



# Public Policies for Sustainable Development in Drylands

The direct, human-induced causes of desertification consist mainly of destructive land-use practices that diminish biodiversity and soil quality. These, in turn, are shaped by various indirect factors, which are closely related to public policies.

For example, since large parts of the dry areas are rangelands suited more to pastoralism than crop production, policies that promote a major shift from extensive livestock production to intensive cropping contribute to desertification. Likewise, policies on land tenure that limit herders' and farmers' control over the land they use tend to undercut their incentives to invest in sustainable land management. Also important are public policies governing farmers' access to agricultural inputs and markets, since these are central to the success of any effort to enhance productivity.

Appropriate changes in public policy can help diminish the forces that drive desertification. And they can contribute importantly to the success of strategies aimed at strengthening food security, reducing poverty and protecting natural resources in drylands. For example, to create more favorable conditions for widespread adoption of the various agroforestry options now available for Africa's drylands, it is urgent that governments reform outdated forestry codes that have been in place since colonial times.

Bringing about the necessary changes in policy is by no means easy, given conflicting pressures from urban, farming and pastoralist stakeholders. To accomplish this requires sound research as well as wide dissemination and discussion of results, which improve our understanding of dryland development. These measures are critical for raising the quality of the debate about key issues and for formulating sound policies that are conducive to sustainable development of drylands.

## Selected Highlights from Research for Dryland Development

**Improved policies for livestock management:** One especially important focal point for policy research is livestock management. In most arid and semi-arid regions, raising livestock is the predominant rural livelihood, but it is under constant threat from erratic rainfall. To cope with this hazard, pastoralists must be able to move their livestock; reliable access to a wide range of pasturelands is essential for sustaining traditional livestock systems.

Through a project entitled Property Rights, Risk and Livestock Development, scientists from the International Food Policy Research Institute (IFPRI) have examined key policy issues in three drought-prone countries: Burkina Faso, Ethiopia and Niger. The study determined which forms of property rights permit the mobility required for raising livestock in drought-prone areas, and it analyzed the risks involved with these options. The project was conducted jointly by IFPRI and the International Livestock Research Institute (ILRI).

Among the study's main conclusions was that cooperation between herders in resource management can significantly reduce grazing pressure. Greater cooperation was also shown to result in smaller herds and increased mobility. These findings offer policy makers valuable insights that can help them design strategies for mitigating the impact of drought on livestock production, particularly in countries that are signatories to the UN Convention to Combat Desertification (UNCCD). A key aim is to improve herd mobility and pastureland tenure without prompting dramatic increases in herd size.

**Promoting improved land management:** In developing improved land management practices, researchers need to have a good grasp of the various factors that determine whether individual farmers and entire rural communities will adopt new practices. IFPRI researchers, in collaboration with ILRI and national partners, are examining such factors in the highlands of northern Ethiopia. In connection with this research, they are comparing alternative investments, policies, and programs in terms of their impact on agricultural productivity, rural poverty, and land degradation. As a result, they have found profitable opportunities for enhancing rural livelihoods, such as tree planting in degraded areas, improved management of grazing lands and water harvesting.

**Seed relief policies and practices:** Another issue on which CGIAR scientists have generated important policy-relevant findings is the provision of emergency seed relief in the wake of natural and human-made crises, such as drought and civil war. For nearly three decades various CGIAR Centers have actively supported crisis mitigation efforts, providing seed stocks from gene banks for massive seed multiplication as well as information tools to guide the planning and targeting of relief efforts in crop production and pasturelands. Sometimes, such support is called for in dry areas, the most recent case being that of Afghanistan, where eight centers are engaged in a project to rebuild the country's seed and food systems.

In addition to working with other CGIAR Centers in such programs, the International Center for Tropical Agriculture (CIAT) has carried out collaborative research with major aid providers and on this basis has developed guidelines for more effective seed aid policies and practices. Likewise, ILRI, in collaboration with the Animal Agriculture Research Network of the Association for Strengthening Agricultural Research in Eastern and Central Africa (ASARECA), is conducting research to better understand how people in drylands cope with drought, animal diseases and other stresses and how their strategies can be strengthened.

**The Desert Margins Program:** An important framework for designing policy as well as technological interventions for dry areas is the CGIAR's Desert Margins Program. Convened by the International Crops Research Institute for the Semi-Arid Tropics (ICRISAT), the program is working with African partner organizations to halt the degradation of drylands, with particular emphasis on biodiversity and soils. Toward this end scientists promote widespread sharing of successful practices and strengthening of human capacities.



Among the Desert Margin Program's many activities and achievements, a major one is the creation of decision-support systems. Various factors, including weather, soils, and management, determine how a crop will respond to irrigation, fertilizer application and other practices. In the face of so many uncertainties, development specialists working in desertification-prone areas need all the help they can get in deciding which crop management strategies are most suitable in economic and environmental terms. The Desert Margins Program has organized workshops on the Decision Support System for Agrotechnology Transfer (DSSAT), a computer model designed to guide complex decisions about crop management.

Another novel technique, which helps detect signs of land degradation, is infrared spectroscopy, developed by the World Agroforestry Center. Both faster and cheaper than previous tools, it provides precise and timely recommendations about how to improve depleted soils, boost crop productivity and measure soil functions, such as carbon storage and water regulation.