmental and reduce vulnerabilities, while contributing to long-term development and poverty reduction.

### **Lessons Learned**

The overall conclusion of the evaluation of DEIP was that the emergency intervention realized its objectives. The other conclusion was that impacts of drought-related emergencies will continue to worsen unless four factors are addressed:

- Reduction in livestock numbers in the pastoralist areas;
- Re-introduction of community-based grazing management with community bylaws enforced by both the community and the Government;
- Insecurity and therefore open up large tracks of pasture land that remains inaccessible. Linking pastoralists to the rest of the economy is an important strategy that needs to be explored; and
- Strategic preparation for droughts during the preparedness phase.

The last point reflects the emphasis of this case study, namely the paradigm shift that periods of drought can be prepared for as long as projects and activities are planned for and implemented within the logical framework of the drought cycle, and as long as planning and implementation are community based. Development and relief can thus indeed be linked and help prevent or lessen the intensity of a disaster.

### **Potential for Replication**

Probably the most important precondition for replication is the willingness of donor organizations to become flexible in budget allocation, allowing different kinds of interventions depending on the phase of the risk cycle, including preparing for emergencies. Contingency funds must be set aside to be made available during actual emergency situations.

Development organizations must thus develop the capacity to prepare for and deal with emergencies, and humanitarian organizations must shift their emphasis more into the direction of preparedness and prevention. It is in this way that ECHO and CORDAID now cooperate in funding longer-term drought cycle management programmes, in addition to specifically support preparedness activities and set contingency funds aside in case of the onset of an actual emergency.

## **Malawi: Small, Medium-Scale Interventions to Control River Flow**

**Tearfund** (In Partnership with Eagles)

### *Abstract*

*Over 10 to 15 years, the district of Chikwawa in southern Malawi suffered from the increased impact of flooding from Mthumba River, including disruption of agricultural production, loss of lives and destroyed buildings. This not only re-enforced the local cycle of poverty but also reduced the impact of development gains in the district.*

*In 2003, Tearfund partner NGO "Eagles" undertook a "Participatory Assessment for Disaster Risk" with five villages. The villages' specific vulnerabilities to flooding were assessed, and their capacities to address the problem reviewed. Some of the root causes of their vulnerability were identified, as well as the reasons for a more frequent occurrence of the hazard. In conjunction with the villages, Eagles initiated small-scale mitigation initiatives, including the creation of a wood lot and a storm drain.*

*In 2005-2006, Eagles consulted with another 11 villages and the local government authorities, as it became clear that a multi-stakeholder approach was needed. Sufficiently motivated after two years of awareness raising efforts by Eagles, the villagers established a community-based task force. Once created, the task force along with government authorities and experts widely consulted with all communities and designed an earthen dike that would re-instate the previous river course of Mthumba River and reduce the impact of flooding on a wide area.*

*The impact of the project was felt virtually immediately. During the 2005-2006 rainy season, excess run-off was diverted by the storm drain, rainfall run-off was reduced by the wood lot, and the original river course of Mthumba River was restored through the earthen dike.*

### **The Initiative**

This was a flood mitigation project consisting of multiple small to medium-scale interventions aimed at controlling river flow during rainy seasons. The project was launched in 2003. Even though the proposed flood mitigation structures (wood lot, storm drain, earthen dike, etc.) have been completed, Eagles' relationship with the communities and villages is still ongoing and the structures are managed by the community and the government through a community-based task force established in 2005-2006. The task force, made up of community members, operates under the coordination of the District Civil Protection Committee mandated by the local District Executive Committee to look after disaster mitigation and response within the District Assembly.

The project was initially implemented in five villages in the area of Mthumba, Chikwawa District, Malawi. The district lies in the Great Rift Valley in the southern part of the country, through which passes Shire River which is the single outlet for Lake Malawi. After some initial research and consultation, the project was extended to another 11 villages when it was realized that the mitigation work would require their support and would also benefit them. Relationships were also built at district level, specifically with the District Civil Protection Committee of the District Assembly, and with the District Executive Committee.

Involved in the project were: Eagles' Relief and Development Programme (for project initiation and management); the District Executive Committee (for decision making); the District Civil Protection Committee (for coordination); the District Assembly (for ratification and endorsement); Illovo Sugar Company and various government departments (for resource inputs); the community-based task force (managed by the District Civil Protection Committee); Forestry and Agricultural Departments (training support and advice); local churches (for community mobilization and consultation); two traditional elders and local chiefs (for community mobilization and consultation); and all village communities (for broad consultation, indigenous knowledge and local labour).

The project was implemented by Tearfund partner NGO Eagles under initial funding from Tearfund. Eagles' ongoing relationship with the communities and villages is supported by Tearfund through a DFID<sup>8</sup>-funded global DRR programme.

### **Goal and Objectives**

As mentioned earlier, the major goal of this project was to reduce food insecurity through flood management. Overall, the project targeted 4,706 flood-affected farming families in over 52 villages.

### **Outcomes and Activities**

The implementation of this project required the following activities:

- Building a storm drain in 2004 in Nedi village to protect people, their houses and their community child care centre.
- Establishing a small local tree plantation (wood lot) in 2003 in Chikalumphu village to slow down flood waters and forcing them into drains, away from the people, houses and fields behind.
- Building an earthen flood dike in 2006 in Santana village to protect crop fields. The labour for the dike was predominantly provided by the task force, with local churches and traditional authorities that agreed to work with the task force to take responsibility for its ongoing maintenance.

During the course of the design and construction of these structures, the communities were made aware of what actions they had done to cause the increased flooding. They were given new skills in tree and grass planting. They were also made aware of the consequences of tree felling and overgrazing. The task force, made up of community members, learnt to advocate to local businesses to provide inputs in kind for the project, as well as negotiate with government authorities to provide inputs such as training. As a result, the villages increased in confidence in their ability to negotiate with local government authorities and to manage and own solutions to their problems.

Furthermore, the project was implemented through the adoption of the following strategies:

- *New multi-sectoral approach*: After a comprehensive risk assessment, a new multi-sectoral approach was developed to resolve the flood problem.
- *Advocacy*: (1) Advocacy with government departments and District Assembly to draw their attention on the problem; (2) Advocacy to re-enforce a bye-law to prevent farmers from planting within 20 m of rivers/streams; (3) Advocacy with private and public sectors to provide extra resource inputs.
- *Networking*: (1) Improve networking with existing government mechanisms (mainly the District Civil Protection Committee) to support disaster mitigation and response; (2) Use expertise for advice and supervision to ensure sustainable mitigation structures.
- *Community mobilization*: (1) Sensitize traditional and church leaders to take responsibility in their areas; (2) Mobilize communities to understand and take responsibility in their areas, and consequently develop action plans; (3) Undertake review, with all stakeholders, of previous flood mitigation efforts to understand what did and what did not work.

The following methods were used:

- Participatory Assessment for Disaster Risk methodology (a form of vulnerability and capacity assessment, VCA) to identify main hazards, root causes and subsequent community capacity to draw together action plans.
- Environmental resource management training of communities by government and institutional experts, especially on the use of trees and grasses on river banks to prevent soil and river erosion.

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<sup>8</sup> DFID: Department for International Development (UK Government)

- Use of community elders to identify the previous course of the river, which led to the choice of mitigation structures needed to re-establish the previous route of the river away from community structures and agricultural lands.
- Development of a community task force to rear tree saplings, dig the storm drain and build the earthen dike, along with the use of heavy equipment funded through the project.

### **The Good Practice**

The overall impact for all the villages is significant. There has been a decreased incidence in water-borne diseases during the rainy season and also increased school attendance. Indeed, schools and clinics in the past had been disrupted either from the temporary closure of public buildings or through lack of access. Agricultural lands have also increased their yield and production, and there is increased food security. All parties agree that with collective discussion, agreement and action, they managed to address a problem that was previously deemed impossible to manage.

In particular, the following specific impacts have been observed from 2005-2006 onwards:

- Significant reduction of flooding in prime agricultural lands, including the re-enforcement of a river bank with a 400-metre section;
- Reduced water-borne diseases in flood-affected villages;
- Increased school attendance (flooding stopped schools from operating or prevented children from attending class during rainy season);
- Provision of food through food-for-work programmes;
- Communities' better understanding of causes of flooding;
- Communities' increased skills in planting and raising tree saplings; and
- Communities' increased confidence through all the above to solve their flood-related problems.
- Furthermore, this project can be regarded as a good practice because:
- All stakeholders were consulted during the project
- Disaster risks leading to effective interventions were analyzed in a participatory manner
- Learning was also explored from historical and indigenous knowledge
- Use of intermediate technology enabled local community involvement
- Communities were sensitized on the underlying causes of flooding

### **Lessons Learned**

The key lessons learnt from this practice were:

- Communities need to be involved in the project so that they can understand how their own practices can increase flooding.
- Communities need to be mobilized to accept and own subsequent mitigation activities and for the long-term sustainability of the project.
- Local government officials' endorsement and support needed as encouragement and as a source of resources.

**The major challenges** were:

- How to maintain the communities' consensus and behavioural change needed to address the underlying causes of flooding. The key was to ensure that church and traditional leaders maintained the momentum and understanding of sustainable environmental management.
- The threat of climate variability leading to changes in the seasonality and volume of the precipitation: this may lead to new levels of unexpected flooding or alternatively agricultural drought affecting the growth of the wood lot and agricultural crops. Tearfund is now working with partners to understand how VCAs (Vulnerability and Capacity Analysis) can be modified to appropriately cater for scenario forecasting of climate variability.

The **key success factors** of this initiative were:



- Willingness of all stakeholders to discuss and learn during the lifespan of the project.
- Multiple appropriate technologies that were well considered and integrated back into wider government thinking and policies, yet owned by the community.

The **key failure factors** were:

- Protection of young trees, especially from livestock and in drought periods.

Slow decision making with a volunteer task force whose mobilization was based on good will and motivation.

### **Potential for Replication**

The following aspects of the project are generic and can be replicated almost anywhere in the world:

- The multi-stakeholder approach leading to awareness raising and consultation with communities, and the involvement of local government structures;
- Use of risk assessment methodologies to correctly assess the underlying causes of flooding and the design of appropriate technologies; and
- The development of a multi-stakeholder community-based task force as central to the sustainability and ownership of mitigation structures.

This said, the administrative and governance structures were conducive to encouraging and mobilizing the community to participate and own their own resolutions. Subsequently, in countries where there are limited administrative or governance structures related to disaster management, replication of this approach would need to be reconsidered, or at least undertaken concurrently with advocacy measures to help governments design appropriate mechanisms to supporting community-based disaster risk reduction.

Furthermore, there was an already existing strong understanding of what mitigation structures did and did not work in Malawi, which was helpful in identifying appropriate solutions. Again, in countries where there are no appropriate examples of mitigation structures available, pilot initiatives should be encouraged in collaboration with the government in active consultation with high-level experts. The project design should also have a strong component for disseminating learning across the country after completion of the pilot.

## **Namibia: Supporting Local Decision Making with Inter-community Platform and Local-level Monitoring**

**Desert Research Foundation of Namibia (DRFN)**

### *Abstract*

*Drought and desertification are slow-onset disasters that impact on livelihoods of people living in drylands. They are often exacerbated by poverty and a naturally variable climate and compounded by lack of organization in communities affected. With increasing population, urbanization, changing climate, evolving policy and political frameworks and other pressures, capacity of drylands residents to cope with and adapt to natural climate variability and intervening extreme events is diminished. Increased understanding of variable natural environmental conditions and potential effects of climate change, enhanced cooperation amongst the growing population, appropriate organizational and communication structures and community-based monitoring to support local decision making are all essential components of community-based disaster management and risk reduction.*

*In Namibia, in southwestern Africa, an approach known as “Forums for Integrated Resource Management” has provided the platform for organization and communication within and amongst communities. This approach has contributed to placing communities at the centre of their own development. Whether based, inter alia, on a water point committee or a farmers’ association, the approach strengthens capacity amongst the community to coordinate their own activities in conjunction with service providers through planning, monitoring and adjustment of mutually agreed upon development plans.*

*To support information exchange and decision making, an approach known as “Local Level Monitoring” is designed by communities with support from service providers. Communities identify relevant indicators to monitor their livelihoods including key environmental elements. Service providers contribute to design of a monitoring and information capturing system. The communities discuss the results, analyze them and use them where appropriate for decision making. This provides a tool for identification of environmental changes affecting livelihoods that may be based on management actions, climate variability, policy changes or other factors. At the same time, this information can be used to identify and track evolving drought and decreasing productivity and apply the results to decision making related to coping with the identified risks.*

### **The Initiative**

This initiative started as part of Namibia’s programme to combat desertification, which represented the country’s National Action Programme. The “Forums for Integrated Resource Management” (FIRM) and “Local Level Monitoring” (LLM) approaches described in the above “Summary” were initiated in the mid 1990s. The programme that developed them was completed in 2004. But since then, they have been adopted by extension services and new projects and programmes.

The initial programme was implemented in the Central North (villages and extension services in nine constituencies in Oshikoto Region), Northeast and East (five Villages and extension services), Northwest (three villages), West (a management committee) and South (four villages). Several spin-off projects, ongoing and planned, have adopted this approach as has the FSRE (Farming Systems Research and Extension) of agriculture extension.

Involved in the initiative were the Desert Research Foundation of Namibia (DRFN), an NGO, and the Directorate of Extension and Engineering Services (DEES) in the Ministry of Agriculture, Water and Forestry (MAWF). The personnel involved included a variety of staff members at different times ranging from the Director of the DEES to field facilitators such as agricultural extension technicians (AETs). Over 1,000 people were targeted and were directly or tangentially involved in the initiative implemented by the DRFN working with the DEES under the guidance of a Steering Committee chaired by the Ministry of Environment and Tourism (MET). The initiative was funded primarily by

the German development agency GTZ but other donors supported various activities and sub-projects during the 10-year programme.

### **Goal and Objectives**

The major goals and objectives were to understand drought and desertification in the Namibian context, to develop awareness and capacity to deal with their various forms, particularly amongst communal farmers and their service providers, and to contribute to relevant policy formulation.

### **Outcomes and Activities**

The impact of this initiative has been extensive and is ongoing at community level and amongst service providers. Several policy instruments have been influenced by the project and a number of derivative projects are ongoing.

As a result of this initiative:

- The Farming Systems Research and Extension (FSRE) programme of the Directorate of Extension and Engineering Services (DEES) had adopted the FIRM approach and uses it, with greater or lesser success, at many Agricultural Development Centres (ADCs) throughout Namibia.
- Local Level Monitoring (LLM) is actively implemented by communities in five of the 13 regions of Namibia and less actively at other communities with ADCs in other regions.
- The Drought Policy and Strategy has been elaborated under the programme but is yet to be fully implemented. Several other policies take drought and desertification into consideration, e.g. Agriculture, Water.
- A number of programmes, e.g. Desert Margins Programme (Global Environment Facility, GEF), Ephemeral River Basins (Norway), Oshikoto Livestock Development Project (EU) and several planned programmes as well as ongoing activities, e.g. Kuiseb Basin Management Committee, follow the FIRM approach and/or use LLM as a decision support tool.

### **The Good Practice**

This can be considered good practice because it contributes to capacity building and institutional development amongst rural farming communities so they can enhance their own resource management and livelihoods and thereby enhance their capacity to manage and reduce risks related to drought and desertification and other potential disasters.

The FIRM approach is an innovative, flexible approach to enhancing individual and institutional capacity of rural communities; the LLM is an innovative way to monitor livelihood and environmental changes based on the communities' own interests and used by the communities for their own decision making. The LLM approach is being expanded to provide community-derived information to national level with the aim of national coverage in support of risk reduction and management.

The programme was implemented through a joint venture between NGOs and government departments working with farming communities. While NGO staff and resources undertook the community-level facilitation, the programme was guided by a national Steering Committee.

### **Lessons Learned**

The key lesson learned from this initiative is that community capacity building requires time from the community and the service providers involved with the community. There must be obvious benefits for the community, and facilitators must be able to elaborate on these benefits from the first engagement. Since time is a key, funding to support the ongoing facilitation is also essential, something which rarely is available from donor programmes. Consequently, involvement of the relevant government departments is also essential - from the head office to the extension level on the ground.

**Major challenges** to be overcome during the project involved changing personnel in government who often were not aware of or convinced of the benefits to be derived from community capacity

development. Limited capacity amongst newly appointed extension personnel was part of the ongoing capacity strengthening associated with the project.

Another major challenge was the degree of expectation from government by communities in newly independent Namibia. Communities still expect the government to provide free drought relief food, water and energy, and overcoming this perception has been an ongoing challenge to the programme. Although an enlightened drought policy and strategy was developed by the government during the 10-year programme, there has been reluctance by the government to adopt some of the key elements challenging its use to guide and enhance community capacity.

### **Potential for Replication**

If the implementers and the communities and the government structure all have the will and the time and the interest, it would be easy to replicate this project. Governments are usually interested in DRR but do not know how to reach local communities in a non-bureaucratic manner. Governments often want to support local development but forget the step of helping communities to organize and gain capacity so they can participate fully in their own development. FIRM represents a communication platform between decision makers, communities and service providers and research workers and others contributing to addressing drought and desertification, slow-onset disasters prevalent in the region. However, to replicate this project in a different context, the tacit support of government and the appropriate policy framework supporting participation should be in place. The establishment of some sort of communication platform, such as FIRM, requires attention. Full participation from the communities themselves is essential and not the usual top-down approach.

### **Afghanistan: Raising Awareness of Risk through Radio Drama Tearfund**

#### *Abstract*

*Afghanistan is not only a country that has suffered from wars and conflicts; it is also prone to disasters (earthquakes, avalanches, floods, drought, etc.) and its human development index is one of the lowest in the world. Partly because of its mountain ranges, the country is also hindered by lack of transport; hence the existence of perhaps the most isolated villages in the world. These isolated villages are extremely vulnerable to disasters.*

*Inspired by Priority for Action Three<sup>1</sup> of the Hyogo Framework for Action (HFA), the international NGO Tearfund is working alongside communities, partners and the Government within Afghanistan to communicate disaster risk reduction messages. In August 2006, Tearfund entered into an agreement with the BBC World Service Trust to integrate, for a one-year period, disaster risk reduction messages into the story lines of the very successful BBC educational radio programme called "New Home, New Life", NHNL.*

*The BBC World Service Trust had launched NHNL 13 years earlier to support returning internally displaced persons. Its success is based on its commitment to research issues that are most relevant to communities themselves. After reviewing the issues with experts, the BBC integrates appropriate community education messages into the programme's story lines.*

*The first four months of implementation of the Tearfund-BBC agreement saw the issues of earthquake, drought and flood explored through drama set in a fictional remote village of Afghanistan. Disaster story lines have been integrated into the NHNL programme at least every other week. The messages are broadcast at certain hours of the day to suit women as well as men. The DRR messages have reached a wide audience because, among other reasons, a large section of the Afghan population listens to NHNL. It is early to assess the full impact of the DRR messages, but there are indications that the communities are keen to listen and understand more about what they can do in times of disaster. Also, reports from an evaluation team include evidence of success from the previous story lines.*

#### **The Initiative**

This is a disaster risk communication project based on the use of proven communication practices targeting local communities. Disaster risk reduction (DRR) messages are integrated

into the story lines of the very successful BBC educational radio programme called “New Home, New Life”, NHNL. As the NHNL was launched by the BBC World Service Trust 13 years earlier to support returning internally displaced Afghans, it is broadcast in two Afghan languages. The DRR-related project includes a disaster-based radio drama series set in a fictional remote village in Afghanistan.

As between 60 to 68 per cent of those who have radio sets in Afghanistan listen to the BBC programme which is broadcast five times a week in the Dari and Pashtu languages, the DRR messages have reached a wide audience. Between two to four times per month, a programme on the findings of a research conducted at community level and an expert-advised story line on disaster issues are broadcast. The story lines are generally hazard specific and are run for up to a period of four months as a reoccurring theme (e.g. April to August on earthquakes). The programmes are rebroadcast at different times of the day and are aired on a variety of radio frequencies and channels to ensure wider audience. The story lines have been operating since July 2006.

### **Goal and Objectives**

Afghanistan is not only a country that has suffered from wars and conflicts; it is also a country prone to earthquakes, avalanches, floods and drought, and its human development index (HDI) is one lowest in the world. Partly because of its mountain ranges, the country is also hindered by lack of transport; hence the existence of perhaps the most isolated villages in the world. These isolated villages happen to be extremely to disasters. In the light of this, and as 80 per cent of Afghans have radio sets in their homes and between 60 to 68 per cent of them listen to the above-mentioned NHNL, the idea of integrating disaster risk reduction (DRR) messages into the BBC programme was born.

Moreover, Afghanistan’s 2003 National Disaster Management Plan stresses the need to work closely with communities, yet much of the initial institutional strengthening was done at national and provincial levels. The Project therefore provided an entry point for community-level action. The idea was that DRR aware communities would be in a better position to engage with local government structures in the development of local disaster management plans.

In view of the above, the major goal of the Project is to support the development of disaster-resilient communities across Afghanistan. Its major objectives are to:

1. Raise community awareness of hazards and disaster risks;
2. Promote understanding of hazards and communities’ vulnerabilities; and
3. Help communities enhance their capacities to address their vulnerabilities.

### **Outcomes and Activities**

Following an initial period of research and consultation, Tearfund entered into a contract with the BBC World Service Trust in August 2006 for an initial one-year period. Because a large section of the Afghan population listens to NHNL and its supporting programmes, research for the DRR-related radio programming is being conducted across a variety of different provinces, covering multiple hazards and involving programme recording with trained actors in the capital, Kabul.

To maximize impact, NHNL not only bases its messages on the research conducted at community level, it also ensures that the messages are broadcast at certain hours of the day that suit women as well as men. A typical real-life community disaster reduction story picked by NHNL as an entry point for its programmes - and accompanying features and publications - is the following. One community recalled when forests of tamarind trees surrounding their village had been cleared so that the trees could be sold, and this resulted in heavy destruction caused by a flood. After hearing on NHNL, a few years ago, that destroying forests could lead to destructive flood impact on farms and houses, the community established a local council and decided to fine any one who cuts trees. The forest trees have now been growing for 4-5 years and the community is happy with the many benefits accruing from them: no flood impact on houses, less dust, good pastures for animals, etc.

It is early to understand the full impact of the DRR messages, but indications are that the communities are keen to listen and understand more about what they can do in times of disaster. Also, reports from an evaluation team include evidence of success by the previous story lines. An evaluation of the effectiveness of the messages is indeed being conducted, and those who use the programme material in their projects are also being asked to provide information on their effectiveness.

### **The Good Practice**

The good practice in the Project lies in the commitment of NHNL to make the programme as accessible and acceptable as possible to Afghan communities. The comprehensive research on the context of the issues faced by communities makes the programme very popular. Also, the programme design team has a clear understanding of dialects, accents and listeners' motivations. And the involvement of experts - such as Tearfund - to support and advise on key messages responding to the communities' felt and expressed needs helps ensure relevance and effectiveness.

Moreover, an innovative element is the fact that NHNL is also supported by a series of supplementary feature programmes which expand on some of the issues raised in the dramas. The feature programmes pick the findings of the community research and communicate actual examples of community actions or evidence of learnt messages. The feature programmes also provide supporting information for community structures to debate the issues raised. NHNL also has a quarterly publication that repeats the messages in cartoon format for partners to circulate and use in their discussions with communities. The BBC World Service Trust can also produce children's publications relating to the messages, which can be used in formal and informal learning methods.

Another innovative element is the use of community radio to reach some communities which sometimes can be reached only after a three-day donkey-riding journey. Community radio is a cost-effective and effective way to reach the large section of the population (80 per cent) who have radio sets in their homes. Indeed, the communities' remoteness makes hands-on community-based projects extremely difficult, if not impossible.

### **Lessons Learned**

The key lessons learned from this project are:

- The messages need to be integrated effectively into a drama that is entertaining. In-depth analyses of issues are needed but they are not always possible.
- The opportunity to get community social networks or mobilizing structures to discuss the messages needs to be nurtured. It is hoped that the above-mentioned separate stand-alone audio stories will help trigger local debates.
- There is a need to work closely with the BBC to ensure that its staff members have an understanding of the basic concepts of DRR. This would help script writers communicate the messages effectively in a culturally relevant way.

The **key success factors** are:

- NHNL can be integrated into any community-based DRR project implemented in Afghanistan. The programme story lines will be extracted onto a separate set of audios which can be used in a stand-alone setting. Also, Tearfund's current chairmanship of the Disaster Risk Reduction Consortium in Afghanistan will facilitate the circulation of the audios. The Consortium is an NGO network linked to the Government and the UN and which is dedicated to sharing good practices and lessons learnt.
- The programme can address multi-hazard issues in one setting. Displacement and migration is still common place in Afghanistan, and understanding the different hazards that communities could face when they are displaced into a new location is also beneficial.

### **Potential for Replication**

Even though it is not unusual for community messages to be communicated through radio drama in other countries, NHNL has been designed specifically for Afghanistan. Also, the cost of having consistent and long-term community researchers may be high, but it provides the

most accurate understanding of the needs of communities and therefore the best point of departures for effective and relevant messages. If these two issues are dealt with adequately, the Project can be easily replicated through state-funded radio programmes as part of an integrated package of DRR initiatives at community level.

## **Kyrgyzstan: Rural, School “Disaster Teams” to Boost Preparedness**

**Christian Aid, (In Partnership with Shoola)**

### *Abstract*

*The initiative described below has targeted five villages and local government representatives over a one-year period in the eastern part of the Kyrgyz Republic. In each village, “rural disaster teams” and “school disaster teams” were formed and supported in their development through a simple and transparent process.*

*The local disaster teams underwent theoretical and practical training on disaster management, preparedness and risk reduction. This enabled them to raise community members’ awareness of existing and potential hazards and disaster risks.*

*After an early warning system was developed, and the team members trained in first aid and on how to respond to emergency situations, they were able to plan community response to disasters.*

### **The Initiative**

This is a community capacity building and small-scale structural mitigation project that involved both communities and local government authorities in project implementation, for the sake of sustainability. The first phase of the project was implemented from January 2006 to December 2006. A second phase is planned in 2007 covering the same target villages. The project was implemented by Christian Aid partner Shoola, with funding from DIPECHO (Disaster Preparedness, European Community Humanitarian Office).

Involved in the project were the following: (1) *Primary stakeholders* - Rural and school disaster team members in five villages (approximately 100 adults and 125 children); staff of regional, district and local government; 11,301 community members of five villages benefiting from structural mitigation and raised awareness and warning systems through activities undertaken by the rural and school disaster teams; (2) *Secondary stakeholders* - 100,000 residents of Issyk-Kul Region that were informed about hazards and disaster risks through a video and other material broadcast by the local TV channel.

### **Goal and Objectives**

The project sought to enhance disaster mitigation and preparedness among villagers. The five villages targeted were located in Ton, Djetioguz, Aksuu, and Tjup districts in Issyk-Kul Region in the eastern part of the Kyrgyz Republic, central Asia<sup>9</sup>.

### **Outcomes and Activities**

Over a period of two months, rural and school disaster teams were formed, underwent training and engaged in capacity building for other community members. The preparation of village maps and risk areas, and preparedness and contingency plans was done in a participatory manner but under the leadership of the disaster teams. They also supported Shoola in facilitating repair and construction work using the *ashar* method (free community labour).

The rural disaster teams and school disaster teams were formed in the five villages to support the development of community awareness and preparedness measures. The teams received capacity building in the form of training on disaster risk reduction and management, and were equipped with tools and kits for emergency preparedness and response including spades and shovels, first aid kits and stretchers, flashlights, tents, etc.

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<sup>9</sup> The villages were identified in an assessment undertaken in December 2006.

Each rural disaster team consisted of 20 adult members, and each school disaster team of 23-25 school children. The teams drew disaster risk maps of the villages, planned escape routes, and prepared contingency plans. They also facilitated structural mitigation work including strengthening river banks, reconstructing reservoirs and building dikes.

To ensure sustainability and continuity, each school disaster team formed one “duplicate” disaster team consisting of younger children who had not been involved in the initial activities. The school disaster teams also conducted training on disaster risk in the schools of neighbouring villages, which were not directly involved in the project.

Competitions and summer camps were organised for the youth, where they could demonstrate their skills and knowledge. These events and construction activities in the villages were broadcasted by the local TV channel for the residents of the whole Issyk-Kul Province. Overall, the major outcomes of this project were raised awareness, structural mitigation work and enhanced disaster preparedness.

**Concrete and verifiable results** achieved by this initiative include:

- Five rural disaster teams and five school disaster teams formed in the five villages. Each rural disaster team consisted of 20 adult members, and each school disaster team of 23-25 school children. In other words, the five villages are supported permanently by 100 adults and 125 or so school children who are key disaster reduction actors.
- Disaster risk maps of the villages, planned escape routes and contingency plans developed.
- Structural mitigation work completed: river banks strengthened, reservoirs rebuilt and dikes built.
- Five “duplicate” disaster teams consisting of younger children formed by the five school disaster teams to ensure sustainability and continuity.
- Children actively engaged in disaster issues and learnt about the importance of community initiative in disasters through innovative methods and in a playful manner.
- 11,301 community members of the five villages benefited from structural mitigation, raised awareness and the early warning systems.
- 100,000 residents of Issyk-Kul Region informed about hazards and disaster risks through a video and other material broadcast by the local TV channel.

### **The Good Practice**

This can be considered a good practice because:

- The involvement of both communities and local government authorities meant that raising awareness about existing and potential risks reached all relevant stakeholders. Further, the rural and school disaster teams were linked to the local government in that they were both actively involved in the project implementation.
- Forming the rural disaster teams from community members and training them helped build sustainability into the structural mitigation components of the project. Indeed, the teams facilitated maintenance and repair work, and passed on their knowledge to other community members and neighbouring communities through formal training and informal communication.
- The school disaster teams ensured that children were actively engaged in the issues and learnt from an early age about the importance of community initiative in disasters. Knowledge about disaster risks and response was conveyed using innovative methods and in a playful manner.
- Linking capacity building with small-scale structural mitigation work - that included community contribution - provided motivation and tangible results for the communities to build on.

### **Lessons Learned**

1. A **major challenge** was the political and administrative culture still prevalent in the Central Asian region: top-down approaches and government-led planning remain dominant and the concept of participation is a relatively new phenomenon. Further, NGOs are put at a disadvantage by an unclear perception and much scepticism from government towards private, non-governmental and community-based development organizations. In the light of this, the



- project aimed to link local government and communities, and Shoola tried to play a merely facilitating role.
2. Receiving funding or contributions from government departments remains problematic. Therefore, it can be seen as a success that the project managed to secure contributions from local government in the form of providing their relevant staff to get involved in the planning and implementation of the project. This included staff participating in training as well as experts supporting the structural mitigation work.
  3. Ensuring and keeping up community participation is another key challenge, also due to a history of top-down decision making. Shoola had to remain directly engaged in motivating the disaster teams and visiting the communities on a regular basis to ensure participation throughout the project period.
  4. The one-year project duration is too short because the activity was new to both Shoola and the target communities. Therefore, Shoola and Christian Aid have decided to implement a second phase to achieve more sustainable collaboration between the communities and the local government authorities.

### **Potential for Replication**

The project approach can be easily replicated as it made sole use of local experts and locally available materials. However, a key challenge for replication and scaling up will be the commitment of local and national government authorities. This is an area which Shoola and Christian Aid are aiming to develop further over the next year and in similar initiatives in South and Central Asia.

## **Tajikistan: Sustaining Community DRR with “Endowment Funds” and Natural Resource Management**

**CARE International**

### *Abstract*

*Tajikistan, a Central Asian country, is prone to a variety of disasters triggered by natural hazards. In 2003, CARE International launched a community-based project called “Disaster Preparedness Action Plan Tajikistan”. The project seeks to reduce disaster risk through better preparedness among vulnerable people in three districts of central Tajikistan.*

*Sixty-four village committees - in the form of community-based organizations (CBOs) - have been formed to be the driving force. The CBOs enabled to complete, among other things: hazard, risk and evacuation maps at community level; small-scale mitigation projects; community drills; training on risk assessment, disaster management, financial management, organization building, leadership, project design, monitoring and evaluation, etc.; and the dissemination of information by youth volunteers. Over 54,000 people have benefited from the project: CBO members, community members, other community members, school children, school teachers, local government officials and staff.*

*Better still, for the sake of long-term sustainability, each CBO has established an “endowment fund” which enables the community to tackle existing problems locally and finance other DRR activities with its own resources. Recently, in February 2007, the fourth phase of the project was launched, featuring another innovative factor of sustainability - a “sustainable natural resource management” component. The project demonstrates that long-term sustainability of DRR activities can be pursued with the commitment, involvement and resourcefulness of local communities.*

### **The Initiative**

This project, called “Disaster Preparedness Action Plan Tajikistan”, focuses on community mobilization, disaster mitigation and capacity building to sustain disaster preparedness management (DPM). Sixty-four village committees – in the form of community-based organizations (CBOs) - have been formed as driving forces for disaster preparedness. The CBOs have been trained to handle disaster preparedness and mitigation issues.

The project was launched in 2003, involving three separate projects or project phases (July 2003 - June 2004; June 2004- Aug. 2005; Sep. 2005- Nov. 2006) with an innovative methodology that establishes “endowment funds” for the sake of sustainability. A fourth project was launched in February 07, incorporating sustainable natural resource management (NRM) into DRR.

Funded by DIPECHO, the project is being implemented in disaster-prone areas of Varzob, Vahdat and Yovon districts in Khatlon region, central Tajikistan. Involved in the project are community members, school children, local authorities, the district branch of the Ministry of Emergency Situations, the district branch of the Ministry of Education, as well as officials and experts from the Institute of Botany and the Tajikistan Red Cross/Red Crescent Society.

### **Goal and Objectives**

Tajikistan, a Central Asian country, is prone to a variety of disasters triggered by natural hazards. This, as well as other factors – including increased interest in disaster reduction in the country - led to the project idea.

The main goal of the project is to reduce disaster risk in Tajikistan through better preparedness among vulnerable people living in areas most affected by recurrent natural hazards.

### **Outcomes and Activities**

The concrete outcomes of the first three projects (or project phases) are as follows:

- 45 Youth Rescue Groups (volunteer groups) have been organized to disseminate disaster preparedness information to their families and community members.
- 64 hazard, risk and evacuation maps were developed at community level.
- 64 small-scale mitigation projects were completed.
- Training were conducted for all 64 CBOs on community risk assessment, disaster management, financial management, organization building, leadership, fire fighting, first aid health, natural resource management, project design and project monitoring and evaluation (M&E).
- 124 community drills were conducted.
- 32 project proposals on DRR have been submitted to other donors by CBOs.
- Guidelines for using endowment funds (EFs) and realization of small-scale mitigation (SSM) projects were developed and distributed to CBOs.
- Better coordination has been enforced at national, district and local levels and within CARE, providing a strong system of support to CBOs’ preparedness and mitigation activities, as well as an effective venue for sharing lessons.
- Public awareness on disaster preparedness was raised through training, school competitions, evacuation drills and IEC (Information-Education-Communication) material.

In order to implement the project, CARE International suggested the formation of village committees (called community-based organizations, CBOs) for the purpose of disaster preparedness. Sixty-four CBOs, with an average membership of 31 (including men and women), have been established since 2003, getting training and support from CARE. Many of the CBOs have since become very active, taking disaster preparedness and village development into their own hands, with support from local authorities (*jamoats*<sup>10</sup>) that are involved in all project stages. Small grants have also been provided to each CBO to carry out a sample “small-scale mitigation project” (e.g. building a flood protection wall in their village) with support from and under the supervision of an engineer provided by CARE. Last but not least, CARE developed a Monitoring & Evaluation (M&E) matrix and conducted monitoring using an M&E checklist.

Overall, 54,601 people have benefited from the three project phases so far, including 1,981 members of at least 64 community-based organizations, 41,000 other community members, 11,400 school children, 90 school teachers and 130 local government officials and staff.

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<sup>10</sup> *Jamoat* can also refer to “village” or “neighbourhood”.

### **The Good Practice**

This is a good practice because its results can have long-term impact. For instance, for the sake of sustainability, each CBO has set up its own “Endowment Fund” (EF) which enables the community to tackle existing problems locally and finance other DRR activities with its own resources. Another innovative factor of sustainability was incorporated into the ongoing fourth project phase launched in February 2007: a “sustainable natural resource management” component. Another innovative element is raising public awareness on disaster preparedness and response through school volunteers.

A **key success factor** of the project is cross visits among CBOs.

### **Lessons Learned**

The project demonstrates that the community itself should be a key actor of disaster preparedness, and that long-term sustainability of DRR activities can be pursued with the commitment, involvement and resoluteness of local communities. The following key lessons were also learnt from the three previous projects (phases) and incorporated into the ongoing fourth project:

- Include earthquake-safe construction techniques in the project.
- Introduce good quality training on project proposal writing for other NGOs (DIPECHO partners).
- Establish, in one pilot *jamoat*, a (CBO-based) “Emergency Response Coordination Centre” (ERCC) to coordinate mobilization for efficient and effective disaster response.
- Incorporate sustainable natural resource management (NRM) into disaster risk reduction.

### **Potential for Replication**

The methodology of working with and through village committees (CBOs) is likely to work in many countries - provided that local authorities cooperate. In more segregated societies (e.g. with strong ethnic, gender differences, etc.), the composition and representation of CBOs may be a challenge.

## **Bangladesh: Voluntary Formation of Community Organizations to Implement DRR**

### **Practical Action Bangladesh**

#### *Abstract*

*Bangladesh is known worldwide for its recurrent flood disasters. To help address community vulnerability to floods, community-based organizations (CBOs) have been formed voluntarily by selected community volunteers under an ongoing project entitled “Mainstreaming Livelihood-Centered Approaches to Disaster Management”. The CBOs are involved from the initial stage of problem and solution identification and participate in the implementation of community-based activities through the country’s Participatory Action Plan Development (PAPD).*

*During the planning phase, the CBOs identify their vulnerabilities and prioritize their needs with minimum assistance from the project staff. The project aims to help reduce the vulnerability of the communities to recurrent flooding problems while lifting them from extreme poverty and insecurity.*

*Adopting a participatory approach to problem and solution identification has strengthened the social bondage of the community. The approach creates self-confidence among the poorest and most vulnerable families. In addition, the CBOs are responsible for disseminating early warning messages to the communities and creating mass awareness. They are also charged with rescuing marooned people in times of flood disaster.*

### **The Initiative**

This is a community-based participatory project that is part of an ongoing larger project entitled “Mainstreaming Livelihood-Centered Approaches to Disaster Management.” It is about forming voluntary community-based organizations and strengthening them to assume a leading role in the formulation and implementation of disaster risk reduction (DRR) or disaster resilience-related projects initiated by the community.

The project was launched in January 2006, lasting five years. It is being implemented in northwestern Bangladesh in the following unions (lowest tiers of local government): Kamargani Union in Gaibanda District; Sariakandi and Norsis unions in Bogra District; and Kazipur and Maizbari unions in Sirajganj District. The three districts are located on the western bank of Jamuna River in northwestern Bangladesh.

Practical Action Bangladesh and its local partner NGOs are implementing the project. Stakeholders are different community groups like marginal farmers, fishermen, daily-wage labourers, local elected bodies, local educational institutions (schools) and government service providers. The project, which targets 33,000 men, women and children from 6,000 households, is funded by the UK government Department for International Development (DFID), based on previous Practical Action Bangladesh experience of working with local communities susceptible to flooding.

### **Goal and Objectives**

The project aims to demonstrate that increasing the resilience of poor communities' livelihoods reduces vulnerability to disaster risk while contributing to poverty reduction. Evidence of the impact of this approach is used to influence local government officials and policy makers to be more responsive to the needs of the poor.

### **Outcomes and Activities**

The project supports CBOs to implement the identified activities by transferring technology, strengthening capacity and providing input support. The baseline for solution identification is hazard analysis, together with vulnerability and capacity assessments, all based on the sustainable livelihoods approach. In addition, the CBOs are responsible for disseminating early warning messages to the communities and creating mass awareness. They are also charged with rescuing marooned people in times of flood disaster.

As a result of this project, the livelihoods of community members have been strengthened and diversified. Union and *upazila*<sup>11</sup> disaster management committees have been cooperative, as are *upazila* service providers (Agriculture, Fisheries, Livestock, etc.). Liaison with district officials indicates their willingness to try to incorporate a livelihoods approach into local and eventually national development and disaster plans, making them more responsive and effective in enabling poor communities to reduce disaster risks that threaten their livelihoods.

Other outcomes of this project include: strengthened community cohesion and social bondage, communities' increased capacity to make informed decisions regarding their own well-being, and increased self-confidence among the poorest and most vulnerable families, all as a result of CBOs' involvement in the decision-making process.

As this is an ongoing project, it is too early to identify concrete and verifiable results regarding policy influencing.

### **The Good Practice**

The good practice lies in the fact that the project is based on a participatory approach whereby facilitation techniques are used to empower communities to assess their vulnerabilities and capacities in the face of identified hazards. Their involvement in identifying their problems, solutions and the implementation of their own strategies empowers them. Appropriate technologies are introduced to increase their capacity.

The key to success is the involvement of the community and the CBO in all stages of the process. Technologies which both strengthen local coping strategies and diversify livelihood strategies are offered on demand.

### **Lessons Learned**

The key lessons learnt from this practice are:

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<sup>11</sup> *Upazila*: Intermediate tier of local government between union and district

- Communities always try to adapt to changing situations. Initially, they use their indigenous knowledge to cope with the situation.
- Coping strategies are often inadequate and need to be reinforced through training to enhance skills in alternative livelihood options.
- Technological support is commonly needed both during and after flooding.

### **Potential for Replication**

It would not be difficult to replicate this approach elsewhere. The community-led approach is suitable for any context and geographical locations. As mentioned earlier, this project is about the voluntary formation of a community-based organization (CBO) which brings the community together and which can assume a leading role in the formulation and implementation of projects initiated by the community. This means that the role of the NGO is only to *facilitate* and *support* this process. This practice can be replicated in a different context as long as this last principle is applied strictly and fully.

### **India: Masons with a Disaster Risk Reduction Mission Sustainable Environment and Ecological Development Society (SEEDS)**

#### *Abstract*

*Following the devastating 2001 earthquake in Gujarat State, western India, rehabilitation programmes incorporated several disaster risk reduction (DRR) features. Among them was an initiative by the Sustainable Environment and Ecological Development Society (SEEDS) to create a pool of masons trained in earthquake-resistant construction. The cadre of trained masons was expected to address the immediate need for reconstruction and a long-term need for a culture of safe buildings.*

*Over the years, the SEEDS Mason Association (SMA) has expanded to an 800-member organization, of which 200 have been certified by the Government for having reached internationally accepted standards in construction skills. The masons are now serving their local communities, educating fellow masons in other regions at similar risk, as well as responding in disaster-hit areas for shelter reconstruction and capacity building.*

*The SMA initiative is an effort in consolidating training and research on good quality safe construction practice at grassroots level. The Association also acts as an information centre for dissemination of modern technologies in construction through newsletters and public meetings.*

#### **The Initiative**

This is a disaster risk reduction programme aimed at creating a culture of safe buildings under the following vision: “A Disaster-Resilient Built Environment”.

Training activities were initiated in Gujarat State, western India, in 2001 but the SMA was formed in 2004. The first members of the Association were from communities affected by the 2001 Gujarat earthquake. They were trained by engineers and architects from SEEDS. It was their wish to sustain their learning and share it with more like-minded individuals.

Over the years, the SEEDS Mason Association (SMA) has expanded to an 800-member organization, of which 200 have been certified by the Government for reaching internationally accepted standards in construction skills. It is expected that the Association, which has now a countrywide presence, will continue to grow and serve the needs of the burgeoning building industry in the country. It would focus its efforts in creating resilience among communities at risk to natural disasters.

#### **Goal and Objectives**

Following the devastating 2001 earthquake in the Indian State of Gujarat, the Sustainable Environment and Ecological Development Society (SEEDS), a NGO with a focus on DRR, resolved to create a pool of masons trained in earthquake-resistant construction. The trained masons were expected to address the immediate need for reconstruction and a long-term need for a culture of safe buildings.

The programme's objectives are:

- To respond to the shelter needs of communities affected by disasters;
- To address the needs of trained construction workers in the fast-growing construction industry; and
- To promote disaster-resistant building technologies among communities in high-risk areas.

### **Outcomes and Activities**

The masons are now serving their local communities, educating fellow masons in other regions at similar risk, as well as responding in disaster-hit areas for shelter reconstruction and capacity building. The Association also acts as an information centre for dissemination of modern technologies in construction through newsletters and public meetings.

The Association has received recognition and support from the Government. Donor support has come in the form of specific reconstruction projects. Members of the Association also pay regular membership fees.

In regions where activities have been carried out, there is clear evidence of communities learning from the training imparted by the SEEDS Mason Association.

The SEEDS Mason Association is currently active in five locations across the country:

- In tsunami-affected Andaman & Nicobar Islands, it has promoted bamboo-based demonstration housing. The Association constructed temporary shelters for 354 families.
- Following the Kashmir earthquake in 2005, the SMA constructed shelters for 404 families. A local chapter of the SMA was launched. The local chapter is now imparting training in local communities as part of the rehabilitation exercise.
- The SMA is training local building contractors and masons in Shimla on retrofitting of school buildings.
- The SMA is involved, in the Western State of Barmer, in the reconstruction of 300 shelters.
- In Gujarat State, which was affected by the 2001 earthquake, SMA members sat exams and have been certified by the Government through a unique internationally designed certification programme.

### **The Good Practice**

This initiative is considered a good practice because: (1) It has been mainstreamed into development from the very beginning; (2) It addresses an important need for safe buildings; (3) It has a grassroots reach; (4) It is very accessible to the poor and to vulnerable households.

It is also innovative as it promotes peer learning as well as a single point access for disseminating information related to safe buildings. A key success factor of this initiative is that the Association is supported by SEEDS, an NGO with a focus on DRR. SEEDS ensures that the Association is partnered with in every related initiative.

Overall, such a grassroots movement has tremendous potential as over 57 per cent of India's national territory is prone to earthquakes, and vulnerabilities to other disasters put India's one billion people at risk.

### **Lessons Learned**

The key lessons learned from this initiative are:

- Disasters are opportunities for bringing in change such as disaster-resistant construction as part of reconstruction;
- Peer-level exchange and learning at grassroots level has proved to be effective in building capacity; and
- Institutionalization of efforts is important for promoting building safety.

- The major challenges of this initiative are:
- Difficulty to overcome the inertia among existing construction workers to absorb new technologies;
- High demand from the building industry and limited supply has led to poor quality that characterizes the building sector - which has increased disaster risk; and
- Recognition and acceptance by communities that have not been affected by disasters yet, has been sluggish.

### **Potential for Replication**

Such models exist in other parts of the world, though not necessarily focused on disaster reduction. Besides, they seldom look into training and up-gradation needs. Such models can be introduced where they do not exist. Alternatively, existing institutions of construction workers should be sufficiently equipped to disseminate disaster-resistant technologies at grassroots level.

In the light of many unsustainable practices of post-disaster training in safe construction, a grassroots institutionalized approach should preferably be adopted. Moreover, the larger issue of availability of skilled construction labour is key to the success of similar initiatives.

## **India: Disaster Micro-insurance Scheme for Low-income Groups**

### **All India Disaster Mitigation Institute (AIDMI)**

#### *Abstract*

*In 2002, the majority of the 2001 Gujarat earthquake relief beneficiaries were still exposed to disaster-induced financial losses. Various studies - including the Gujarat Community Survey of 2002 by the Gujarat-based All India Disaster Mitigation Institute (AIDMI) and ProVention Consortium - revealed that access to risk transfer was correlated with sustainable economic recovery among victims<sup>12</sup>, yet only two per cent of those surveyed had insurance. A micro-insurance scheme was designed to augment AIDMI's ongoing Livelihood Relief Fund<sup>13</sup> activities. The resultant scheme, called "Afat Vimo", was the product of extensive discussions and negotiations with insurance providers who could be interested in supplying low-premium insurance policies to poor clients.*

*Afat Vimo policyholders are covered for damage or loss up to the value of 1,744 US dollars for non-life assets and 465 US dollars for loss of life, which gives a total damage and loss coverage of 2,209 US dollars. Current Afat Vimo clients include 5,054 individuals from low-income households with an annual income of 280 US dollars. These households are mainly involved in small enterprises in the informal sector and have assets worth approximately 209 US dollars. It is striking that 94 per cent of the clients did not have any other insurance prior to Afat Vimo, and 98 per cent today have no other insurance besides Afat Vimo.*

*The scheme covers 19 disasters including fires, explosions, riots, malicious damage, aircraft damage, cyclones, tempests, floods, inundation, earthquakes, lightning, implosions, strikes, impact damage, storms, typhoons, hurricanes, tornados and landslides. Afat Vimo policyholders are also supported with micro-mitigation measures such as fire-safety training, seismic-safe construction practices and business development services. The policy is available for an annual premium of less than 5 US dollars (about a four-day wage). Damage to policyholders' houses, household assets, trade-stock and losses of wages due to accidents are covered. The earning household member's life is also covered.*

### **The Initiative**

This is a disaster micro-insurance scheme for low-income households. Called *Afat Vimo*, the scheme is part of the Regional Risk Transfer Initiative (RRTI), an action learning project (ALP) of the Gujarat-

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<sup>12</sup> All India Disaster Mitigation Institute. (2002). *Community Survey: Gujarat Earthquake 2001*. AIDMI and ProVention.

<sup>13</sup> Established after the 1998 Kandla cyclone, the Livelihood Relief Fund (LRF) of AIDMI has supported livelihood recovery of 13,336 victims to date. This demand-driven and tailor-made relief worked in the 2001 Gujarat earthquake, 2002 riots, December 2004 tsunami, 2004 Gujarat floods and 2005 Jammu and Kashmir earthquake.

based All India Disaster Mitigation Institute (AIDMI). The RRTI teaches insurance companies, authorities, donor communities and NGOs how to facilitate a convergence between micro-finance tools and disaster risk reduction strategies.

The RRTI was launched on 25 September 2003. It is an ongoing initiative. The *Afat Vimo* scheme has been implemented in the Indian states of Gujarat, Tamil Nadu, Pondicherry, and Jammu and Kashmir. Lessons have been shared in Sri Lanka, Pakistan, Iran and other Asian countries through policy dialogues, regional courses, and publications. The *Afat Vimo* insurance scheme is implemented with ProVention Consortium, the Indian Chamber of Commerce and Industry for Small-Scale Business (CCISB) and local insurance companies.

### **Goal and Objectives**

Various studies - including the Gujarat Community Survey of 2002 by AIDMI and ProVention Consortium – indicated that access to risk transfer was correlated with sustainable economic recovery among victims, yet only two per cent of those surveyed had insurance, the *Afat Vimo* micro-insurance scheme was designed to augment AIDMI's Livelihood Relief Fund activities.

The poor amongst disaster victims are repeatedly exposed to and affected and impoverished by disasters. They are also perpetually restricted in their access to vital financial services such as micro-insurance which has recently made progress in reducing disaster risk among the poor. As spreading further such micro-insurance products require continued innovations, the *Afat Vimo* was developed bearing in mind local conditions and contexts.

### **Outcomes and Activities**

Feedback from beneficiaries who made claims under the *Afat Vimo* policy has been very positive and encouraging. To date, 204 claims were made to insurance companies. Of these, 155 were successfully settled, giving a combined payout of 21,940 US dollars. It emerged from a 2006 internal evaluation survey of *Afat Vimo* clients that 100 per cent of the surveyed clients were willing to renew their policy. Seventy-five per cent of those surveyed felt that *Afat Vimo* offered them better protection and 24 per cent said it offered them significant protection.

All the surveyed clients said the *Afat Vimo* scheme needed to be extended to more people in other disaster-affected states. The main reasons given for this view were the value of having insurance in times of crisis (36 per cent), reduced dependence on outside relief (33 per cent) and the affordability of the scheme compared to other insurance schemes (20 per cent).

A participatory review of the Regional Risk Transfer Initiative (RRTI) was conducted in January 2007 by an international consultant. The review found that the scheme was clearly welcomed by clients and that there was pressure to extend it. The review also concluded that most of the practical problems encountered were addressed. The insurance companies have proved to be quick in resolving claims (average about 20 days) and flexible in adjusting and clarifying the terms of insurance. Evidence collected for the review suggest that the main value of micro-insurance lies in limiting indebtedness that can quickly be triggered by an event such as disaster, accident or death.

### **The Good Practice**

The good practice in *Afat Vimo* lies in the fact that risk is transferred from individual level to community or inter-community level that includes groups based in different geographic locations which are not equally disaster prone.

The *Afat Vimo* scheme represents an innovative approach to risk identification, pooling and transfer, which recognizes the fact that the majority of poor disaster victims have little or no access to risk transfer schemes. According to a recent study of micro insurance policies in India by the International Labour Office<sup>14</sup>, 45 per cent of micro-insurance schemes researched cover only a single risk and only 16 per cent cover three risks. As *Afat Vimo* covers 19 disaster risks, it is one of the most comprehensive products in India. This not only makes the policy more attractive to clients, but also makes investment in the policy more efficient in economic terms. Another aspect of *Afat Vimo* that sets

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<sup>14</sup> International Labour Office. (2005). *India: An Inventory of Microinsurance Schemes*. Geneva: ILO.



it apart from other micro-insurance policies is the extensive range of eventualities covered under the policy.

Last but not least, *Afat Vimo* policyholders are also supported with micro-mitigation measures such as fire-safety training, seismic-safe construction practices and business development services. The policy is available for an annual premium of less than 5 US dollars (about a four-day wage). Damage to policyholders' houses, household assets, trade-stock and losses of wages due to accidents are covered. The earning household member's life is also covered.

### **Lessons Learned**

AIDMI has learned that operational know-how on promoting risk identification, risk transfer, risk pooling and advocacy in favour of disaster risk transfer from small businesses is hugely lacking in India and South Asia. The project has also taught AIDMI that extending micro-insurance services to the poor faces many challenges at micro-level such as affordability, access, service delivery, lower renewal rates and long-term sustainability.

The *Afat Vimo* case study also shows that micro-insurance cannot be used as stand-alone measure for disaster risk reduction. To ensure the viability of such products from a commercial point of view, they should be backed up by other micro-finance services and risk mitigation measures. To succeed, both poverty and risk must be reduced - not merely transferred. In this connection, as mentioned earlier, damage to *Afat Vimo* policyholders' houses, household assets, trade-stock and losses of wages due to accidents are covered, as well as the life of the earning household member. *Afat Vimo* policyholders are also supported with micro-mitigation measures such as seismic-safe construction practices and business development services.

Similarly, **macro-level challenges** such as creating incentives for risk reduction, balancing public-private roles and responsibilities, and making up-to-date data available to decision-makers have been identified as key barriers in enhancing benefits of micro-insurance to the poor. To address these key challenges and achieve higher penetration levels, a greater need for learning across disaster events and stakeholders - including governments, insurance companies and civil society organizations - is envisaged as a way forward.

### **Potential for Replication**

The key for extending micro-insurance benefits to the poor affected by disasters lies in a combination of devolution to local organizations, scaling-up, tougher bargaining for commissions from the insurance companies and strengthening the policy framework to put more pressure on the companies. Risk comes at poor people from many angles and it is only a combination of savings, credit and organization can help them overcome the obstacles.

## **Indonesia: Combining Science and Indigenous Knowledge to Build a Community Early Warning System**

### **PMPB - Disaster Management Society (In Partnership with Yayasan Pikul)**

#### *Abstract*

*The eastern part of Nusa Tenggara (southeastern Indonesian islands) has a three-month rainy season and a nine-month drought season. Over the last 100 years or so, food shortage has characterized its drought season as lack of climate-related knowledge and information within the local population often leads to crop failure.*

*A community-based disaster risk management (CBDRM) initiative was launched in 2005 to address the issue in a highly vulnerable community of rural farmers. The initiative seeks to build a monitoring system for food security and livelihood with the aim of preventing the food shortage.*

*With help from a local NGO and a Disaster Management Society, the community has developed its own food early warning system.*

### **The Initiative**

This initiative is about building a monitoring system for food security and livelihood through Community-Based Disaster Risk Management (CBDRM).

The initiative was launched in 2005 after a local NGO called Yayasan Pikul had gathered some information on communities that were at risk of food shortage. The initiative is still under way as a 3-5 year programme in Sikka District (to the west of East Timor).

It is implemented by the local NGO Yayasan Pikul and the Kupang Disaster Management Society - known locally as PMPB<sup>15</sup>-Kupang, with support from the targeted local farmers themselves. They all operate directly at *kecamatan* (village) level through a participatory risk assessment (PRA) approach.

### **Goal and Objectives**

East Nusa Tenggara in southeastern Indonesia has a three-month rainy season and a nine-month drought season. Over the last 100 years or so, food shortage invariably has characterized its drought season as lack of climate-related knowledge and information within the local population often leads to crop failure.

Hence, the major goal of this project is to prevent food shortage observed during prolonged drought. As such, its intended outcome is the establishment of a food shortage prevention mechanism that increases community resilience to drought.

Its major objectives are:

1. *Awareness*: Raising awareness to such an extent that the community develops its own indicators to monitor food security and livelihood.
2. *Community early warning system*: Ensuring that the community develops its own early warning system to prepare for food shortage.
3. *Advocacy*: Advocating the government not to promote agricultural systems that are not appropriate to eastern Nusa Tenggara conditions.

### **Outcomes and Activities**

The key components of this initiative are: (1) participatory risk assessment (PRA); (2) community gathering; (3) capacity building for local farmers by sending them to learn in other places; (4) assistance to the development of the early warning system; and (5) advocacy to government

The concrete and verifiable outcomes of this initiative are as follows:

- (1) The 13 local farmers targeted have acquired the capacity to manage dry lands, now have their own early warning system and know what issues to refer to the government.
- (2) The community early warning system has been built through locally developed monitoring indicators for food security and livelihood through a participatory approach.

### **The Good Practice**

This initiative is a good practice because:

- It was initiated by the community itself to address crop failures that were also brought about by agricultural approaches from Java Island which were not suitable to drought-prone East Nusa Tenggara.
- It incorporates indigenous knowledge and develops mechanisms that help prevent food shortage and build community resilience to prolonged drought.

One of the innovative elements of this initiative is the fact the locally developed early warning system has been developed using a combination of both modern science and indigenous knowledge.

A key success factor of this initiative is the involvement of local people on the basis of their local agricultural conditions.

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<sup>15</sup> PMPB: *Perkumpulan Masyarakat Penanganan Bencana* (Disaster Management Society)

## Lessons Learned

A key lesson learnt from this initiative is that local communities do have basic capacity, what they need is only little additional capacity. The **following challenges** have been observed while implementing this initiative:

- All the activities are still being funded by local farmers. Even though such a financial self-reliance may be in itself a good practice, supporting a 3-5 year programme is a real challenge for farmers that are at risk of food shortage. To ensure that the entire initiative does not collapse because of lack of funds, efforts are under way to identify donors.
- Something has to be done to enhance coordination with other NGOs. Indeed, each NGO comes with its own approach and the great variety of approaches end up creating confusion more than anything else.

## Potential for Replication

This practice can be easily replicated in a community with a low level of education that lives in an area highly prone to prolonged drought.

To improve similar initiatives in the same area:

- There is a need to approach local development agencies and establish a joint secretariat for the government and local NGOs. As a matter of fact, the local government is not highly supportive of the initiative.
- One should be aware that crop failures are also linked to population growth and shift of production and consumption patterns.
- Community members' knowledge should be enhanced further to enable a more participatory assessment of the area's environmental context.

## Philippines: Mainstreaming Community-based Mitigation in City Governance

### Centre for Disaster Preparedness (CDP) (In Partnership with ADPC)

#### *Abstract*

*The present project is part of a larger initiative called "Program for Hydro-Meteorological Mitigation for Secondary Cities in Asia" (PROMISE), a programme that covers several countries in Asia.*

*It is considered to be innovative because it seeks to mainstream community-based disaster risk management project (CBDRM) into city good governance. Implemented in the City of Dagupan, north of Manila on Luzon Island in northern Philippines, by a Filipino NGO called "Centre for Disaster Preparedness" (CDP), the project has provided an opportunity for city officials to go back to the city's (urban) village communities and train them on CBDRM. Barangay<sup>16</sup> Disaster Coordinating Councils were revitalized, which helped develop village disaster risk reduction plans that have benefited the city.*

*The project has been instrumental in bridging the gap between high-level officials and the community through disaster risk communication and understanding of development projects. The project experience is being shared with regional partners and donors.*

#### **The Initiative**

This project, entitled "Community-Based Disaster Risk Management (CBDRM) and Local Governance", is part of a larger initiative called "Program for Hydro-Meteorological Mitigation for Secondary Cities in Asia" (PROMISE), a programme that covers several countries in Asia.

The project was launched in February 2006. It is still under way and a next phase is being planned. It is being implemented in Dagupan City, north of Manila, Pangasinan Province, Luzon Island, northern

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<sup>16</sup> "Village", the smallest administrative unit in both rural and urban settings in the Philippines.

Philippines. Involved in the project are Dagupan City officials, the Philippines-based Centre for Disaster Preparedness (CDP) - an NGO working on disaster risk reduction - and the Asian Disaster Preparedness Center (ADPC) which is both a regional partner and a facilitator. The project created a Technical Working Group (TWG) composed of City heads and staff who are also members of the City Disaster Coordinating Council (CDCC).

The five components of this project are: (1) CBDRM Participatory Risk Assessment (PRA) Training of Trainers (ToT) for the City Officials, who in turn provide training to communities; (2) Reactivation of the CDCC (City Disaster Coordinating Council) and BDCC (*Barangay* Disaster Coordinating Council); (3) Institutionalization of a school “Disaster Safety Day”; (4) Celebration of Disaster Safety Day in all schools in Pangasinan Province where Dagupan City is located; (5) Developing and implementing a City Disaster Risk Reduction Plan.

### **Goal and Objectives**

Increased involvement of stakeholders in CBDRM has encouraged Dagupan City heads and staff to address the vulnerability of some of the city’s villages to hydro-meteorological hazards, especially after they saw for themselves the plight of the villagers.

The project seeks to mainstream CBDRM into city governance. Its objectives are:

- Adoption of specific hydro-meteorological disaster preparedness and mitigation measures to enable stakeholders to address hydro-meteorological disaster risks.
- Increased stakeholder involvement and further enhancement of strategies, tools and methodologies related to community preparedness and mitigation of hydro-meteorological disasters in urban communities.
- Enhanced coordination with donor to promote sustainability and to ensure programme activities in agreement with donor countries and regional strategies.
- Strengthened networks and stronger regional links among relevant risk management institutions/organizations for improving potential and capacity for application and dissemination of lessons learned.

### **Outcomes and Activities**

The TWG and CDP promoted CBDRM and governance in the eight most vulnerable communities first, then within the remaining 23 *barangays* of Dagupan City. Revitalization of *Barangay* Disaster Coordinating Councils (BDCCs) was implemented by the community members themselves with guidance from the TWG and CDP.

Open dialogues allowed members of the eight target vulnerable communities to air their grievances and sentiments to the city government officials who, in turn, explained the various issues faced by the city. A wholesome atmosphere developed, which helped the communities implement a number of disaster mitigation activities in consultation with the city officials. As a result of this project the following major outcomes and results have been achieved:

- Gap between high-level officials and the community bridged through disaster risk communication and understanding of development projects.
- DRR plans developed by eight target vulnerable communities and integrated into the City Disaster Risk Reduction Plan.
- Four community early warning and evacuation plans completed.
- CBDRM and governance promoted in eight most vulnerable communities and in remaining 23 *barangays* of Dagupan City.
- Revitalization of *Barangay* Disaster Coordinating Councils (BDCCs) implemented by community members themselves with guidance from TWG and CDP.
- “Disaster Safety Day” marked in the City on 16 July every year.

- “Disaster Safety Day” extended into a month-long event called “City Wide Disaster Consciousness Month” in 2006, with the theme “Maintain Development Gains, Prepare for Disasters”.
- Day for “River Clean Up and Mangrove Revegetation” organized in the City.
- Earthquake and evacuation drill carried out in various schools. City government said some 55,000 students and teachers from both public and private schools took part in the drill.

### **The Good Practice**

Mainstreaming CBDRM in good governance is a good practice. Indeed, when the NGO and other partner agencies leave the city, residents are already equipped with tools to advance disaster risk reduction. The convergence of the community-level approach and City government’s participation helps endure sustainability and ownership. Lessons learned, through the regional network facilitated by the Asian Disaster Preparedness Center (ADPC), ensure replication and wider practice. And the active involvement of City Government and village officials ensures success of the project.

This project is innovative because, unlike other CBDRM projects that are usually implemented by NGOs with communities, it is implemented in partnership with a City government.

A **key success factor** was the City mayor’s continuous support to the larger programme. The mayor’s support has helped implement the project smoothly.

### **Lessons Learned**

Key lessons learned from the project are:

- The consultation with the ADPC (Asian Disaster Preparedness Centre) is essential for effective reporting of updates, logistical requirements and overall flow of the project.
- Flexibility towards community and city schedules ensures acceptance and participation from community members.
- Children’s participation ensures that their needs are considered and included.
- Networking is deemed essential in early warning system.
- Building linkages with both local and international NGOs help in resource mobilization and in enhancing partnerships.
- *Barangay* residents are very supportive of the programme on disaster preparedness, especially if they are involved in events that showcase their experience to other agencies, partners and organizations.

### **Potential for Replication**

The project can be replicated in other cities and other contexts with political will, commitment from other stakeholders and government support.

## **Vietnam: Flood and Typhoon-resilient Homes through Cost-effective Retrofitting**

### **Development Workshop France (DWF)**

#### *Abstract*

*Vietnam's disaster risk reduction strategy pays insufficient attention to the capacity of families and local communities to play a key role. Top-down approaches need to mesh with community-based disaster risk reduction potential.*

*A Development Workshop France (DWF) programme efficiently demonstrates that communities can be a dynamic force in reducing risks directly related to local contexts, and that their potential can be mobilized through participatory commune-level disaster risk reduction planning, training and outreach and preventive strengthening of housing and public buildings.*

*The DWF Programme seeks to help reduce the impact of typhoons and floods on housing and public buildings; loss of housing being specifically a major family setback with repercussions on all other aspects of family life and development.*

*The Programme is practical, efficient and cost effective. Even though financial institutions have not taken up yet the idea of granting credit to people concerned, many families and communities immediately put their money into it after seeing its concrete and tangible results.*

#### **The Initiative**

This initiative is a disaster reduction programme aiming to reduce the impact of typhoons and floods on housing; loss of housing being a major family setback with repercussions on all other aspects of family life and development.

The Programme kicked off in 1999 and is still continuing with further phases planned. Phases 1 and 2 were implemented from 1999 to 2003 funded by the Canadian International Development Agency (CIDA), and Phases 3, 4 and 5 supported by the European Community Humanitarian Office (ECHO) through its Disaster Preparedness programme known as DIPECHO (Disaster Preparedness, European Community Humanitarian Office). The current phase runs through to 2008

Implemented by Development Workshop France (DWF) in collaboration with the Thua Thien Hué Construction Consultants Stock Company, the Programme has been run in Thua Thien Hué (TTH) Province in Central Vietnam, involving over 100,000 people annually in awareness campaigns, including: commune, district and provincial people's committees; some 600 teachers; 1,500 school children; and 550 builders. The programme targets every year some 4,000 direct beneficiaries, including some 250 families.

#### **Goal and Objectives**

The initiative has been launched because Vietnam's disaster risk reduction strategy pays insufficient attention to the capacity of families and local communities to play a key role, suggesting that top-down approaches should mesh with community-based disaster risk reduction potential. The other reason for launching the initiative is to reduce the general impact of loss of housing caused by typhoons and floods.

#### **Outcomes and Activities**

Based on risk identification and the need to show how preventive action can reduce the identified risks, the Programme involves local and grassroots consultation and preventive action planning. Its central theme is to make families and the community active players in the process of reducing the vulnerability through the integration of storm resistant techniques in existing and future building. Demonstration and training have equally been key components of the Programme's strategy.

DWF promotes the preventive strengthening of existing houses and public buildings based on ten essentially generic key principles of typhoon resistant construction. It encourages the application of these same principles to the construction of new buildings by both government and the private sector and in particular as part of the Vietnam Government's "Temporary House Replacement" programmes that aim to provide a more secure environment in which the extremely poor can improve their situation.

Each of the ten key points of typhoon resistant construction describes a principle that either reduces the risk of damage to the building structure or reduces the risk of loss of materials, such as roof covering. For example, the veranda roof (a high risk item) should be structurally separate from the main roof of the house. The connections between all individual parts of the structure, from the ground to the ridge, have to be strong. Doors and shutters should allow the building to be closed up. All parts of the roof and wall structure must be firmly connected. Roof sheets or tiles must be held or tied down. Trees should be planted to form wind breaks. The ten key points can be applied to almost any type of building in the communes, regardless of the type of structure or the type of materials that have been used. All but the frailest of houses can be strengthened.

The average cost of preventive strengthening is 250 \$ per house. Since the start of the programme families have always contributed to such preventive action, covering some 60% of the costs. From 2002 DWF has piloted the provision of credit for house strengthening, and families have amply demonstrated that they will borrow and repay these short term loans (18 months) to cover part of the costs.

Overall, the Programme shows that preventive strengthening of housing and public buildings is viable, cheap and effective. As hundreds of families have participated, the impact is now both popular – people now trust the approach – and official – provincial authorities have issued orders telling people to apply the DWF prevention approach. Last but not least, Typhoon Xangsang in 2006 clearly demonstrated that the DWF approach works.

### **The Good Practice**

The DWF programme is a good practice because it is both practical and efficient. This is evidenced by the fact that families and communities immediately put their money into the DWF approach after seeing its concrete and tangible results.

One innovative aspect of the Programme is the key role of participatory communication actions that involve people from all levels in getting the prevention message across. Another innovation is the demonstrative value of showing how housing and public buildings can be made to resist disasters. The third innovation consists in showing that the whole process is economically viable.

A long-term success/failure factor of this initiative may be the fact that financial institutions have not taken up the idea of granting credit for preventive strengthening of houses, yet the idea has been well received by beneficiary families. This issue still has to be addressed. A possible link with disaster insurance should be explored.

### **Lessons Learned**

The key lessons learnt from this initiative are:

- Once convinced, people and families are very prepared to commit their own funds to take preventive action to reduce the risk of loss or damage to their own homes;
- Community residents can give equal treatment to community facilities and public facilities as long as the “common good” dimension is perceived ; and
- Scepticism about the value of retrofitting houses has been replaced by confidence.

The **major challenge** is that government policies consider disaster risk reduction (DRR) in macro top-down terms and dismiss the capacity and needs of local communities and families. They do not perceive them as possible key partners in DRR. As a result, national financial commitment does not cover local needs and families have to find their own resources.

### **Potential for Replication**

Replicating this practice is easy. DWF has done so in Indonesia (Banda Aceh), and has a long history of training local builders to integrate disaster resistant construction techniques into building as far afield as Iran, Afghanistan and in the Republic of Guinea in Africa.

Some characteristics of the Programme are context specific, but the approach applied in this DWF Programme has been tested in other countries and it works in different contexts.

## SECTION II

The ISDR system would like to draw attention to the wealth of relevant information available from the ISDR secretariat website, [www.unisdr.org](http://www.unisdr.org), and the ISDR system website, <http://www.preventionweb.net>, currently under development.

Countries and regions' risk reduction strategies, which would be good bases for adaptation, can be found in documents regarding implementation of the **Hyogo Framework for Action 2005 – 2015**<sup>17</sup>. A regional compilation is now available at <http://www.preventionweb.net/globalplatform/first-session/gp-1st-session-docs.html>. Country information is being compiled in preparation for the Global Platform for Disaster Risk Reduction (5-7 June 2007) and will be posted shortly.

The Hyogo Framework for Action page (<http://www.unisdr.org/eng/hfa/hf-implemt-states.htm>) leads to several documents of interest to adaptation planning and practices.

Implementation and follow-up:

- **Under country/states**, see national reports on the Hyogo Framework for Action submitted by countries using a matrix format structured along the Hyogo Framework for Action Priority Areas. Practices-related information will be found under Priority Action 2, 4 and 5.

Key documents:

Two documents contain relevant information on ongoing work related to adaptation planning practices being carried out by international organizations:

1. Matrix of commitment and initiatives to support the implementation of the Hyogo Framework for Action
2. Progress report on the Matrix of commitment and initiatives to support the implementation of the Hyogo Framework for Action

The **Country Information page** (<http://www.unisdr.org/eng/country-inform/introduction.htm>) offers general information for many countries including disaster and hazard profiles. It also contains national reports prepared for the World Conference on Disaster Reduction held in Japan, January 2005.

The **ISDR Platform for the Promotion of Early Warning** (see <http://www.unisdr.org/ppew/>) presents practical information and useful links on early warning systems.

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<sup>17</sup> Reminder: The Priority Areas for Action of the Hyogo Framework for Action are:

1. Ensure that disaster risk is a national priority with strong institutional basis for implementation
2. Identify, assess and monitor disaster risks and enhance early warning
3. Use knowledge, innovation and education to build a culture of safety and resilience at all levels
4. Reduce the underlying risk factors
5. Strengthen disaster preparedness for effective response



PAPER NO. 4: UNITED NATIONS DEVELOPMENT PROGRAM BUREAU FOR CRISIS PREVENTION AND RECOVERY

<b>Type of adaptation action<sup>1</sup></b>	<b>Title of adaptation action, including projects</b>	<b>Status of adaptation action</b> - ongoing - under implementation - under development - under consideration	<b>Needs in order to successfully implement the adaptation action</b>	<b>Concerns/ Barriers</b>	<b>Experiences/ Lesson learned</b>	<b>References</b> i.e. publications, websites etc.
<i>National level</i>						
<b>Approaches / strategies</b>	Mainstreaming climate risk management into development processes for disaster reduction -- UNDP/BCPR's Global Mainstreaming Initiative supports the integration of disaster and climate risks management into development plans through UN country offices	On-going	<ul style="list-style-type: none"> <li>• Analytical tools</li> <li>• Capacity</li> <li>• Harmonized institutional policies</li> <li>• Advocacy</li> </ul>	Complexities include systematically understanding and identifying: <ul style="list-style-type: none"> <li>• gender-specific vulnerabilities and capacities</li> <li>• how risk reduction approaches can be harnessed to help achieve long term development goals; and</li> <li>• how to deal</li> </ul>	<ul style="list-style-type: none"> <li>• Requires a combination of sector-specific and over-arching risk management measures</li> <li>• Requires integration at the policy and project levels</li> </ul>	<a href="http://www.undp.org/bcpr">www.undp.org/bcpr</a> (related UNDP and partner websites) <a href="http://www.undp.org/energyandenvironment/">www.undp.org/energyandenvironment/</a> <a href="http://www.undp.org/drylands/">www.undp.org/drylands/</a> iri.columbia.edu

<sup>1</sup> Please be aware of the degree of adaptation within activities:

- Some activities are undertaken specifically to adapt to climate change, e.g. increased water storage capacity, development of new crop varieties.
- Some activities include a component of climate change adaptation, e.g. infrastructure replacement incorporating higher flood standards
- Some activities are not carried out for adaptation but have other objectives such as preserving biodiversity, however they can offer adaptation co-benefits, e.g. restored wetlands protect against storm surges.

	worldwide.			more effectively with the complex relationship between climate/disasters and conflict/political instabilities.		
<b>Practices</b>	Climate risk management to protect development in high-risk areas, including as part of disaster recovery -- UNDP/BCPR provides support for disaster and climate risk reduction and recovery projects in high risk countries through UN country offices worldwide.	On-going	<ul style="list-style-type: none"> <li>• Identification of priority climate-sensitive development goals</li> <li>• Vulnerability and risk assessment</li> <li>• Prioritization of risk management measures</li> <li>• Human, technical and financial resources</li> </ul>	<p>Complexities include:</p> <ul style="list-style-type: none"> <li>• integrating the management of short- and long-term risks associated with, respectively, climate variability and change</li> <li>• managing uncertainties associated with the long-term interactions of social and environmental changes</li> </ul>	<ul style="list-style-type: none"> <li>• Partnerships: multi-sectoral, scientific and political-economic, international and national-local, short- and long-term perspectives</li> <li>• Establishment of priority outcomes and analysis of causality key for designing risk management strategies</li> <li>• Stakeholder ownership</li> </ul>	<a href="http://www.undp.org/bcpr">www.undp.org/bcpr</a> (related UNDP and partner websites) <a href="http://www.undp.org/energyandenvironment/">www.undp.org/energyandenvironment/</a> <a href="http://www.undp.org/drylands/">www.undp.org/drylands/</a> <a href="http://iri.columbia.edu">iri.columbia.edu</a> <a href="http://managingclimaterisk.org">managingclimaterisk.org</a>
<b>Technologies</b>						

## WFP information on climate change activities and views on risk assessment and adaptation strategies

### **Background**

The UN World Food Programme (WFP) is the largest food aid agency of the UN providing humanitarian food assistance to millions of poor and vulnerable households and communities whose food security and livelihoods are threatened by a variety of disasters including climatic shocks. The poorest and most vulnerable communities are heavily dependent on climate sensitive sectors such as agriculture, livestock, water resources and health and are vulnerable to climate change.

Climate change is linked with increased frequency and magnitude of extreme weather events such as droughts and floods. At the same time there will be changes in the climate pattern (trends) for example a shift in the start of the growing season, the length of the growing season, the amount of rainfall in the season, increased temperature causing the spread of malaria to areas previously malaria free. The combination of these factors will increase vulnerability to the risk of food insecurity resulting in emergencies that threaten the lives and livelihoods of their families.

Food crisis and emergencies if not addressed properly could lead to increased environmental degradation, deforestation and possible conflicts over resources triggering political instability. This re-enforces vulnerability to disasters. Many developing countries lack the necessary emergency response and preparedness capacities and financial means to protect their populations from natural disasters and economic shocks.

### **Emergency Response – the first step for building resilience and adaptation**

In the absence of functioning safety nets and rural financial mechanisms poor households will be unable to cope with climate change induced shocks while continuing to engage in sustainable economic activities. To cope with acute food shortages, households may be compelled to engage in economic activities and strategies that focus on meeting the immediate food requirements of their families. The strategies may include: divesting productive assets such as livestock and exchange their land for food; fire wood sale increasing deforestation; consume their seeds; pull children out of school; migrate looking for jobs often in less productive sectors. In extreme cases households may abandon their villages and mass migrate to urban centers and refugee camps.

In summary, food emergencies not only threaten lives but also have a devastating impact on the livelihoods of the affected households. Long-term exposure to multiple-risks of food insecurity erodes households' ability to manage their adverse effects, leading to situations of chronic crisis, whereby households regularly face shortages in food and income. Household vulnerability to future risks increases and

they become trapped in poverty and hunger. As a result of droughts, competition for natural resources may increase triggering conflicts. Under such circumstances, even a minor climatic shock could have a major impact on the food security status of rural people. For populations in such circumstances adaptation to climate change becomes an unrealistic dream.

Humanitarian assistance has become a necessity to address major food crises. However the unpredictability and unreliability of financing humanitarian responses is a major problem in implementing appropriate emergency programmes. The appeal based emergency financing which is widely used in the current humanitarian response model is not efficient when addressing predictable emergencies such as those caused by climate related hazards such as droughts. There is need to introduce objective methods of assessing humanitarian needs coupled with new financial mechanisms to raise the necessary emergency contingency funds. With predictable resources to address emergencies could we then promote programmes that support longer term adaptation process to climate change.

### **Climate risk assessment (Strengthening humanitarian risk identification)**

To provide appropriate and effective assistance to vulnerable populations, governments and the donor community require timely and reliable information that enable the identification of populations and communities at risk and understanding of the risks that threaten their livelihood security. Appropriate intervention modalities can only be planned with a comprehensive understanding of the factors that determine household food insecurity and the risks involved.

Assessments of risks require systematic collection and analysis of various data sets and should take into account the dynamics and variability of natural hazards and vulnerabilities from processes such as climate change/variability, rural land-use change, environmental degradation and urbanization as well as socio economic factors.

The Comprehensive Food Security and Vulnerability Analyses (CFSVAs) of WFP's Vulnerability Analysis and Mapping (VAM) service are specifically designed to obtain and analyse data pertaining to an assessment of vulnerability. These are the foundation for WFP programming at the country level. CFSVAs involve a sequence of activities ranging from reviewing existing literature and data to undertaking surveys to collect primary data. All CFSVAs include information on the food security situation within a particular country, the various risks facing particular groups or households, household livelihood strategies, the geographic areas where food insecurity is most severe, and the role of food assistance. Essentially CFSVAs would allow identification of the major risks to food insecurity and develop a strategy to monitor them. CFSVAs are conducted in close collaboration with the National Adaptation Plan of Action (NAPA) teams when they exist.

### **Development of livelihood profiles (identify climate risks)**

Information gathered can be presented in a *Livelihood Profiles* (Livelihood Atlas). Such an atlas can describe the vulnerability and hazard components of risk factors in a formal way through data, maps and analyses. Data would include environmental and political hazards and socio-economic vulnerabilities. Analysis of information would include attempts to understand how people make their living and what their capacities for dealing with risks are, thereby providing a better context for interpreting early warning information and the impact of shocks or hazards on transitory food insecurity. Livelihood zones and risk zones can then be established, along with composite vulnerability indices for geographic targeting of zones at risk. Together with hazard and vulnerability maps this would provide the basis for disaster preparedness strategies and developing adaptation programmes

A Livelihood Atlas can provide the platform upon which monitoring systems can be developed. Monitoring systems would be based on indicators – satellite data, social factors (such as market analysis) and environmental (such as drought). Indicators describe how systems should be monitored.

### **Monitoring Platforms**

Monitoring the key factors affecting food security - notably risks and livelihood trends - allows WFP better to anticipate, prepare for and respond to future crises. VAM intends to pilot a series of Food Security Monitoring (FSM) initiatives in priority countries. VAM's approach to FSM will be partnership-driven at the regional and county levels.

Continuous monitoring of hazard parameters and precursors is necessary to generate accurate warnings in a timely fashion. Humanitarian risk identification for different hazards should be coordinated where possible to gain the benefit of shared institutional, procedural and communication networks. Creating hazard calendar maps is an important component of risk monitoring.

During the last several years climate monitoring and weather observation capacity has greatly improved due to latest developments in the field of meteorological modeling, increased satellite data availability and advancements in ICT. Similarly advances in crop modeling, improved cropped area estimation and enhanced vegetation monitoring capacity have contributed to improvements in agricultural monitoring. The ability to better monitor weather and agriculture means that major agricultural and pasture failures can be detected early and agricultural losses predicted several months before the end of the growing season. In this way humanitarian needs and resource requirements could be determined much earlier than is possible in the current system.

## **Capacity Building**

Building an effective food security and vulnerability information management system requires a considerable level of investment in capacity building. The approach advocates both the development and utilization of analytical skills in government, universities, NGOs, the private sector and civil society.

Developing and implementing effective humanitarian risk identification and monitoring platforms require the contribution and coordination of a wide range of individuals, institutions and partners. In this regard there is a need to develop a strategy that facilitates effective partnerships between national governments, regional institutions and international bodies on risk reduction and management activities. National governments must be made responsible for developing policies and frameworks that facilitate humanitarian risk identification systems and establishing monitoring systems.

WFP is collaborating with the African Union Commission (AUC) as well as NEPAD to integrate climate information as a key component in its food security and vulnerability monitoring systems.

PAPER NO. 6: WORLD METEOROLOGICAL ORGANIZATION

Scope of adaptation action <i>Regional level</i>						
<b>*Type of adaptation action</b>	<b>Title of adaptation action, including projects</b>	<b>Status of adaptation action</b> - Ongoing - Under implementation - Under development - Under consideration	<b>Needs in order to successfully implement the adaptation action</b>	<b>Concerns/Barriers</b>	<b>Experiences/Lesson learned</b>	<b>References</b> i.e. publications, websites etc.
<b>Approaches/strategies</b>	<b>Climate Applications and Services</b> Partnership building, vulnerability assessment and capacity building in key socio-economic sectors including health, energy, tourism and urban design and management, joint development of Early Warning Systems for individual sectoral issues, such as for heat waves as a health problem; joint development of information (brochures, notes, and other publications) aimed at the public and the media, and reports and Technical Notes aimed at professionals; and establishment of a global network of CLIPS Focal Points along with relevant capacity building through professional training.	Under implementation	Global and Regional coordination of climate services targeted to specific regions and user sectors; user-provider partnership; user awareness of climate sensitivity and climate products; integration of climate information into decision-making process; establishment of Regional Climate Centres	Lack of adequate resources for capacity building and infrastructure for regional climate services; lack of sustained support to regional networking of climate as well as user sectors	Climate related risk management can improve policy formulation and operational decision-making; Climate information is under-utilized in user sectors	WMO Conference on Living with Climate Variability and Change (17-21 July 2006, Espoo, Finland); <a href="http://www.livingwithclimate.fi/">http://www.livingwithclimate.fi/</a> ; Espoo Statement; Espoo Conference Report (Draft); CLIPS Training Workshop Reports; Reports of the Working Groups on Climate Related Matters of the six WMO Regional Associations

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Please be aware of the degree of adaptation within activities:

- Some activities are undertaken specifically to adapt to climate change, e.g. increased water storage capacity, development of new crop varieties.
- Some activities include a component of climate change adaptation, e.g. infrastructure replacement incorporating higher flood standards
- Some activities are not carried out for adaptation but have other objectives such as preserving biodiversity, however they can offer adaptation co-benefits, e.g. restored wetlands protect against storm surges.

<b>Type of adaptation action</b>	<b>Title of adaptation action, including projects</b>	<b>Status of adaptation action</b> - Ongoing - Under implementation - Under development - Under consideration	<b>Needs in order to successfully implement the adaptation action</b>	<b>Concerns/Barriers</b>	<b>Experiences/ Lesson learned</b>	<b>References</b> i.e. publications, websites etc.
<b>Practices</b>	<b>Climate Applications and Services</b> Support adaptation including development of Guidance documents aimed at ensuring that NMHSs implement and operate best practices in their work and educate the climate and sectoral, Regional Climate Outlook Forums (RCOFs), held in various parts of the world, climate specialists and user groups for any relevant sector come together to review climate conditions and to develop and discuss upcoming patterns. Another effective practice is multidisciplinary workshops and training events that focus on local participation in development of tailored products for sectors such as health and agriculture.	Under implementation	Sustained activities of Regional Climate Outlook Forums (RCOFs) and their expansion to other sub-regions; enhancement of human and infrastructural resources; increased user liaison; Operational activities of RCCs/RCOFs with user focus; further showcase projects with regional/sectoral focus	Lack of adequate resources, insufficient user awareness	RCOFs proven to be effective mechanisms in building regional consensus and sectoral partnerships;	RCOF climate outlook statements and their web sites; WMO El Niño/La Niña Update statements;
<b>Technologies</b>	<b>Climate Applications and Services, Climate Data Management</b> Provision of climate data and use of new Climate data management systems, analysis, prediction and advising on implications of climate change, technical analyses and advice to those developing such technologies	Under implementation	Access to global climate prediction products; global/regional climate modelling; Involvement of NMHSs and the associated regional centres in establishing infrastructures for regional climate model simulations of relevant	Insufficient computational resources and Internet access/bandwidth; Inadequate model evaluation	Downscaling tools are available, but not yet widely used in several regions; there is as yet no standardized framework	IPCC Assessment Reports; WCRP Coupled Model Data Model Archives; Regional climate modelling systems such as PRECIS and RegCM3



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			climate change scenarios and effective downscaling strategies; tailored climate products; decision support tools to integrate climate information	at regional scales and lack of robust regional climate change scenario data; Lack of trained manpower; Inadequate financial resources	for generation and dissemination of high-resolution regional climate scenarios; RCOFs active in climate variability but can also be used to provide climate change information	
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Type of adaptation action	Title of adaptation action, including projects	Status of adaptation action - Ongoing - Under implementation - Under development - Under consideration	Needs in order to successfully implement the adaptation action	Concerns/ Barriers	Experiences/ Lesson learned	References i.e. publications, websites etc.
<b>Approaches/ strategies</b>	<b>Public Weather Services</b> Improving early warning services and products Establishing and promoting best practices in information dissemination Researching and providing information on social and economic aspects of weather services	Under implementation	International and Regional			
<b>Practices</b>	<b>Public Weather Services</b> Publication of guidelines which equip NMHSs with knowledge necessary in achieving the PWS objectives mentioned above; Organizing training workshops and seminars; and Facilitating consultative meetings between experts. Establishment of Expert Team on Services and Products Improvement (ET/SPI); the Expert Team in Support of Disaster Prevention and Mitigation (ET-DPM) and; the Expert Team on Communications Aspects of PWS (ET-COM). Continuous improvement of the "World Weather Information Service (WWIS)" and the "Severe Weather Information Centre (SWIC)" web sites. The SWIC web site provides information on tropical cyclones, rainfall, thunderstorms and heavy rainfall. The WWIS provides weather forecasts and climate data for cities of the world	Ongoing				Strategy for Developing Public Education & Outreach (PWS-1354); Guidelines on Integrat. Severe Weather Warnings into Disaster Risk Management (PWS-13); Guidelines on Weather Broadcasting & the Use of Radio for the Delivery of Weather Information (PWS-12); Guidelines on Cross-Border Exchange of Warnings (PWS-9); Guide on Improving Public Understand. of & Response to Warnings

Type of adaptation action	Title of adaptation action, including projects	Status of adaptation action - Ongoing - Under implementation - Under development - Under consideration	Needs in order to successfully implement the adaptation action	Concerns/Barriers	Experiences/Lesson learned	References i.e. publications, websites etc.
Practices (continued)	Public Weather Services					(PWS-8); Guidelines on Improvement of NMSs-Media Relations & Ensuring use of Official Consistent Information (PWS-3); Weather on the Internet & Other New Technol. (PWS-2). Guidelines on 'Communicating Forecast Uncertainty & Confidence' which will be very useful in getting users to better understand forecasts & warnings, & how to apply them in decision-making. <a href="http://www.wmo.int/web/ao/pwsp/publicationsguidelines.htm">http://www.wmo.int/web/ao/pwsp/publicationsguidelines.htm</a> <a href="http://www.wmo.int/web/ao/pwsp/downloads/WWWIS_WebsiteHosts_%20Rpt_2007_HGK.pdf">http://www.wmo.int/web/ao/pwsp/downloads/WWWIS_WebsiteHosts_%20Rpt_2007_HGK.pdf</a>
Technologies						

Type of adaptation action	Title of adaptation action, including projects	<b>Status of adaptation action</b> - Ongoing - Under implementation - Under development - Under consideration	Needs in order to successfully implement the adaptation action	Concerns/Barriers	Experiences/Lesson learned	References i.e. publications, websites etc.
<b>Approaches/strategies</b>	<b>World Weather Watch</b>					
<b>Practices</b>	<b>World Weather Watch</b> Global Observing System (GOS) provides earth and space based observations and information to prepare weather analysis, forecasts, advisories and warnings. WMO Information System (WIS) to improve and expand GTS operation for monitoring and prediction of hazardous events, tsunami, geo-hazards, earthquake and nuclear accidents.	Under implementation				
<b>Technologies</b>	<b>World Weather Watch</b> Global Observing System (GOS) Global Telecommunication System (GTS) Global Data-Processing and forecasting System (GDPFS) Environmental Emergency Response Activities Programme					

Type of adaptation action	Title of adaptation action, including projects	Status of adaptation action - Ongoing - Under implementation - Under development - Under consideration	Needs in order to successfully implement the adaptation action	Concerns/ Barriers	Experiences/ Lesson learned	References i.e. publications, websites etc.
<b>Approaches/ strategies</b>	<p><b>Global Climate Observing System</b> Facilitate development and implementation of the Climate for Development in Africa Programme, an important objective of which is to assist adaptation to climate change in Africa</p> <p><b>Global Climate Observing System</b> Assist generally in the improvement of observing networks for climate at global, regional, and national scales to support sustainable development and adaptation</p> <p><b>Global Climate Observing System</b> Facilitate implementation of GCOS Regional Action Plans</p>	<p>Ongoing</p> <p>Ongoing</p> <p>Ongoing</p>	<p>Leadership in Africa; engagement of key institutions; assistance from donors; links to other sectors</p> <p>Effective collaboration between met services and users and also between WMO &amp; other international organizations</p> <p>Leadership at the regional level</p>	<p>Funds needed</p> <p>Funds needed</p> <p>Funds needed</p>	<p>Endorsement by regional, intl organizations needed; regional champions very important; assistance by the international donor community essential</p>	<p>Climate Information for Development Needs: An Action Plan for Africa (Report and Implementation Strategy)</p> <p>GCOS Regional Action Plans for 10 developing regions (see web)</p>
<b>Practices</b>						
<b>Technologies</b>						

Scope of adaptation action <i>National level</i>						
Type of adaptation action	Title of adaptation action, including projects	Status of adaptation action - Ongoing - Under implementation - Under development - Under consideration	Needs in order to successfully implement the adaptation action	Concerns/Barriers	Experiences/ Lesson learned	References i.e. publications, websites etc.
<b>Approaches/ strategies</b>	<b>Climate Applications and Services</b> Partnership building, vulnerability assessment, capacity building in key socio-economic sectors including health, energy, tourism and urban design and management; linking climate and development	Under implementation	Mainstreaming user targeted climate services within the NMHSs; partnerships between the climate services and sector agencies; systematic integration of climate information into national development plans	Lack of user awareness; Lack of formal mechanisms for sustained user-provider interaction; lack of human and infrastructural capacity	Well-planned showcase projects are essential to create user awareness	
<b>Practices</b>	<b>Climate Applications and Services</b> Mechanisms for end-user liaison in climate sensitive sectors; develop guidance on best practices in generation and dissemination of tailored climate information products; Showcase projects to demonstrate the application of CLIPS products in the key sectors.	Under implementation	Training of users in understanding climate information; Development of decision making tools relevant to the sector and region; Appropriate integration of climate information with other factors	Lack of guidance to users in using climate information; Inadequate communication/appreciation of	Incorporating uncertainty in decision making sectors is well-developed, yet not fully exploited in climate	

			relevant to decision making	uncertainties inherent in climate products; Limitations of available options to manage climate risks	related risk management ; Socio-economic benefits of climate services need to be convincingly demonstrated	
<b>Technologies</b>	<b>Climate Applications and Services</b> Facilitate the use of new Climate data management systems, improve performance in analysis, prediction and advising on implications of climate change; development of multi-hazard early warning systems; Operationalization of decision-making tools integrating climate information	Under implementation	Regional climate change scenario development and impact assessment; dissemination of scenario products; identify the relevant vulnerabilities to climate variability and change, including extremes, and develop appropriate multi-hazard early warning systems;	Lack of human and infrastructural resources	User sectors need authentic sources of climate information on national scale; National climate centres in some countries	

Scope of adaptation action <i>Local (community) level</i>						
Type of adaptation action	Title of adaptation action, including projects	Status of adaptation action - Ongoing - Under implementation - Under development - Under consideration	Needs in order to successfully implement the adaptation action	Concerns/Barriers	Experiences/ Lesson learned	References i.e. publications, websites etc.
<b>Approaches/ strategies</b>	<b>Climate Applications and Services</b> Partnership building, vulnerability assessment, capacity building in key socio-economic sectors including health, energy, tourism and urban design and management; Integration of climate information into decision making	Under implementation	Vulnerability assessment using downscaled climate information; enhancement of user awareness	User awareness and local capacities	Early warning systems need to be customized to meet the local needs, in consultation with climate providers and users	
<b>Practices</b>	<b>Climate Applications and Services</b> Show case projects in selected locations (e.g., Shanghai, China; Paris, France; New Delhi, India) on the demonstration of early warning systems such as those for the heatwaves and health; training workshops for end-users in applying climate information	Under implementation	Joint coordination of application projects by users and climate experts; operational decision making process to integrate climate information and other required inputs into decision making	Weak or non-existing interaction between users and climate providers; lack of resources and incentives		
<b>Technologies</b>	<b>Climate Applications and Services</b>		Impact assessment	Lack of		
	Facilitate the use of new Climate data management systems, improve performance in analysis, prediction and advising on implications of climate change.		models and decision support tools; user awareness	resources and capacity		



Scope of adaptation action <i>Sectoral level</i> <i>Agriculture</i>						
Type of adaptation action	Title of adaptation action, including projects	Status of adaptation action - Ongoing - Under implementation - Under development - Under consideration	Needs in order to successfully implement the adaptation action	Concerns/Barriers	Experiences/Lesson learned	References i.e. publications, websites etc.
<b>Approaches/ Strategies</b>	<b>Agricultural Meteorology Programme (AgMP)</b> 1) To review the strengths and weaknesses of existing national drought policies and recommend ways and means to establish and strengthen policy guidelines including future climate change scenarios  2) To promote and develop drought management strategies across WMO programmes	Under development	Regional and National			Drought Monitoring and Early Warning: Concepts, Progress and Future Challenges. 2006. WMO #1006.
<b>Practices</b>	<b>Agricultural Meteorology Programme (AgMP)</b> 1) The CAgM Expert Team on Drought and Extreme Temperatures will summarize the status of drought preparedness and drought coping strategies and prepare a report on these strategies.  2) A Cross-cutting Project on Drought Management in Southeastern Europe and Africa has been develop that will incorporate Data, Drought, and Risk assessment and Training and capacity building and Data and Information Delivery sections including Identification of response/mitigation measures and drought policy recommendations	Under development	Regional and National			

Type of adaptation action	Title of adaptation action, including projects	<b>Status of adaptation action</b> <ul style="list-style-type: none"> <li>- Ongoing</li> <li>- Under implementation</li> <li>- Under development</li> <li>- Under consideration</li> </ul>	Needs in order to successfully implement the adaptation action	Concerns/ Barriers	Experiences/ Lesson learned	References i.e. publications, websites etc.
<b>Technologies</b>	<p><b>Agricultural Meteorology Programme (AgMP)</b> The CAgM Expert Team on Drought and Extreme Temperatures will assess the current status of monitoring and predicting droughts and develop standards for drought indices in different Regions. It will also recommend ways and means of improving drought monitoring and prediction.</p> <p>The World Agrometeorological Information Service (WAMIS) provides agrometeorological bulletins and tools and resources on a variety of issues including drought.</p>	Under development	Regional and National			WAMIS website: <a href="http://www.wamis.org">www.wamis.org</a>

<i>Water resources</i>						
Type of adaptation action	Title of adaptation action, including projects	Status of adaptation action - Ongoing - Under implementation - Under development - Under consideration	Needs in order to successfully implement the adaptation action	Concerns/Barriers	Experiences/Lesson learned	References i.e. publications, websites etc.
<b>Approaches/ Strategies</b>	<b>Hydrology and Water Resources Programme (HWR)</b> Improving hydrological information systems through the World Hydrological Cycle Observation System (WHYCOS); Improving early warning & flood forecasting services; Strengthen capabilities of countries to assess their freshwater resources; Launching of an initiative to bring climate information to water managers		Under implementation	Regional and national		
<b>Practices</b>	<b>Hydrology and Water Resources Programme (HWR)</b> The strategies & approaches are put into practice through programmes & activities including WHYCOS, the WMO Flood forecasting Initiative, the Water Resources Assessment Programme & the World Climate Programme – Water (WCP-Water)					

<b>Type of adaptation action</b>	<b>Title of adaptation action, including projects</b>	<b>Status of adaptation action</b> - Ongoing - Under implementation - Under development - Under consideration	<b>Needs in order to successfully implement the adaptation action</b>	<b>Concerns/Barriers</b>	<b>Experiences/Lesson learned</b>	<b>References</b> i.e. publications, websites etc.
<b>Technologies</b>	<b>Hydrology and Water Resources Programme (HWR)</b> Means of implementation are the production of guidelines and manuals, facilitation of field projects both national and regional, the conduct of demonstration projects, building of communication platforms on national, regional and global levels, technology transfer through the HOMS Programme, Training workshops etc geared to build capacity that enables the development and implementation of adaptation measures built on sound information and high quality data products.					

<i>Health</i>						
Type of adaptation action	Title of adaptation action, including projects	Status of adaptation action - Ongoing - Under implementation - Under development - Under consideration	Needs in order to successfully implement the adaptation action	Concerns/Barriers	Experiences/Lesson learned	References i.e. publications, websites etc.
<b>Approaches/ Strategies</b>	<b>Climate Applications and Services</b> Guidance on development of Early Warning Systems for heat waves and Health is in development through the CCI Expert Team on Climate and Health, in partnership with WHO. Enhancing user awareness	Under implementation	Partnership between health (e.g., WHO) and climate sectors; historical information on health impacts of climate	Inadequate interaction between health and climate sectors; lack of resources	Active participation in and support to WHO Regional Workshops on Climate Change and Health has helped to develop an effective framework for partnerships at various levels.	A WHO/WMO infonote on Climate and Health is being developed. WMO/WHO Guidance on Development of Early Warning Systems for Heatwaves and Health (Draft under review)
<b>Practices</b>	<b>Climate Applications and Services</b> Outlooks for Malaria outbreaks are being developed in Southern Africa and in the Greater Horn of Africa Region. The process is called MALOF, and these are held with both climate and health experts in conjunction with regular RCOFs.	Under implementation	User awareness and capacity within the health sector on aspects of climate related risk management.	Inadequate correspondence between the scales of health interest and the scales of climate information available; lack of	WMO co-sponsors WHO workshops at sub-regional levels (e.g. small Island states, mountain areas, semi-arid states, etc.) on	

				downscaled climate products; lack of resources	health impacts of climate variability and change. These workshops are vital instruments in knowledge and capacity-building for both climate and health sectors in a region.	
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Type of adaptation action	Title of adaptation action, including projects	<b>Status of adaptation action</b> - Ongoing - Under implementation - Under development - Under consideration	Needs in order to successfully implement the adaptation action	Concerns/ Barriers	Experiences/ Lesson learned	References i.e. publications, websites etc.
<b>Technologies</b>	<b>Climate Applications and Services</b> Climate and health surveillance data; decision making tools; downscaling tools	Under development	The spatial density and availability of climate data, and of health surveillance data Better observations in and modelling of urban environments for analysis of impacts of heatwaves. Greater effort in communication between the sectors is needed (conferences, workshops) Joint research into multidisciplinary models for disease outbreaks Intercomparisons of various Early Warning Systems for heat waves and health Climate-related health issues and knowledge needs to be addressed in government actions & policies for emergency response & in	Lack of resources	Early warning systems and the required tools have been demonstrated in Europe, Asia and North America; Expertise available but needs resources	

			the mandates of NMHSs			
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Type of adaptation action	Title of adaptation action, including projects	<b>Status of adaptation action</b> <ul style="list-style-type: none"> <li>- Ongoing</li> <li>- Under implementation</li> <li>- Under development</li> <li>- Under consideration</li> </ul>	Needs in order to successfully implement the adaptation action	Concerns/Barriers	Experiences/Lesson learned	References i.e. publications, websites etc.
<b>Approaches/ Strategies</b>	<b>World Climate Research Programme (WCRP)</b> WCRP plans on holding subsequent Sea-level Rise workshops every two years especially for Least Developed Countries and Small Island Developing States.					
<b>Practices</b>	<b>World Climate Research Programme (WCRP)</b> Operation of Global Sea Level Observing System (GLOSS) Ocean modeling systems					
<b>Technologies</b>	<b>World Climate Research Programme (WCRP)</b> Early warning of changing risks and of specific ocean inundation, especially during intense storms, is vital for national infra-structure planning and adaptation strategies. Ocean modelling systems Study on changes in water storage on land, alterations in gravity and geometry of the ocean basin and coasts Global Sea Level Observing System (GLOSS) Update and integrate complementary geodetic capabilities (SLR, VLBI, DORIS, and GPS)—co-locating them where possible—into a reliable and consistent global geodetic ground and space network. • Install GPS positioning at all appropriate GLOSS tide gauge stations to determine changes in global					



Type of adaptation action	Title of adaptation action, including projects	<b>Status of adaptation action</b> <ul style="list-style-type: none"> <li>- Ongoing</li> <li>- Under implementation</li> <li>- Under development</li> <li>- Under consideration</li> </ul>	Needs in order to successfully implement the adaptation action	Concerns/Barriers	Experiences/Lesson learned	References i.e. publications, websites etc.
<b>Technologies (continued)</b>	<b>World Climate Research Programme (WCRP)</b> Develop an integrated geodetic modeling capability that can be combined with those for the Earth sciences. <ul style="list-style-type: none"> <li>• Utilize observations of the time-invariant gravity field from the Gravity Field and Steady-State Ocean Circulate Explorer (GOCE), once launched, to determine the precise geoid, thereby enabling an estimation of the absolute ocean circulation for constraining climate models, as well as an improvement in understanding of geophysical processes related to sea level.</li> </ul>					

*Energy*

Type of adaptation action	Title of adaptation action, including projects	<b>Status of adaptation action</b> - Ongoing - Under implementation - Under development - Under consideration	Needs in order to successfully implement the adaptation action	Concerns/ Barriers	Experiences/ Lesson learned	References i.e. publications, websites etc.
<b>Approaches/ Strategies</b>	<b>Climate Applications and Services</b> WMO's Commission for Climatology Expert Team on Climate and Energy is building partnership with UNEP.	Under implementation	Improvement in the spatial density & availability of climate data for effective analysis of the role of climate in various segments of the energy industry. Better observations in & modelling of wind fields is for siting of wind farms. Greater effort in communication between the sectors is needed (conferences, workshops). Climate-related energy issues and knowledge need to be addressed in government actions & policies for emergency response and in the mandates of NMHSs. Wider use of renewable energies as a key adaptation strategy; development	Inadequate financial mechanisms; lack of user awareness	Systematically prepared databases on renewable climate-related resources (e.g., solar radiation, wind energy potential) are essential pre-requisites to optimally utilize their full potential.	A new WMO Technical Note on 'Meteorological Aspects of Utilization of Renewable Energy Sources' being developed. An info note on Climate and Energy is planned to be developed in summer 2007.

			of appropriate risk transfer strategies (e.g., insurance) to protect against energy disruptions due to climate related hazards			
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Type of adaptation action	Title of adaptation action, including projects	Status of adaptation action - Ongoing - Under implementation - Under development - Under consideration	Needs in order to successfully implement the adaptation action	Concerns/Barriers	Experiences/Lesson learned	References i.e. publications, websites etc.
<b>Practices</b>	<b>Climate Applications and Services</b> Seasonal predictions from NMHSs and through Regional Climate Outlook Forums are an important source of advance information on upcoming climate patterns	Under implementation	More targeted dissemination of the services to the energy sector, and design of tailored climate products	Lack of user awareness and inadequate partnership; lack of appropriate decision making strategies.	RCOFs and NMHSs have the potential to meet the needs of the energy sector; Showcase projects essential to demonstrate the potential.	
<b>Technologies</b>	<b>Climate Applications and Services</b> Seasonal prediction models, information on climatic elements that could affect the renewable energy industry, particularly hydro, solar and wind power generation; downscaling of the climate information to the scales of energy operations	Under development	Data management tools, preparation of tailored products, downscaling techniques, communication of climate information products and the appropriate decision making tools.	Lack of resources to support research in the decision support systems	Technologies do exist in developed countries, but their transfer to developing countries need to be facilitated	

*Urban Sector*

Type of adaptation action	Title of adaptation action, including projects	<b>Status of adaptation action</b> - Ongoing - Under implementation - Under development - Under consideration	Needs in order to successfully implement the adaptation action	Concerns/Barriers	Experiences/ Lesson learned	References i.e. publications, websites etc.
<b>Approaches/ Strategies</b>	<b>Climate Applications and Services</b> Documentation of technical information useful for building and urban climatology, with special focus on climate change, and wide dissemination to all the stakeholders.; partnership building with relevant sectors;	Under implementation	Engaging world renowned experts in preparing the documentation; synthesis of all the existing technical knowledge; bibliography on building and urban climatology; user liaison	Lack of resources; inadequate user awareness and capacity	Close coordination with other related sectors (e.g., health, water) will be essential.	The Commission for Climatology Expert Team on Urban and Building Climatology is developing two new WMO Technical Notes on 'Building Climatology in a changing climate' and 'Urban Climatology and its relevance to urban design', to replace outdated versions of these documents, published as Technical Notes Numbers 149 and 150.
<b>Practices</b>	<b>Climate Applications and Services</b> Development of climate input into national building codes, based on sound climatological analyses of averages and extremes in wind, rain, temperature, runoff, snowloads, etc. ; adequate consideration of climate information in urban planning and design; development of guidelines for standardization of scientific communication on	Under implementation	Improve the spatial density and availability of climate data in urban areas for effective analysis of the role of urban heat and cool islands, flash flooding, wind	Lack of resources; inadequate user awareness and capacity	Cross-cutting issues with health, urban planning, water disaster reduction, etc. sectors	

	urban climate issues		<p>canyons, etc.          Better modelling of the urban environment for improved urban design.          Ensure appropriate partnerships and effective communication mechanisms between relevant sectors (architecture, health, risk reduction and emergency services, planning, energy, transportation, etc.;          Conferences, workshops with professionals and the public will help build resilient societies that can better adapt to a changing environment.          Because of the anticipated growth of many urban centres and the proliferation of mega cities, often in vulnerable areas such as flood plains and near coastlines, the importance of understanding the impacts of climate extremes in high-density areas is vital to development of risk reduction and adaptational strategies and policies.</p>		need to be identified and addressed.	
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Type of adaptation action	Title of adaptation action, including projects	<b>Status of adaptation action</b> - Ongoing - Under implementation - Under development - Under consideration	Needs in order to successfully implement the adaptation action	Concerns/ Barriers	Experiences/ Lesson learned	References i.e. publications, websites etc.
<b>Technologies</b>	<b>Climate Applications and Services</b> Facilitate use of modelling tools to represent urban surface atmosphere processes; develop a directory of available models and promote model intercomparisons; develop an inventory of climatologically significant characteristics of the world's cities.	Under development	Workshops and conferences to promote modelling studies and create user awareness; capacity building in the use of modelling tools; showcase projects; technical documentation	Lack of resources and inadequate user awareness	Modelling tools are available but not widely used in urban planning and design	Technical Notes on Urban Climatology & its relevance to urban design (WMO/TN 149); Application of Building Climatology to the problems of housing and building for human settlements (WMO/TN 150), 1976. WMO/TN 665 on Guidance material on the calculation of climatic parameters used for building purposes, 1992 . A long-term bibliography on urban climatology exists and is kept up to date by the CCI Expert Team. WMO held a conf. on Tropical Urban Climates 28 March-2 April 1993 in Dhaka, Bangladesh

<i>Tourism</i>						
Type of adaptation action	Title of adaptation action, including projects	Status of adaptation action - Ongoing - Under implementation - Under development - Under consideration	Needs in order to successfully implement the adaptation action	Concerns/Barriers	Experiences/Lesson learned	References i.e. publications, websites etc.
<b>Approaches/Strategies</b>	<b>Climate Applications and Services</b> WMO-UNWTO partnership and joint studies on the impacts of climate variability and change on the tourism industry, particularly for the most vulnerable regions the sector (e.g. mountain and coastal areas). Understanding the impacts of tourism on the environment (stress on biodiversity, land use change, emissions from aviation, etc.)	Under implementation	Improve the spatial density and availability of climate data for effective analysis of the role of climate in various segments of the tourism industry Better observations in and modelling of mountain and coastal climates for siting of resorts for long term planning in a changing climate. Greater effort in communication between the sectors is needed (e.g., through conferences, workshops)	Lack of resources and inadequate user awareness at the local level	Members of the Commission for Climatology (CCI) Expert Team on Climate and Tourism are actively involved in UNWTO initiatives on the subject, helping to strengthen the partnership; WMO actively participates in UNWTO workshops/conferences; Further linkages between NMHSs and	A meeting of Experts on Climate, Tourism and Human Health, Topes de Collantes, Cuba, 22-29 January 1995 ( WCASP 33; WMO/TD-No. 682, WMO, May 1995) WMO Bulletin: Tourism, Climate and Weather, P. An info note on Climate and Tourism is under development. Shackleford & L.E. Olsson, WMO Bulletin, Volume 44, No. 3, July 1995; & Climate Services for Tourism & Recreation, L. Lecha & P. Shackleford, WMO Bulletin, Volume 46 No. 1, January 1997. UNWTO & WMO jointly published the Handbook on Natural Disaster Reduction in Tourist Areas in 1998.

					local tourism sector need to be developed.	UNWTO held an Internat. Conf. on Climate Change & Tourism, in Djerba, Tunisia (9-11 April 03)
<b>Practices</b>	<b>Climate Applications and Services</b> Joint studies of climate change impacts on tourism; Seasonal predictions from NMHSs & through Regional Climate Outlook Forums (RCOFs) are an important source of advance information on upcoming climate patterns (e.g. temperature & precipitation patterns) that could affect the tourism industry in the medium term.	Under implementation	Identifying the climate information needs of the tourism sectors; development of tailored products; capacity building; communication of climate prediction products to the different stakeholders within the tourism sector; enhanced partnerships between NMHSs and RCOFs and the local/regional tourism sectors.	Lack of resources; inadequate user awareness, inadequate user-provider coordination	WMO-UNWTO joint initiatives have been highly successful and similar activities need to be developed at the national and regional levels.	UNWTO-UNEP-WMO Study on "Climate Change and Tourism: Impacts, Adaptation and Mitigation" to be completed in October 2007.
<b>Technologies</b>	<b>Climate Applications and Services</b> Seasonal prediction models, heatwaves & other extreme events, retreating glaciers, etc. that could affect the tourism industry; develop methodologies to establish empirical relationships between climatic conditions and touristic frequentation and destination choice; development of multi-hazard early warning systems; develop templates for climate-related outreach products to disseminate the climate information generated by NMHSs more effectively in the tourism sector	Under implementation	Design of specialized climate products for the tourism sectors; development of effective communication strategies; showcase projects, assessment of tourism business on climate change; promotion of the concept of climate as a resource; quantification of socio-economic benefits of climate	Lack of resources	CCI ET on Climate and Tourism has been making concerted efforts to address these issues; Some NMHSs and RCOFs have established partnership with the tourism sector at the	Updated WMO Technical Note (under an advanced stage of completion) on Socio-economic Benefits of Climatological Services has a chapter devoted to the Tourism sector.

			services to the tourism sector		respective levels.	
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PAPER NO. 7: THE ORGANISATION FOR ECONOMIC CO-OPERATION AND DEVELOPMENT

**NAIROBI FIVE-YEAR PROGRAMME OF WORK ON IMPACTS, VULNERABILITY AND ADAPTATION TO CLIMATE CHANGE**

At its 25<sup>th</sup> session, the Subsidiary Body for Scientific and Technological Advice (SBSTA) invited Parties and relevant organizations to provide structured submissions on *adaptation approaches, strategies, practices and technologies for adaptation at the regional, national and local levels in different sectors, as well as, on experiences, needs and concerns*. In response to this request, the OECD would like to submit the information on its relevant work.

The OECD is not an implementing agency, and it does not develop nor implement adaptation projects. The OECD provides analyses of practical adaptation experiences of its Member countries and other countries, and it develops recommendations and guidance for its Member countries.

Recent analysis by the OECD of adaptation approaches, strategies, practices and technologies focuses on two main dimensions: integration of adaptation into sectoral policies at the national and local levels, and integration of adaptation into development cooperation. The results of this analysis include the following products:

Integration of adaptation into sectoral policies:

- 1) *Policy Frameworks for Adaptation to Climate Change in Coastal Zones: the case of the Gulf of Mexico*, by Levina E., Jacob J., Ramos L and Ortiz I. (2007)

This OECD paper focuses on legal and institutional issues as well as policies and management practices that govern wetlands and human settlements in the US and Mexico on the Gulf of Mexico coast. It examines how current practices and arrangements could either facilitate adaptation to climate change or create impediment to adaptation. The paper found that many current policies on wetland protection and mitigation facilitate wetland's adaptation to climate change but may not be sufficient to compensate wetland loss associated with sea level rise. However, there is no legal statute that would authorise protection of lands that may become wetlands in the future as sea level rises. Sea walls designed to protect human settlements may potentially impede adaptation of wetlands by disrupting a natural water flow between the sea and wetlands. As for human settlements, current policies that regulate the quality of housing and other construction, land use management and urban patterns have a key role in facilitating adaptation of human settlements to climate change.

The paper can be downloaded from the OECD website:

- <http://www.oecd.org/dataoecd/36/22/38574805.pdf>

- 2) *Domestic Policy Frameworks for Adaptation to Climate Change in the Water Sector. Part I: Annex I Countries*, by Levina E. and Adams H., (2006)

*Domestic Policy Frameworks for Adaptation to Climate Change in the Water Sector. Part II: Non-Annex I Countries. Lessons Learned from Mexico, India, Argentina and Zimbabwe* by Levina E., (2006)

In 2006 the OECD published these two papers on mainstreaming adaptation into the water sector policy frameworks in Annex I and non-Annex I countries. As part of the analysis, the papers examined climate change impacts on the water sector in 8 countries: Argentina, Canada, Finland, India, Mexico, UK, US, and Zimbabwe. The papers analysed how domestic and international water-

related laws and agreements, institutional arrangements, water policies and management tools, traditional knowledge and practices, and status of infrastructure in the examined countries affect vulnerability of these countries' water sector to climate change and either facilitate or impede adaptation of the water sector to climate change. The papers analysed the existing long-term water management strategies, flood and drought management strategies and tools, demand side policies, and approaches to water abstraction in the context of their ability to facilitate adaptation of the water sector to the impacts of climate change. s.

The papers can be downloaded from our website:

- <http://www.oecd.org/dataoecd/46/15/37671630.pdf>
- <http://www.oecd.org/dataoecd/32/47/36835429.pdf>

- 3) OECD (2006) *Climate Change in the European Alps: Adapting Winter Tourism and Natural Hazards Management*, edited by Shardul Agrawala.

OECD's recent book focuses on adaptation measures to address two key vulnerabilities in European Alps: increasing losses in winter tourism due to reduced snow cover, and increased exposure of settlements and infrastructure to natural hazards. The book examines frameworks and financial mechanisms to manage natural hazards as well as technological and behavioural measures that might be needed to deal with climate change in five Alpine countries: France, Switzerland, Italy, Germany and Austria.

- Executive Summary : <http://www.oecd.org/dataoecd/25/40/37909236.pdf> Climate Change in the European Alps. Adapting Winter Tourism and Natural Hazards Management (ISBN: 9789264031692, published 18 January 2007).
- URL to the Alps book : <http://www.oecd.org/env/cc/alps>

Integration of adaptation into development cooperation:

- 4) To highlight the importance of integrating climate change adaptation into development cooperation projects and programmes, the OECD Environment and Development Co-operation Ministers signed the *OECD Declaration on Integrating Climate Change Adaptation into Development Co-operation* in April 2006.

- Link to the ministerial Declaration : <http://www.oecd.org/dataoecd/44/29/36426943.pdf>

- 5) As a follow up to the Declaration, the OECD is preparing a *Stocktaking Paper of Progress on Integrating Adaptation to Climate Change into Development Cooperation Activities*.

The paper will review progress made by international donor agencies and international financial institutions in raising awareness on climate risks and taking such risks into account within their development cooperation activities.

- The paper is forthcoming in 2007, and will be available at the OECD website: [www.oecd.org/env/cc](http://www.oecd.org/env/cc)

- 6) OECD (2005) *Bridge Over Troubled Waters: Linking Climate Change and Development*, edited by Shardul Agrawala

This OECD publication is the product of a collaborative effort between the OECD Environment and Development Co-operation Directorates on mainstreaming responses to climate change in development planning and assistance. This volume synthesises insights from six country case studies that reviewed climate change impacts and vulnerabilities, analysed relevant national plans and aid investments in terms of their exposure and attention to climate risks, and examined in depth key systems where climate change is closely intertwined with development and natural resource management. These include the Nepal Himalayas, Mount Kilimanjaro in Tanzania, the Nile in Egypt, the Bangladesh Sundarbans, coastal mangroves in Fiji, and agriculture and forestry sectors in Uruguay.

- Executive Summary : <http://www.oecd.org/dataoecd/16/4/36174361.pdf>
- URL to Bridge Over Troubled Water : <http://www.oecd.org/env/cc/bridge>
- URLs to the following Case Studies :
  - Egypt : <http://www.oecd.org/dataoecd/57/4/33330510.pdf>
  - Uruguay : <http://www.oecd.org/dataoecd/42/7/32427988.pdf>
  - Nepal : <http://www.oecd.org/dataoecd/6/51/19742202.pdf>
  - Bangladesh : <http://www.oecd.org/dataoecd/46/55/21055658.pdf>
  - Fiji : <http://www.oecd.org/dataoecd/46/58/21056315.pdf>
  - Tanzania : <http://www.oecd.org/dataoecd/47/0/21058838.pdf>



Type of adaptation action <sup>1</sup>	Title of adaptation action, including projects	Status of adaptation action - ongoing - under implementation - under development - under consideration	Needs in order to successfully implement the adaptation action	Concerns/Barriers	Experiences/Lesson learned	References i.e. publications, websites etc.
<b>Scope of adaptation action</b> <i>Regional level</i>						
Approaches/strategies						
Practices						
Technologies						
<i>National level</i>						
Approaches/strategies	Integration of adaptation into development cooperation	On-going analysis by the OECD on integrating adaptation into development co-operation.			Lessons learned from country case studies and from recent analysis of the progress made by bi-lateral and multi-lateral donor institutions in raising awareness on climate risks and taking such risks into account within their	<p>Stocktaking paper of Progress on Integrating Adaptation to Climate Change into Development Cooperation Activities. (forthcoming in 2007, <a href="http://www.oecd.org/env/cc">www.oecd.org/env/cc</a>).</p> <p>OECD Declaration on Integrating Climate Change Adaptation into Development Co-operation, adopted by OECD Environment and Development Co-operation Ministers in April 2006. <a href="http://www.oecd.org/dataoecd/44/29/36426943.pdf">http://www.oecd.org/dataoecd/44/29/36426943.pdf</a></p> <p>OECD (2005) <i>Bridge Over Troubled Water: Linking Climate Change and Development</i>, edited</p>

<sup>1</sup> Please be aware of the degree of adaptation within activities:

- Some activities are undertaken specifically to adapt to climate change, e.g. increased water storage capacity, development of new crop varieties.
- Some activities include a component of climate change adaptation, e.g. infrastructure replacement incorporating higher flood standards
- Some activities are not carried out for adaptation but have other objectives such as preserving biodiversity, however they can offer adaptation co-benefits, e.g. restored wetlands protect against storm surges.

					development co-operation activities.	<p>by Shardul Agrawala  <a href="http://www.oecd.org/env/cc/bridge">http://www.oecd.org/env/cc/bridge</a></p> <p>(2004) Development and climate change case studies:  Egypt :  <a href="http://www.oecd.org/dataoecd/57/4/33330510.pdf">http://www.oecd.org/dataoecd/57/4/33330510.pdf</a>  Uruguay :  <a href="http://www.oecd.org/dataoecd/42/7/32427988.pdf">http://www.oecd.org/dataoecd/42/7/32427988.pdf</a>  Nepal :  <a href="http://www.oecd.org/dataoecd/6/51/19742202.pdf">http://www.oecd.org/dataoecd/6/51/19742202.pdf</a>  Bangladesh :  <a href="http://www.oecd.org/dataoecd/46/55/21055658.pdf">http://www.oecd.org/dataoecd/46/55/21055658.pdf</a>  Fiji :  <a href="http://www.oecd.org/dataoecd/46/58/21056315.pdf">http://www.oecd.org/dataoecd/46/58/21056315.pdf</a>  Tanzania :  <a href="http://www.oecd.org/dataoecd/47/0/21058838.pdf">http://www.oecd.org/dataoecd/47/0/21058838.pdf</a></p>
<b>Practices</b>						
<b>Technologies</b>						
<i>Local (community) level</i>						
<b>Approaches/ strategies</b>						
<b>Practices</b>						
<b>Technologies</b>						

<i>Sectoral level<sup>2</sup></i>						
<i>Agriculture</i>						
<b>Approaches/ Strategies</b>						
<b>Practices</b>						
<b>Technologies</b>						
<i>Water resources</i>						
<b>Approaches/ Strategies</b>	Integration of adaptation into water sector policies, management practices, legal and institutional frameworks.	Completed analysis by the OECD Annex I Expert Group.			Lessons learned from the analysis of current policies, legal provisions, institutional arrangements and water management practices in 8 case study countries: Canada, Finland, the US, UK, Argentina, India, Mexico and Zimbabwe.	(2006) <i>Domestic Policy Frameworks for Adaptation to Climate Change in the Water Sector. Part II: Non-Annex I Countries. Lessons Learned from Mexico, India, Argentina and Zimbabwe</i> by Levina E. <a href="http://www.oecd.org/dataoecd/46/15/37671630.pdf">http://www.oecd.org/dataoecd/46/15/37671630.pdf</a>  (2006) <i>Domestic Policy Frameworks for Adaptation to Climate Change in the Water Sector. Part I: Annex I Countries</i> , by Levina E. and Adams H. <a href="http://www.oecd.org/dataoecd/32/47/36835429.pdf">http://www.oecd.org/dataoecd/32/47/36835429.pdf</a>
<b>Practices</b>						
<b>Technologies</b>						
<i>Health</i>						
<b>Approaches/ Strategies</b>						

<sup>2</sup> The sectors below are given as examples. Please provide information on any other sectors which you consider important and have examples to share.

<b>Strategies</b>						
<b>Practices</b>						
<b>Technologies</b>						
<i>Coastal zones (settlements)</i>						
<b>Approaches/ Strategies</b>	Integration of adaptation into coastal zone management.	Completed study by the OECD Annex I Expert Group.			Lessons learned from the analysis of the US and Mexican current coastal zone policies, legal provisions and management practices on the Gulf of Mexico that either facilitate or impede adaptation of coastal wetlands and human settlements to climate change.	(2007) <i>Policy Frameworks for Adaptation to Climate Change in Coastal Zones: the case of the Gulf of Mexico</i> , by Levina E., Jacob J., Ramos L and Ortiz I. <a href="http://www.oecd.org/dataoecd/36/22/38574805.pdf">http://www.oecd.org/dataoecd/36/22/38574805.pdf</a>
<b>Practices</b>						
<b>Technologies</b>						
<i>Others: Winter Alpine tourism</i>						
<b>Approaches/ Strategies</b>	Integration of adaptation into hazard management and winter tourism sector in European Alps.	Completed analysis by the OECD.			Lessons learned from the analysis of winter tourism and hazard management in five Alpine countries:	OECD (2006) <i>Climate Change in the European Alps: Adapting Winter Tourism and Natural Hazards Management</i> , edited by Shardul Agrawala.



					France, Switzerland, Germany, Italy and Austria.	
<b>Practices</b>						
<b>Technologies</b>						

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