



Mitigating Drought — Long-Term Planning to Reduce Vulnerability

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About 1.3 billion of the world's people live on fragile land—arid, semiarid, mountainous, or steep terrain (World Bank 2002). Such lands are often prone to drought, which can result in humanitarian, environmental, and economic disaster. But being drought prone is not necessarily the same as being vulnerable. Much depends on how dependent the economy is on rain and on whether the country's risk management and infrastructure are adequate and appropriate for dealing with drought.

Given the potentially devastating impacts of drought on the lives and livelihoods of the poor, drought preparedness and adaptation to climate variability and change are key priorities in World Bank strategies and in the Bank's portfolio. That the international community must respond to drought emergencies in the short term goes without saying. This note, however, concentrates on long-term measures for prediction, management, and mitigation that are aimed at minimizing the life-threatening and economy-weakening consequences of drought.

THE SOCIOECONOMIC COSTS OF DROUGHT



Drought occurs when there are significant reductions in precipitation over an extended period of time. In vulnerable areas, drought can lead to loss of live-stock, rainfed crops, and other productive assets and, in extreme cases, to famine, starvation, and economic disruption.

Despite the inadequacies of drought cost assessments in many countries, it is known that these costs can be significant. Drought costs the U.S. economy \$6 billion to \$8 billion annually (FEMA 1995). In 2002 at least seven Indian states experienced a severe drought that resulted in a 19 percent drop in output of kharif (monsoon) crops, a 3.1 percent decline in agricultural gross domestic product (GDP), and an overall reduction in GDP growth from 5.6 percent in 2002 to 4.4 percent in 2003 (Hess 2003).

In addition to direct impacts on rain-dependent sectors, droughts can also have indirect, cumulative, and cross-sectoral effects. For example, direct agricultural and livestock losses from the 1998–2000 La Niña drought in Kenya amounted to about 4.4 percent of GDP (\$377 million), but an estimated 24 percent of GDP (\$2.04 billion) was lost because of the 41 percent drop in hydropower production, the increased cost of power production, import substitution, and decreased industrial production due to inadequate power.

Droughts limit livelihood options for many poor rural households and contribute to inappropriate use of natural resources (such as deforestation and overgrazing). For example, risk-averse poor people may not invest in productive assets; children withdrawn from school during droughts may not be able to catch up if they return (Dercon and Hoddinott 2003).

Many countries in Africa, Asia, and Latin America are vulnerable to frequent and severe droughts. About 60 percent of Sub-Saharan Africa is in this category. In areas such as the West African Sahel, the sheer cumulative consequences of drought and the resulting transboundary migrations of people and livestock mean that the costs and benefits of mitigating drought go beyond the borders of individual countries.

COMPETING APPROACHES TO ADDRESSING DROUGHT

Although governments and donors have invested heavily in drought management operations, these investments, with important exceptions, have tended to be short-

term and reactive. Moreover, they are often implemented in isolation from regular national public expenditure and development processes. Emergency measures are necessary, but they do little to minimize the vulnerability of communities and countries to subsequent droughts. The inadequacy of drought risk analysis and assessment in most vulnerable countries adds to the difficulty of making the transition from crisis to risk management.

Drought must be seen as a long-term development issue that should be part of national development planning and continuing country dialogue. This is emphasized by the Bank's strategies for environment, rural development, and water resources. All three strategies recognize the importance of managing and mitigating risk and reducing people's vulnerability to natural disasters such as drought in developing countries. The Bank's Environment Strategy (2001) calls for providing security and introducing enhanced coping mechanisms against climatic variability and change. The Water Resources Strategy emphasizes the formulation and implementation of country water resource assistance strategies (CWRASs) designed to promote pragmatic upstream cross-sectoral interventions in water resource management.

DROUGHT MANAGEMENT IN THE WORLD BANK'S PORTFOLIO

The World Bank invests in drought mitigation through three broad instruments: project support, programmatic support, and country-level mainstreaming strategies and development frameworks. Between 1973 and 2003 the Bank invested an estimated \$8.62 billion in 113 projects and programs that addressed drought to varying degrees. A review of the World Bank portfolio shows that in general, investments have been increasing and are often correlated with significant drought events. However, even though the overwhelming number of drought related projects are in Africa Region, the total volume of lending is comparable to that in the East Asia and Pacific (EAP) region (figure 1). Earlier emergency drought operations included budget support for food imports and reconstruction of infrastructure but also some provision for early warning systems. More recent operations focus on local natural resource management and tend to cover, over longer timeframes, the causes of risk and vulnerability and the institutionalization of drought management systems in national development planning. This reflects an increasing trend toward mainstreaming drought management activities into projects other than drought emergency or recovery efforts.

Key sectors in the drought mitigation portfolio are agriculture, water resources, and livestock. Projects with drought management components

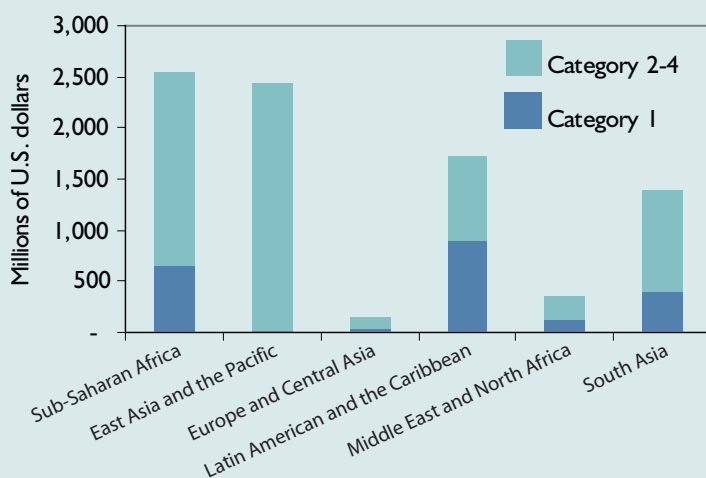
BOX 1 ARID LANDS MANAGEMENT IN KENYA

The Kenya Arid Lands Resource Management Project (1995, with a second phase in 2003) was designed to build the capacity of communities in Kenya's arid districts to better cope with drought. Some of the successful outcomes and innovations from the project include a coordinated drought early warning system; targeted unified famine relief distribution; market-oriented elements such as transport subsidies for traders to encourage livestock offtake in drought-stressed areas; borehole drilling in areas with abundant pasture, with wells then capped for emergency use; capacity- and institution-building at the local and national levels; articulation and implementation of natural resource management principles and plans at the local level through pastoral associations; and establishment of drought contingency funds at the district level.

Source: Project Information Document for Arid Lands Resource Management Project in Kenya.

Figure 1

World Bank drought mitigation investment by Region



Note: Category 1 projects focus primarily on drought; categories 2, 3, and 4 incorporate drought components in decreasing order.

typically focus on general agriculture (for example, Morocco Rain-fed Agriculture Development, 2002); drought emergency or recovery (India Drought Assistance, 1987); natural resource management (Malawi Environmental Management, 1997); water sector restructuring and resource development (China Yangtze Basin Water Resources, 1995); and general community development (Tajikistan Community Watershed Development, 2004, and Brazil Second Rural Poverty Reduction, Bahia State, 2001). Although many of these projects were triggered by drought emergencies, several include forward-looking innovative designs and implementation that have produced satisfactory outcomes in mitigating the impacts of droughts (see box 1).

INTEGRATING DROUGHT MITIGATION IN POLICY DIALOGUE AND BANK OPERATIONS

Since drought tends to be a systemic shock, cutting across many sectors, it is critical that interventions seek to deepen relevant country-level dialogue and mechanisms for responding via macro-level frameworks such as CASs, PRSCs, CWRASS, development policy lending, Country Environmental Analysis, and the Comprehensive Development Framework. A good example of this is Botswana's drought mitigation strategy (box 2).

It is clear that the Bank will continue to be called on to assist in drought emergencies in client countries. For instance, the Bank's Operational Policy 8.50, Emergency Recovery Assistance, provides for emergency recovery loans and grants for restoration of assets and for economic and social activities following a drought disaster. Such facilities tend to be quick disbursing. Innovative follow-up investments that would enhance country capacity to cope with subsequent droughts are imperative. For example the ongoing Sustainable livelihoods program in Mongolia, a 12-year adaptable program loan for pastoral risk management, has many innovative features. This includes a key learning-by-doing index-based livestock insurance scheme through which private insurance companies offer livestock insurance to individual herders, herding households, or other qualifying persons owning livestock to cover covariant risk due to drought, *dzud*, or other weather-related disasters.

Based on a review of drought related World Bank projects, a number of design elements emerge as important (box 3). For example, support for diversi-

BOX 2 BOTSWANA'S DROUGHT MANAGEMENT STRATEGY

Unlike other countries in southern Africa, Botswana has developed a comprehensive drought management capacity based on experience with droughts since independence in 1966. The elements that make the strategy effective include:

- Recognition of drought as a recurrent phenomenon rather than an isolated event.
- Drought mitigation and relief activities undertaken as part of the long-term development strategy.
- Incorporation of annual drought assessments and early warning analyses into multisectoral drought planning for the year.
- A permanent interministerial subcommittee under the Ministry of Finance that is responsible for drought monitoring and response coordination. Having the Ministry of Finance as the central player allows for the timely incorporation of drought assessment findings into national financial planning.
- Vulnerability reduction addressed through regular rural development programs that are designed to mitigate drought.

Source: Halmrast-Sanchez et al. 1995.

fication of livelihood options is critical for affected communities in the aftermath of drought. Interventions such as micro watershed management activities that aim to conserve and restore environmental services such as water quantity and quality are also important. Which combination of these interventions is important however, needs to be considered in the context of local socio-political conditions such as changes in settlement patterns where mobility becomes less viable, social conflict in drought prone areas, and access to natural resources.

COUNTRY CAPACITY AND POLITICAL ACCOUNTABILITY

An important element of long term planning for drought mitigation is building country capacity for response-triggering systems that

BOX 3

KEY DROUGHT MITIGATION INVESTMENT AREAS

- Nonstructural measures such as management of water and other natural resources
- Structural hydraulic infrastructure that increases buffering capacity through capture and storage and through interbasin transfers
- Appropriate infrastructure (access roads, crop storage and processing) and technologies, such as drought-resistant crops and efficient irrigation
- Market mechanisms such as drought insurance, destocking in advance of droughts, buying from producers at competitive rates, and establishment of food reserves
- Early warning and information systems; community awareness campaigns
- Appropriate land use and agriculture policies and institutions and responsive drought disaster governance systems.

are spatiotemporally sensitive and are accountable to stakeholders in a way that reflects the periodicity and magnitude of the shocks. The experience with the *time sensitive* US disaster declaration and aid process is noteworthy here (FEMA, 1995). Depending on the type and nature of the disaster, the decision process could take anywhere between a few hours to several weeks and includes the following steps:

- Local government, helped by neighboring communities and volunteer agencies, responds to a disaster, such as drought, and; if overwhelmed, seeks state assistance.
- The state responds with its own resources.
- Damage assessment by local, state, federal and volunteer organizations determines losses and recovery needs.
- A major disaster declaration is requested by the governor of the affected state, based on the damage assessment, and more important, an agreement to commit state funds and resources to long-term recovery.
- The Federal Emergency Management Agency (FEMA) evaluates the request and recommends action to the White House.
- The president approves the request, or FEMA informs the governor that it has been denied.

However, for well-designed disaster mitigation response systems such as this to be effective, it is not just sufficient to have resources and capacity but political support

and accountability from a range of leaders and frontline workers at different administrative levels. Active pressure from community and civil society groups is also vital to facilitate this process.

CONCLUSION

In summary, it is important to reiterate three key points:

- It is essential to make long-term strategic investments in mitigation while continuing to provide assistance in immediate drought emergencies.
- Where drought is a serious threat, all Bank operations need to plan for strategic risk management over space and time.
- Cross-sectoral coordination in the design and implementation of mitigation measures, particularly in the infrastructure, water resources, and agriculture sectors, should be encouraged and promoted in Bank operations, among donors, and at the country level.

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