

# LAND A TOOL FOR CLIMATE CHANGE ADAPTATION

The Kyoto Protocol negotiated in the mid-1990s to address climate change adaptation and mitigation will expire in 2012. This protocol represents one of the two milestones that the multilateral negotiation of climate change has delivered. Ten years after its adoption, the climate change negotiators decided upon the second largest milestone when they approved the Bali Action Plan at their 2007 meeting in Bali.

To address adaptation to climate change, the Bali Action Plan emphasizes a set of actions to be undertaken by all countries at different levels of magnitude and intensity, with a view to alleviate the additional harm from global warming that vulnerable developing countries will suffer.

The climate change agreement currently under negotiation needs to seal the policy gaps in adaptation and mitigation that were omitted or excluded from the Kyoto Protocol on account of scientific uncertainties and a lack of political will. In light of the now anticipated and, in some cases already manifest, effects of climate change in the drylands, it is imperative that the new agreement provides for policy measures that would enable governments with such vulnerable communities to adapt to these predictable, as well as the unknown, climate change-related hazards.

## Risks and Vulnerabilities from Climate Change

According to the Fourth Assessment Report of the Intergovernmental Panel on Climate Change (IPCC) in 2007, increased warming of the earth will lead to more evapotranspiration and an enhanced capacity in the atmosphere to hold moisture, and to extreme weather events, such as floods. Consequently, there will be less precipitation, particularly in the tropical and sub-tropical drylands. Not only will droughts be longer and more intense in such regions, but new areas will suffer from drought. The IPCC also reports that drying is evident in new regions, such as the sub-humid areas of Southern Africa. The IPCC suggests there is a 90% probability these developments will take place, and implies there is a need to put in place effective adaptation measures for dryland communities.

Communities living in drylands affected by desertification and land degradation are generally vulnerable to drought, but are now also exposed to new, predictable and unpredictable, dimensions of this menace on account of climate change. Over the years, communities have developed coping mechanisms. In the absence of proper assistance in the forms of financial and technology transfers and capacity building among other needed international support, these

communities are unlikely to cope when these new hazards strike. Past experience with disasters of the kinds now expected to be commonplace suggests that the human and economic impacts will be tragic, unless response measures are in place to support rapid response and adaptation.

The human casualties from the most severe droughts during the last 100 years in China in 1928, Bangladesh in 1943 and India in 1942 were, respectively, 3 million, 1.9 million and 1.5 million. All 10 cases of the countries with the highest number of affected populations are from China and India, with India's affected population exceeding 100 million in five of the six incidents. The damage to the economy is also high. The drought of 1984 cost China approximately US\$13.8 billion, Zimbabwe US\$2.5 billion in 1982, and Brazil US\$2.3 billion in 1978.

There are three justifications for the inclusion of adaptation measures for the drylands communities in the new climate change agreement. First, drylands communities are classified as the poorest of the poor and are therefore unlikely to be able to bear the added cost of response to longer and more intense

droughts precipitated by climate change. Second, the carbon footprint of dryland communities is among the lowest in the world. Therefore, while their vulnerability increases, they should not have to bear the burden of adjusting. Moreover, many are engaged in practices that minimize soil carbon release. Third, in light of their socio-economic condition, it is likely few have set in place any adaptation efforts. A recent study of a local community in Ethiopia conducted by the United Nations Development Programme found that 40% of the population was “doing nothing” in the face of the climate change threat. The principle of equity embedded in the new agreement makes it imperative for the establishment of policy measures supported from the carbon markets to strengthen the abilities of these communities to cope and adapt to the changing climate, and to be cushioned from its unpredictable effects.

Adaptation measures in the drylands need to take into consideration three dynamics: an adaptation lag due to the learning curve; some but not all predictable risks may be averted; and the preparation for risks that cannot be anticipated. To minimize the learning curve and ensure long-term sustainability of the measures, the technologies applied must build on and strengthen the knowledge that communities possess already, specifically their current adaptation practices and mechanisms (usually referred to as coping mechanisms). However, these traditional mechanisms require modification in recognition of the fact that today’s problems cannot be solved with technologies of yesterday. In preparing for the unpredictable risks, adaptation measures need to provide for rapid responses, including rescue efforts if necessary, as well as long-term solutions that cut across the livelihoods, ecosystems and social aspects of these communities.

## Adaptation Approaches

Different communities submit to different approaches for sustainable livelihoods when adapting to climate change. Pastoralists, for instance, have practiced livestock mobility for centuries. In its studies on pastoralism, the International Institute for Environment and Development has found that livestock movement across ecological zones maximizes productivity, provides for the regeneration of vegetation by allowing for the completion of life-cycles and safeguards the environment from overstocking through: controlling the use of stocking between primary (resident) and secondary (visiting) users; reciprocating access between localities to allow for inter-seasonal and inter-annual climatic variability; and upholding these norms through social sanctions. Livestock capacity within specific zones is determined by water availability and the state of vegetation. A pre-requisite for its effectiveness is the existence of communal tenure regimes that operate through clans, traditional leaders and family structures. These practices are adjusted or adapted with variations in the natural climatic conditions.

Although these practices have been used and transmitted over generations, they will not be sufficient to address the anticipated intensity and duration of droughts in drought-prone areas. Moreover, the emergence of drought in regions where droughts have been non-existent will impose new challenges for communities and their governments. Therefore, dryland populations and the affected Parties will require new resources to cope with these new developments. Considering the economic challenges that many of the

affected dryland countries face, the level of responses required in the event of an unexpected extreme drought may have devastating effects on their economic growth. Four approaches are proposed to enable countries to respond effectively to these drought scenarios.<sup>1</sup>

A *hazards-based approach* is proposed where threats can be predicted, for example, the expectation that droughts will occur in specified, previously non-affected regions. A hazards-based approach would entail the introduction and transfer of technical interventions that aim to expand the range of capabilities of affected communities to increase resilience in order to withstand longer and more intense droughts in existing drought-prone areas, and for the effective transfer of these technologies to other communities lacking prior experience with drought. A hazards-based approach, however, must be complemented by the vulnerability-, adaptive capacity- and policy-based approaches, as a hazards-based approach alone is unlikely to be effective.

A *vulnerability-based approach* refers to measures that address risks based on an analysis of the local livelihood systems that are least likely to be affected by the anticipated effects of climate change. Where effects can be predicted, it is possible to assess the varying levels of vulnerability of each community’s

<sup>1</sup> These approaches are built on the work of United Nations Development Programme

support systems in order to determine the appropriate response measures. A vulnerability-based approach enables communities to adapt by minimizing their risk exposure, if they can diversify their livelihoods while increasing the resilience of existing resources.

Where there is a high degree of uncertainty about the potential impact of climate change, a different strategy is needed. Studies among pastoralists have demonstrated that the governance structure matters for their ability to adapt. Local governance and traditional decision-making approaches are important determinants of local communities' abilities to cope with the natural resource challenges in drylands. The *adaptive capacity-based approach* emphasizes the use of flexible and adaptable systems. Working closely with local communities in the design and development of adaptation measures would enable local communities to under-

stand and build in new adaptation measures into their governance structures, which can facilitate rapid adjustments when unanticipated disasters strike.

Lastly, a *policy-based approach* is needed where urgent action is warranted. Governments need to be aware of policies that would be required under situations of emergency. To minimize the number of casualties, such measures need to be elaborated in advance and systems put in place to facilitate a rapid response.

Each of these adaptation measures impose financial obligations on drought-prone countries, over and above what they would normally prepare for absent climate change. These additional costs for adaptation are well suited to financing through the Kyoto Protocol's instruments, especially the Adaptation Fund.

## Policy Proposals on Adaptation

Communities that are dependent on rain fed agricultural and pastoral systems for their livelihoods such as subsistence and livestock farmers and other ecosystems suffering from water stress, such as small-island ecosystems and mountain ecosystems, are particularly vulnerable to the effects of climate change and drought. The proposals outlined below are applicable to the concerns of such regions, not solely those of the drylands.

### Hazard-based Adaptation Strategies

- **Early Warning Systems:** Advance knowledge about a potential disaster as well as timely and permanent access to this information can motivate communities to establish safeguards particularly at the household level, for example, saving excess food produce for a forecast drought and selling livestock before a disaster strikes. To this end, national and local level institutions to gather and disseminate information permanently will provide the right signals for advocating for Sustainable Land Management and drought risk management. It is necessary that they are interfaced appropriately with community information structures that facilitate rapid information dissemination.
- **Strengthen Coping Mechanisms:** There is a need to design new adaptive mechanisms that are built on traditional practices and knowledge and appropriate technology transfer to strengthen the capacity of local people to address the issue of climate change within their own communities and social structure.

- **Mitigation activities support adaptation:** Actions related to Sustainable Land Management improve the conditions of the natural resource base exploited by communities. These aim to restore soil fertility, improve water availability, improve livestock productivity, etc. Improving the productive capacity of communities that depend on the rainfed production systems – and livestock and agriculture – would strengthen their income basis and ability to diversify their crops.
- **Joint Forest Management:** Conserving and establishing forests with varying canopy-levels can check moisture and soil loss, enhance crop and fodder availability, and improve soil quality. The introduction of science-based agricultural technologies such as these that minimize soil carbon emission are particularly useful.

### Vulnerability-based Adaptation Strategies

- **Diversification of Livelihoods:** There is a need for studies to assess the diversity of systems that support local livelihoods, coupled with analysis of their varying levels of resilience to climate change, their potential for development, scaling up and transfer, as well as to determine viable new economic activities that provide innovative solutions.
- **Discriminate Use of Current Practices:** Livestock intensification in dryland areas in particular, should be avoided because it may add to the carbon footprint.



- **Climate-Proof Community Development Plans:** The economic development and aspirations of local communities should not be thwarted by climate change. Thus, policy attention needs to focus on measures to protect these aspirations in the face of climate change.

#### Adaptive Capacity-based Approaches

- **Local Governance:** Local communities are the owners of their management approaches. Their ability to develop the rationale and operation of “new technologies” is crucial to their ability to be flexible when there is great uncertainty. Consequently, participation in the policy and project development for climate adaptation is essential.
- **Climate Insurance:** In a globalized market economy, the institutionalization of long-range financial instruments/institutions that communities can draw upon during moments of great and unanticipated risk is indispensable and a priority. A percentage of the resources in the Adaptation Fund could be designated for this purpose and invested in the market for income generation.

#### Policy-based Approaches

- **Establish Financial Instruments:** The post-Kyoto agreement needs to build in new climate change effects that were not apparent in the 1990s, and establish appropriate financial instruments to support vulnerable countries. Consideration should be given to broadening the scope of the Adaptation Fund to cover hazards-, vulnerability- and adaptation capacity-based approaches for adaptation, and the establishment of a climate-related Disaster Fund along the lines of the Adaptation Fund. Resources for the Disaster Fund could be

invested in the market to generate returns to support countries when climate-related disasters strike.

- **Build Synergy:** Disaster mitigation and response often involves a large number of international actors. Cooperation among them is needed in the development of the various adaptation strategies, yet synergy is often lacking among them. To strengthen synergy, incentives and reward systems could be built into the implementation of systemic climate change adaptation strategies, and in national development frameworks. Criteria might include demonstrated joint or coordinated implementation and harmonized delivery in the priority areas of these conventions. For example, targeted action, including research can be jointly designed on forest conservation, reducing water scarcity and carbon sequestration in selected ecosystems.
- **Transboundary Issues:** The anticipated nature of drought, particularly in the sub-tropics and Southern African region underlines the need to protect livestock corridors and water points. Existing and effective practices such as the use of wildlife corridors in East and Southern Africa and transboundary water management approaches in different regions can inform these processes.
- **National and Local Policies:** While global policies may be needed to address these issues, corresponding measures will be required at the national level, including building local and national institutional capacity to carry out risk assessments. In particular, attention should be given to strengthen and empower local institutions, for example, combining customary and statutory models of land management.

## About the UNCCD

Developed as a result of the Rio Summit, the United Nations Convention to Combat Desertification (UNCCD) is a unique instrument that has brought attention to land degradation in some of the most vulnerable ecosystems and affected populations in the world. Thirteen years after coming into force, the UNCCD benefits from the largest membership of the three Rio Conventions and is increasingly recognized as an instrument that can make an important contribution to the achievement of sustainable development and poverty reduction. As the sole institution with a United Nations mandate to focus on issues of drought in the drylands, the UNCCD provides policy guidance and proposals to the United Nations system on measures that will enable drought-prone and newly affected countries to adapt effectively. It also has the responsibility of advising UNFCCC parties on related gaps in the current and new agreement that require action.