

Sustainable Land Management in Central Asia

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The United Nations Conference on Environment and Development (UNCED), that took place in Rio de Janeiro in 1992, identified 3 key environmental issues facing the global community in the 21st century: climate change, biodiversity, and desertification. The follow-up World Summit held in Johannesburg, South Africa in 2002 reviewed progress in addressing these closely interrelated issues and highlighted the need for promoting synergies as a strategy for the design and implementation of more efficient and effective solutions to interlinked problems.

Climate change, human security, and mountain environments

Global climate change, and particularly its causes and implications, are characterized by a considerable amount of uncertainty and controversy in both scientific and political circles. The observed impact of global warming on the earth's glaciers, however, is among the facts that enjoy a high degree of acceptance. The notable trend of disappearing glaciers, particularly in the lower latitudes, poses severe threats to the security and livelihood of the close to 600 million people living in mountains and their foothills. The various one-time or recurring disasters and encroaching hazards caused by climate change—in addition to other socioeconomic and political challenges such as population growth and armed conflicts, among others—are straining the capacities of mountain people to cope with these problems and in turn causing further degradation of mountain ecosystems through deforestation, exploitative agricultural practices, mining, and the expansion of unsustainable mountain tourism as sources of income. The likelihood of increasing environmental threats as a result of global warming, combined with such anthropogenic responses and practices, is threaten-

ing to seriously worsen already existing environmental problems, with both global and local consequences such as floods, landslides, and famine, which are among a growing list of problems confronting the "water towers of the world."

While several of the world's mountain areas are in relatively good ecological condition, many face accelerating environmental and cultural decline, brought on in part by governmental and multilateral agency policies too often founded on inadequate research. It is necessary to recognize that minority populations in the mountains worldwide are among the poorest of the poor, but that they are also extremely rich in terms of environmental understanding. Their opinions and experience need to be combined with scientific knowledge before a better understanding of mountain processes can be obtained. Cultural diversity, which is a prevailing feature of mountain life, must be considered as complementary to biodiversity if sustainable mountain development is to be achieved. Widespread conflict in mountain regions, including conventional warfare, terrorism, guerrilla insurgency, and repression of minority peoples, must be tackled far more vigorously than hitherto. Management and utilization of the natural resources in mountains, especially water, must be undertaken in such a way that mountain people have their share of the benefits. Equal access to resources for both men and women must also be given much greater attention. These are among the key messages that have emerged from the interdisciplinary and participatory research that the United Nations University has promoted for over a quarter of a century.

The UNU sustainable mountain development initiatives

For more than 25 years UNU has played an important role in enhanc-

ing understanding of the challenges facing mountain communities and in fostering political commitment and cooperation to address them. The UNU mountain agenda has evolved in line with changing challenges as well as understanding of these challenges. Most recently, it was re-evaluated and restructured in light of the review of mountain development problems and the goals and means set for addressing them in the declaration of the International Year of Mountains 2002. In the past, UNU's work on mountain development has focused on conducting research and awareness raising on mountain issues, through conferences and research reports challenging conventional thought on such issues as degradation of mountain environments, flooding, and the role of mountain people in conserving their own environment. Since the late 1990s, UNU has been working closely with the United Nations Environment Programme (UNEP), the Food and Agriculture Organization of the United Nations (FAO), and other relevant organizations to ensure that the necessary range of expertise is mobilized to reach the goals of sustainable mountain development. Building upon established synergies, over the past several years the UNU mountain development program has developed a clearly defined focus for addressing land degradation and promoting sustainable land management.

In line with the UNU's mission to initiate and support initiatives aimed at bridging the gap between academic research and pressing global problems and needs, a number of targeted research and capacity building projects aimed at understanding land degradation and related vulnerabilities, as well as at promoting sustainable land management, particularly in mountainous areas, have been undertaken. Land degradation is a complex problem that poses both sudden

and encroaching threats to human security. Currently underway is a UNU project on multi-hazard risk assessment, which seeks to implement risk assessment relating to catastrophic events that result from extreme rainfall, and covers assessment of catastrophic flood risk resulting from overflow or breach of major rivers in urban centers, vulnerability of underground space to combined hazards, and landslide risks. Catastrophic risks are integrated in a broader analytical framework of vulnerability assessment that was recently developed and is currently being tested in Sri Lanka and the Volga basin.

Understanding risks and vulnerabilities to land degradation and related environmental processes, particularly in remote mountain areas where people have to rely on their own resources to cope with the associated threats and challenges, requires the participation of local farmers with scientific knowledge and perspectives. Building upon the field-oriented People, Land Management and Ecosystem Conservation Project that UNU executed, a capacity building course on Land Degradation Assessment, highlighting farmers' perspectives on the phenomenon and process of land degradation, was launched and implemented by the Overseas Development Group at the University of East Anglia in Norwich, with the support of UNU. In line with recognition of the importance of taking local knowledge and views into account in the design of effective sustainable land management strategies, approaches, and technologies, UNU is currently working on the development of a multidisciplinary methodology for assessment of sustainable management of marginal drylands worldwide, linking scientific indicators with indicators based on local farmers' perspectives on land degradation.

Ultimately, however, in order to be useful, understanding of land



FIGURE 1 Livelihoods in the harsh, degraded, and hazardous Pamir environment are at risk and require sustainable land management. (Photo by Tobias Hoeck)

degradation and related risks and vulnerabilities has to be applied to the development and implementation of effective, efficient, and sustainable approaches to improved land management and human livelihoods and security. In this regard, UNU has most recently undertaken a set of new field-oriented sustainable land management initiatives. Among them are: a project on Sustainable Land Management in Mountainous Regions: Thailand, Lao PDR, and China (Yunnan Province), which is intended to develop conservation practices and sustainable use of biodiversity in managed ecosystems; a community-based sustainable land management initiative in the Balkans; and, most notably, an integrated and trans-boundary initiative aimed at promoting sustainable land management in the High Pamir and Pamir-Alai mountains of Central Asia.

Sustainable land management in the High Pamir and Pamir-Alai mountains of Central Asia

The idea for the Pamir-Alai sustainable land management project sprang from and gained momentum in the aftermath of the Bishkek Global Mountain Summit. It was developed jointly with the 2 concerned countries, Kyrgyzstan and Tajikistan, UNEP, and the Swiss National Centre for Competence in Research (NCCR) North-South, at the Centre for Development and Environment (CDE), Institute of Geography, University of Berne, Switzerland. The NCCR North-South is directed by Professor Hans Hurni, a pioneer in integrating multidisciplinary and participatory studies on natural resource management, with a particular focus on controlling soil erosion in mountainous areas. This initiative draws

FIGURE 2 Teresken—one of the few woody species that grow in the harsh High Pamir environment—is increasingly being used for heating and cooking due to lack of other affordable energy sources since the collapse of centralized fuel provision in 1991. This results in severe degradation of mountain slopes, in turn increasing the local population's vulnerability to natural disasters and climate change. (Photo by Nevelina Pachova)



on the UNU Strategic Plan, and is designed to contribute to the achievement of the Millennium Development Goals (MDGs), in particular MDG 1 (*Eradicate Extreme Poverty and Hunger*) and MDG 7 (*Ensure Environmental Sustainability*), by promoting win-win strategies to ensure human security and environmental sustainability, in line with the Water and Sanitation, Energy, Health, Agriculture and Biodiversity (WEHAB) initiative proposed by UN Secretary-General Kofi Annan during the World Summit on Sustainable Development, and the World Summit on the Information Society.

The preparatory phase of the project was launched in January 2004, for 2 years, with the financial support of the Global Environment Facility (GEF), in addition to the

other involved parties and agencies, with UNEP as the implementing agency, and UNU as the executing agency. The initiative was undertaken in response to the urgent threats to the unique physical environment of the Pamir-Alai mountains and to the livelihoods of the marginalized populations inhabiting them, and in recognition of the broader regional security implications of unsustainable development of the fragile mountain environment and resources of the Pamir-Alai ranges (Figure 2). Growing global climatic pressures, combined with decreased human capacities to cope with them in the context of still on-going socioeconomic and political transformations that began in the late 1980s and early 1990s, have enclosed people in the Pamir-Alai

mountains in the vicious circle of poverty and environmental degradation.

Focusing on land management as the entry point into that vicious circle, the Pamir-Alai project hopes to develop a framework for integrated and sustainable mountain resource management through multi-level, multi-stakeholder, and multi-national participatory approaches. In the course of its preparation over the past year, more than 30 local experts underwent relevant methodological training and, based on this, undertook participatory baseline appraisals in 8 pilot villages in the Pamir-Alai area, producing analyses of the relevant legal, policy, and institutional structures at the local, national, and regional levels, and reviews of on-going related initiatives in the project area, among other data collection and studies. The findings and recommendations of the local experts were synthesized by international experts in consultation with local partners. A GIS database for the Pamir-Alai area and a decision-support system for identification of "hot" and "bright" spots of vulnerability to land degradation were developed. Based on the review of the baseline studies, in June 2005, the key local, national, and international stakeholders met in Dushanbe, Tajikistan, and agreed on a conceptual framework for the full project.

According to this conceptual framework, the intended project goal is to restore, sustain, and enhance the productive and protective functions of the transboundary ecosystems of the High Pamir and Pamir-Alai mountains of Tajikistan and Kyrgyzstan, so as to improve the social and economic well-being of the rural communities and households utilizing the region's ecosystem resources to meet their livelihood needs, while preserving its unique landscape and globally important biodiversity.

Prospects for the immediate future

Implementation of the following framework is expected to begin in 2006:

Outcome 1

Enhanced regional cooperation between Tajikistan and Kyrgyzstan, and mainstreaming of sustainable land management concepts and principles in regional, national, and local environmental management, and economic development, plans, and programs, resulting in improved legislative, policy, institutional, technical, and economic incentives, environment, and a regional strategy and action plan for the sustainable management of the High Pamir and Pamir-Alai mountain ecosystems.

Outcome 2

Improved capacity of Tajikistan's and Kyrgyzstan's public and private sector agency research and advisory support service providers, and civil society organizations, to promote sustainable land management within the High Pamir and Pamir-Alai mountains.

Outcome 3

Restoration and enhancement of the productive and protective functions (ecological goods and services) of the High Pamir and Pamir-Alai mountain ecosystems, thereby supporting sustainable higher value ecosystem resource-based rural livelihoods, and improving the social and economic well-being of the rural population.

Outcome 4

Experience with project management, decision making, and monitoring and evaluation (M&E) systems, gained from promoting sustainable land management in the High Pamir and Pamir-Alai mountain ecosystems, serving as the basis for replication within comparable transboundary mountain regions in Asia and elsewhere.

The immediate development objective is to address the link between poverty and land degradation at the community level, by enabling rural households to identify and pursue improved livelihood enterprises derived from the sustainable and profitable utilization of the ecosystem resources of the High Pamir and Pamir-Alai mountains.

The immediate environmental objective is to mitigate the causes and negative impacts of land degradation on the structure and functional integrity of the ecosystems of the High Pamir and Pamir-Alai mountains, through the promotion of improved sustainable land man-

agement tools and practices from the regional to the local level.

To achieve these objectives, the project should address the inter-linked problems of land degradation and poverty through a trans-boundary approach that will seek to improve the technological, institutional, policy, and legislative environment required for enabling mountain communities to take primary responsibility for the productive and sustainable management of their local ecosystem resources. In particular, a regional strategy for the sustainable management of natural resources in the High Pamir and Pamir-Alai region should be developed and used as a framework

for the elaboration and implementation of appropriate interventions, which will be targeted at the local level. Concrete sustainable land management measures and approaches will be identified through a participatory land use planning process carried out at the lowest administrative level in the project area in each country. A portfolio of micro project proposals developed by the communities will be funded and implemented with the support of targeted capacity building initiatives. These will aim at enhancing the potential of relevant public and private sector agencies to continue to provide local communities with the necessary research and advisory services for sustainable land management after the end of the project. The principal global environmental benefits of the initiative should be the protection of the structure and functional integrity of the unique ecosystems of the High Pamir and Pamir-Alai mountains, and the development of a replicable 'model' of an integrated development strategy. This model should be applicable in similar mountain environments threatened by global climatic changes, in order to address the interlinked problems of land degradation and human vulnerability. The expected outcomes from the Pamir-Alai initiative—the implementation of which is expected to begin in 2006—are summarized in the Box on the left.

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